

# AUTORIZZAZIONE UNICA Ex D. LGS. N. 387/2003



## PROGETTO DEFINITIVO PARCO EOLICO LARINO

Titolo elaborato:

### STUDIO SUGLI EFFETTI DELLO SHADOW FLICKERING

| LT      | GD     | WPD     | EMISSIONE                       | 04/07/22 | 0   | 0 |
|---------|--------|---------|---------------------------------|----------|-----|---|
| REDATTO | CONTR. | APPROV. | DESCRIZIONE REVISIONE DOCUMENTO | DATA     | REV |   |

#### PROPONENTE



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Formato  
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Scala  
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Foglio  
1 di 30

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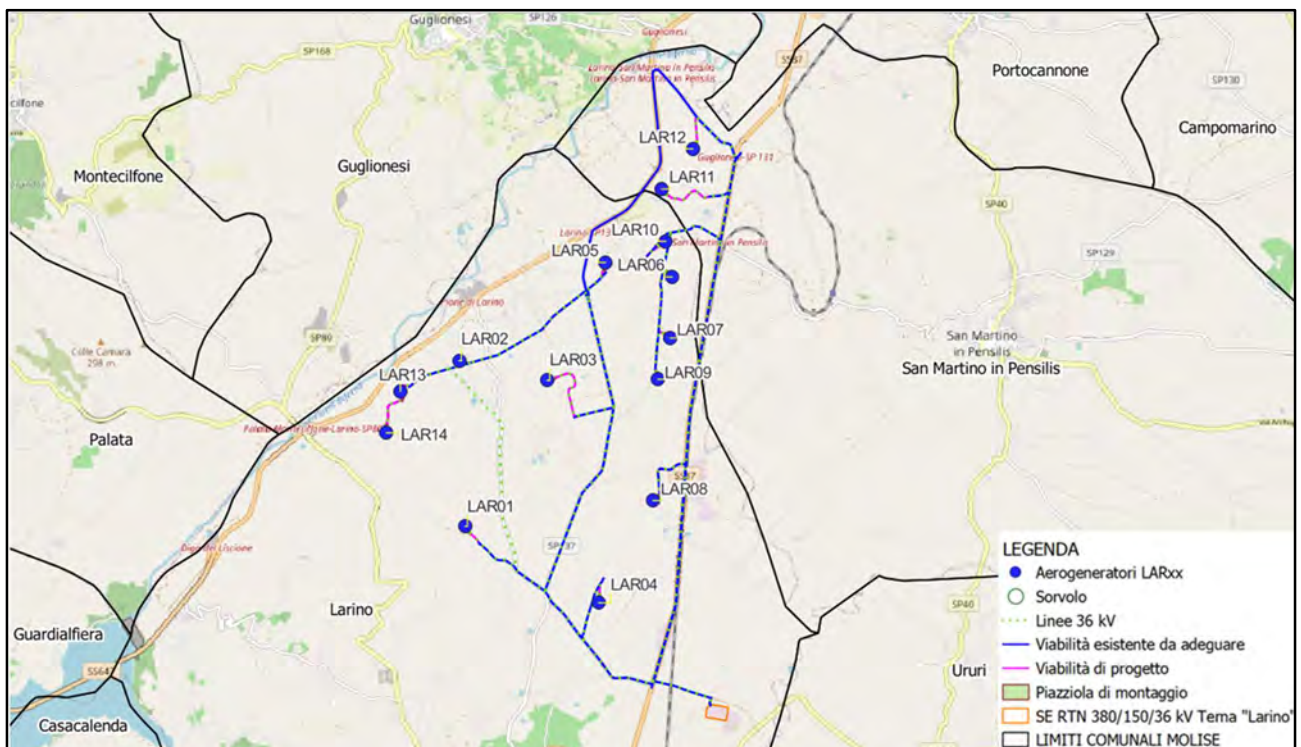
## 1. PREMESSA

Nella presente trattazione si descrive l'evoluzione giornaliera delle ombre generate dalle pale eoliche facenti parte dell'impianto eolico denominato "Parco Eolico Larino" al fine di verificare che l'alternanza ciclica dell'ombra non arrechi danni alla salute su un possibile ricettore.

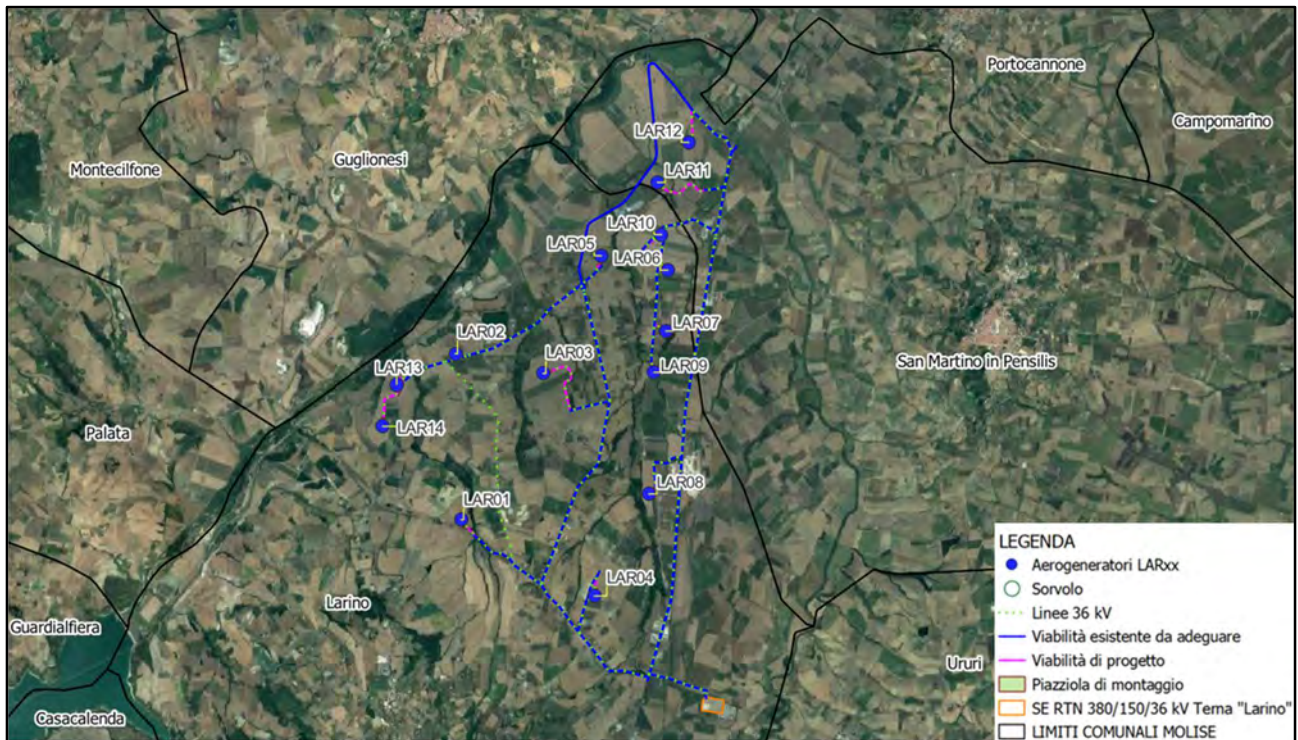
## 2. DESCRIZIONE DEL PROGETTO

L'impianto eolico presenta una potenza nominale totale pari a 84 MWp ed è costituito da 14 aerogeneratori di potenza pari a 6.0 MWp, altezza torre pari a 165 m e rotore pari a 170 m, collegati tra loro mediante un sistema di cavidotti interrati da 36 kV, opportunamente dimensionati, che si collega alla stazione elettrica di trasformazione (SE) della RTN 380/36 kV di Larino, previo ampliamento della sottostazione elettrica di trasformazione esistente SE RTN 380/150 kV.

L'impianto si colloca all'interno di un'area di circa 2.500 ettari ed interessa prevalentemente il Comune di Larino, ove ricadono 12 aerogeneratori e le opere di connessione alla RTN, e il Comune di San Martino in Pensilis, ove ricadono 2 aerogeneratori.



**Figura 2.1:** Inquadramento territoriale - Limiti amministrativi comuni interessati



**Figura 2.2:** Layout d’impianto su immagine satellitare

L’impianto è collegato in antenna a 36 kV con una nuova sezione a 36 kV della stazione elettrica di trasformazione della RTN 380/36 kV di Larino, previa realizzazione degli interventi previsti nell’ambito del Piano di Sviluppo Terna, in accordo alla STMG (*Soluzione Tecnica Minima Generale*) CP 202101917 Terna.

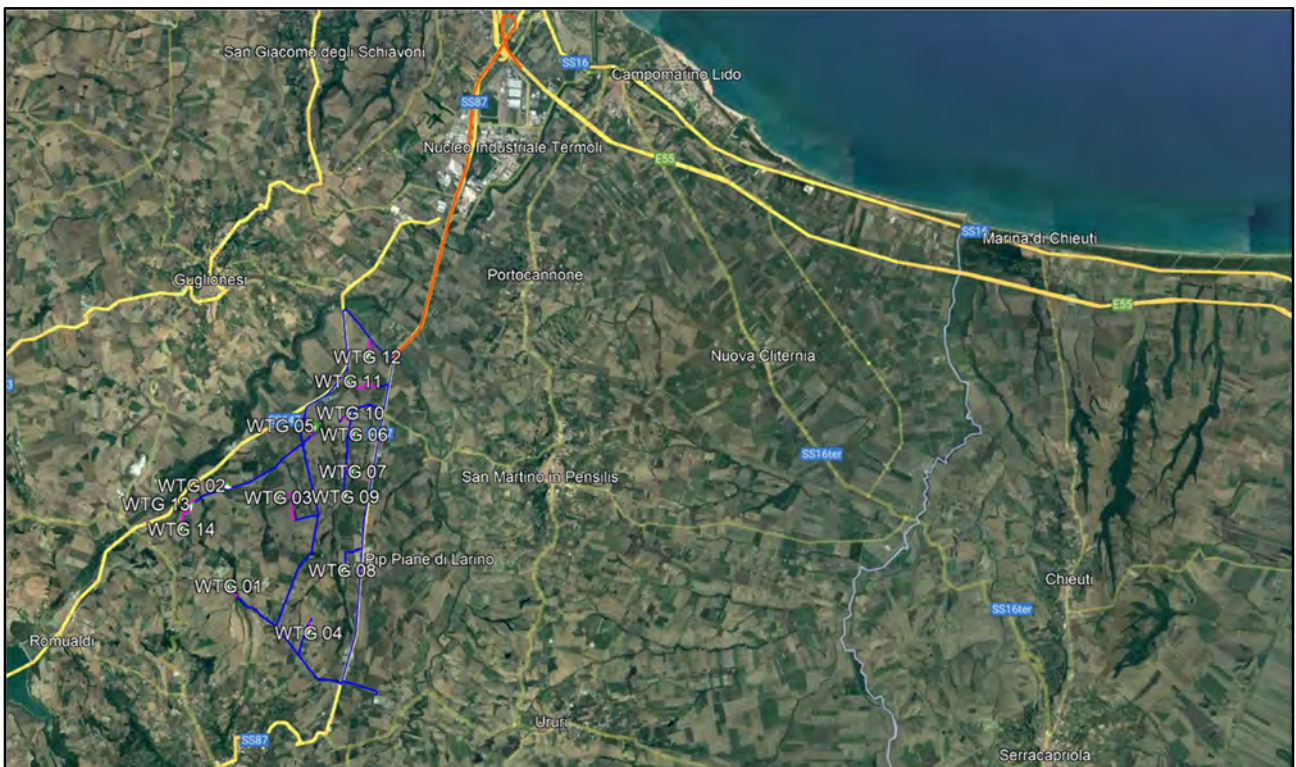
“Ai sensi dell’allegato A alla deliberazione Arg/elt 99/08 e s.m.i. dell’Autorità di Regolazione per Energia, Reti e Ambiente, l’elettrodotto in antenna a 36 kV per il collegamento della Vs. centrale alla citata stazione di Larino costituisce impianto di utenza per la connessione, mentre lo stallo arrivo produttore a 36 kV nella medesima stazione costituisce impianto di rete per la connessione”.

Le turbine eoliche verranno collegate attraverso un sistema di linee elettriche interrato a 36 kV allocate prevalentemente in corrispondenza del sistema di viabilità interna che servirà per la costruzione e la gestione futura dell’impianto. Tale sistema di viabilità verrà realizzato prevalentemente adeguando il sistema viario esistente e realizzando nuovi tratti di raccordo per consentire il transito dei mezzi eccezionali.

Il collegamento tra il parco eolico e la sezione a 36 kV della stazione elettrica di trasformazione della RTN Terna 380/150/36 kV nel Comune di Larino (CB) avverrà attraverso le suddette linee elettriche a 36 kV.



L'area di progetto è servita dalla SS 87, SS 647 e da un sistema di viabilità esistente e capillare che non richiede la realizzazione di molti nuovi tratti di viabilità in quanto verranno utilizzate prevalentemente le strade provinciali e strade interpoderali e/o comunali, opportunamente adeguate e migliorate per il transito dei mezzi eccezionali da utilizzare al fine consegnare in sito i componenti degli aerogeneratori, da cui si dirameranno i nuovi tratti di viabilità per giungere alle posizioni degli aerogeneratori e che verranno utilizzati per la costruzione e la manutenzione dell'impianto eolico.



**Figura 2.3:** Layout d'impianto con sistema di viabilità esistente su immagine satellitare

## 2.1 Caratteristiche tecniche dell'aerogeneratore

L'aerogeneratore è una macchina rotante che trasforma l'energia cinetica del vento in energia elettrica ed è essenzialmente costituito da una torre (suddivisa in più parti), dalla navicella, dal Drive Train, dall'Hub e tre pale che costituiscono il rotore.

Per il presente progetto una delle possibili macchine che verrà installata è il modello Siemens Gamesa SG 170 di potenza nominale pari a 6.0 MW, altezza torre all'hub pari a 165 m e diametro del rotore 170 m (**Figura 2.1.1**).

Oltre ai componenti su elencati, vi è un sistema di controllo che esegue, il controllo della potenza ruotando le pale intorno al loro asse principale, ed il controllo dell'orientamento della navicella, detto controllo dell'imbardata, che permette l'allineamento della macchina rispetto alla direzione del vento.



|                              |   |  |
|------------------------------|---|--|
| <b>Rotor</b>                 |   | <b>Grid Terminals (LV)</b>   |
| Type.....                    | 3-bladed, horizontal axis                           | Baseline nominal power...6.0MW/6.2 MW  |
| Position.....                | Upwind  | Voltage.....690 V  |
| Diameter.....                | 170 m   | Frequency.....50 Hz or 60 Hz   |
| Swept area.....              | 22,698 m <sup>2</sup>                               |  |
| Power regulation.....        | Pitch & torque regulation<br>with variable speed    |  |
| Rotor tilt.....              | 6 degrees   |  |
| <b>Blade</b>                 |   | <b>Yaw System</b>  |
| Type.....                    | Self-supporting                                     | Type.....Active  |
| Single piece blade length    | 83,3 m  | Yaw bearing.....Externally geared  |
| Segmented blade length:      |   | Yaw drive.....Electric gear motors   |
| Inboard module.....          | 68,33 m   | Yaw brake.....Active friction brake  |
| Outboard module.....         | 15,04 m   |  |
| Max chord.....               | 4.5 m   |  |
| Aerodynamic profile.....     | Siemens Gamesa<br>proprietary airfoils              | <b>Controller</b>  |
| Material.....                | G (Glassfiber) – CRP<br>(Carbon Reinforced Plastic) | Type.....Siemens Integrated Control<br>System (SICS)   |
|                              | Semi-gloss, < 30 / ISO2813                          | SCADA system.....Consolidated SCADA<br>(CSSS)  |
| Surface gloss.....           | Light grey, RAL 7035 or                             |  |
| Surface color.....           | White, RAL 9018                                     | <b>Tower</b>   |
|                              |   | Type.....Tubular steel / Hybrid  |
|                              |   | Hub height.....100m to 165 m and site-<br>specific   |
|                              |   | Corrosion protection.....  |
|                              |   | Surface gloss.....Painted  |
|                              |   | Color.....Semi-gloss, <30 / ISO-2813<br>Light grey, RAL 7035 or<br>White, RAL 9018             |
| <b>Aerodynamic Brake</b>     |   | <b>Operational Data</b>  |
| Type.....                    | Full span pitching                                  | Cut-in wind speed.....3 m/s  |
| Activation.....              | Active, hydraulic                                   | Rated wind speed.....11.0 m/s (steady wind<br>without turbulence, as<br>defined by IEC61400-1) |
|                              |   | Cut-out wind speed.....25 m/s  |
|                              |   | Restart wind speed.....22 m/s  |
| <b>Load-Supporting Parts</b> |   | <b>Weight</b>  |
| Hub.....                     | Nodular cast iron                                   | Modular approach.....Different modules<br>depending on restriction                             |
| Main shaft.....              | Nodular cast iron                                   |  |
| Nacelle bed frame.....       | Nodular cast iron                                   |  |
| <b>Mechanical Brake</b>      |   |  |
| Type.....                    | Hydraulic disc brake                                |  |
| Position.....                | Gearbox rear end                                    |  |
| <b>Nacelle Cover</b>         |   |  |
| Type.....                    | Totally enclosed                                    |  |
| Surface gloss.....           | Semi-gloss, <30 / ISO2813                           |  |
| Color.....                   | Light Grey, RAL 7035 or<br>White, RAL 9018          |  |
| <b>Generator</b>             |   |  |
| Type.....                    | Asynchronous, DFIG                                  |  |

Tabella 2.1.1: Specifiche tecniche aerogeneratore

## 2.2 Viabilità e piazzole

La viabilità e le piazzole del parco eolico sono elementi progettati considerando la fase di costruzione e la fase di esercizio dell'impianto eolico.

In merito alla viabilità, come anticipato sopra, si è cercato di utilizzare il sistema viario esistente adeguandolo al passaggio dei mezzi eccezionali. Tale indirizzo progettuale ha consentito di minimizzare l'impatto sul territorio e di ripristinare tratti di viabilità comunale che si trovano in stato di dissesto migliorando l'accessibilità dei luoghi anche alla popolazione locale.

Nel caso questo non sia stato possibile, sono stati progettati tratti di nuova viabilità seguendo il profilo naturale del terreno senza interferire con il reticolo idrografico presente in sito.

Nella **Figura 2.2.1** è riportata una sezione stradale tipo di riferimento per i tratti di viabilità da adeguare e quelli di nuova realizzazione.

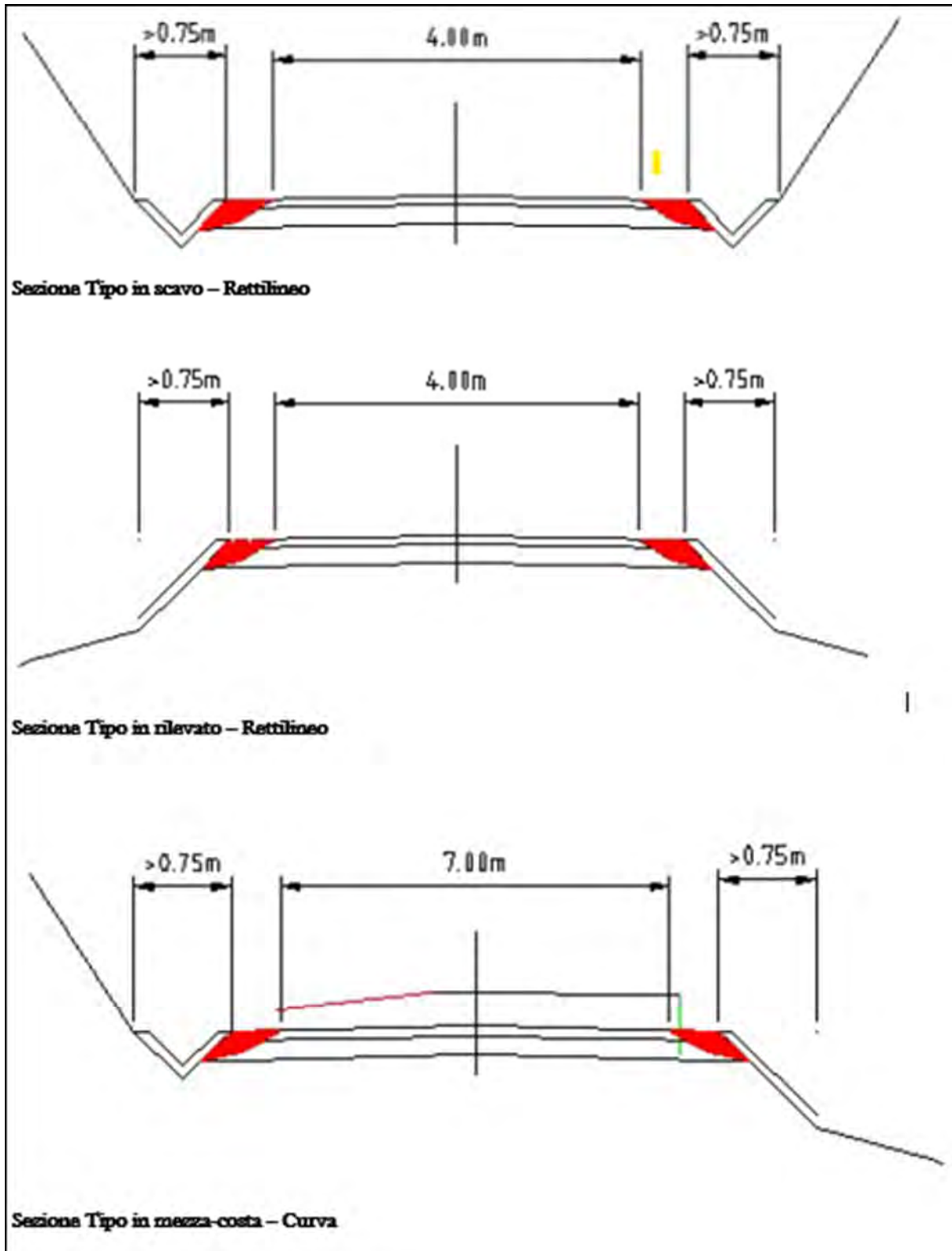
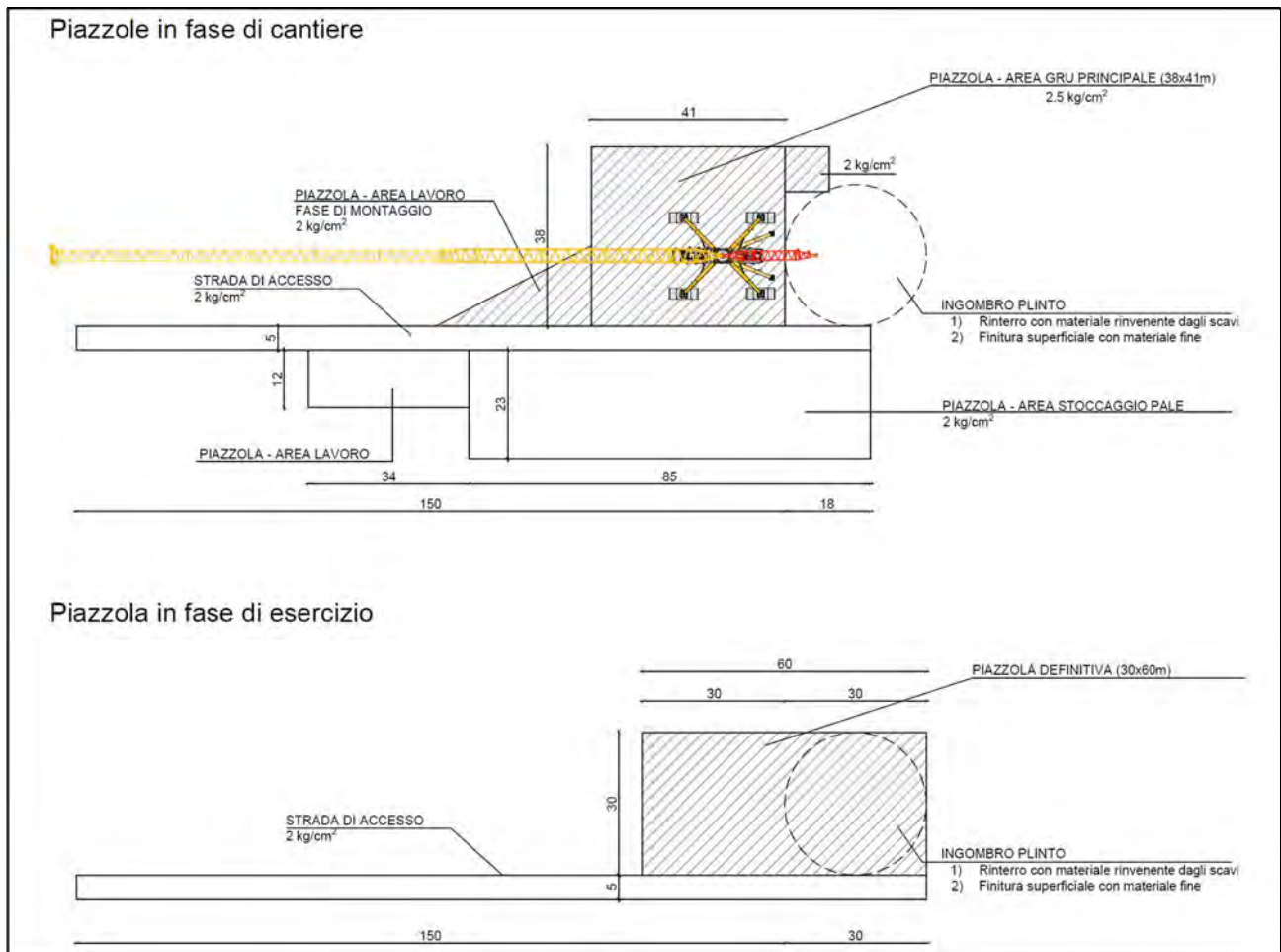


Figura 2.2.1: Sezioni tipo viabilità parco eolico



La progettazione delle piazzole da realizzare per l'installazione di ogni aerogeneratore prevede due configurazioni, la prima necessaria all'installazione dell'aerogeneratore e la seconda, a seguito di opere di dismissione parziale, per la fase di esercizio e manutenzione dell'impianto (**Figura 2.2.2**).



**Figura 2.2.2:** Planimetria piazzola tipo per la fase di installazione e fase di esercizio e manutenzione

### 2.3 Descrizione opere elettriche

#### 2.3.1 Aerogeneratori

L'impianto eolico è composto da 14 aerogeneratori di potenza nominale pari a 6,0 MWp, opportunamente disposti e collegati in relazione alla disposizione dell'impianto, dotati di generatori asincroni trifasi. Ogni generatore è topograficamente, strutturalmente ed elettricamente indipendente dagli altri anche dal punto di vista delle funzioni di controllo e protezione.

Gli aerogeneratori sono collegati fra loro e a loro volta si connettono al nuovo stallo della stazione elettrica di trasformazione 380/150/36 kV di Larino tramite un cavidotto interrato a 36 kV.

All'interno della torre saranno installati:

- l'arrivo cavo BT (690 V) dal generatore eolico al trasformatore;

- il trasformatore MT-BT (0,69/36 kV);
- il sistema di rifasamento del trasformatore;
- la cella a 36 kV di arrivo linea e di protezione del trasformatore;
- il quadro di BT (690 V) di alimentazione dei servizi ausiliari;
- quadro di controllo locale.

### 2.3.2 Linee elettriche di collegamento a 36 KV

Il parco eolico avrà una potenza complessiva di 84 MWp, data dalla somma delle potenze elettriche di 14 aerogeneratori da 6 MWp ciascuno. Dal punto di vista elettrico, gli aerogeneratori sono collegati fra loro in n. 4 gruppi (sottocampi) da 3 oppure 4 aerogeneratori ciascuno, come riportato nella tabella sottostante.

| Sottocampo o Circuito | Aerogeneratori                    | Potenza totale [MW] |
|-----------------------|-----------------------------------|---------------------|
| CIRCUITO A            | LAR 14 – LAR 13 – LAR 02 – LAR 01 | 24                  |
| CIRCUITO B            | LAR 05 – LAR 03 – LAR 04          | 18                  |
| CIRCUITO C            | LAR 12 – LAR 11 – LAR 10          | 18                  |
| CIRCUITO D            | LAR 09 – LAR 07 – LAR 06 – LAR 08 | 24                  |

**Tabella 2.3.2.1:** Sottocampi degli aerogeneratori

Coerentemente con la suddivisione in sottocampi di cui sopra, l'intero sistema di distribuzione dell'energia dagli aerogeneratori verso il nuovo stallo della stazione elettrica di trasformazione 380/150/36 kV di Larino è articolato in 4 distinte linee elettriche, una per ciascun sottocampo, con un livello di tensione pari a 36 kV e che confluiscono sui quadri generali a 36 kV dell'edificio a 36 kV in prossimità dello stallo di cui sopra.

Dall'aerogeneratore capofila di ciascun sottocampo, infatti, si diparte una linea elettrica di vettoriamento in cavo interrato a 36 kV, di sezione pari a 500 mm<sup>2</sup> (circuiti B e C) o 630 mm<sup>2</sup> (circuiti A e D). Analogamente, gli aerogeneratori di ciascun sottocampo sono collegati fra loro in entra-esce o fine linea con una linea elettrica in cavo interrato a 36 kV, di sezione crescente dal primo all'ultimo aerogeneratore. Tutti i cavi di cui si farà utilizzo, sia per il collegamento interno dei sottocampi che per la connessione alla stazione elettrica di trasformazione della RTN 380/150/36 kV di Larino, saranno del tipo schermato a filo di rame rosso, con conduttore a corda rotonda compatta di rame rosso, semiconduttore esterno elastomerico estruso e guaina in PVC.

In generale, per tutte le linee elettriche, si prevede la posa a trifoglio direttamente interrata dei cavi, ad una profondità di 1,50 m dal piano del suolo e l'utilizzo di una lastra protettiva che ne assicuri la

protezione meccanica. In caso di particolari attraversamenti o di risoluzione puntuale di interferenze, le modalità di posa potranno essere modificate in conformità a quanto previsto dalla norma CEI 11-17 e dagli eventuali regolamenti vigenti relativi alle opere interferite, mantenendo comunque un grado di protezione delle linee non inferiore a quanto garantito dalle normali condizioni di posa.

La figura seguente, nella quale le misure sono espresse in mm, mostra la modalità di posa sopra indicate; maggiori dettagli sono apprezzabili nell'elaborato di progetto "LAROE063 Sezioni tipiche delle trincee di cavidotto utente".

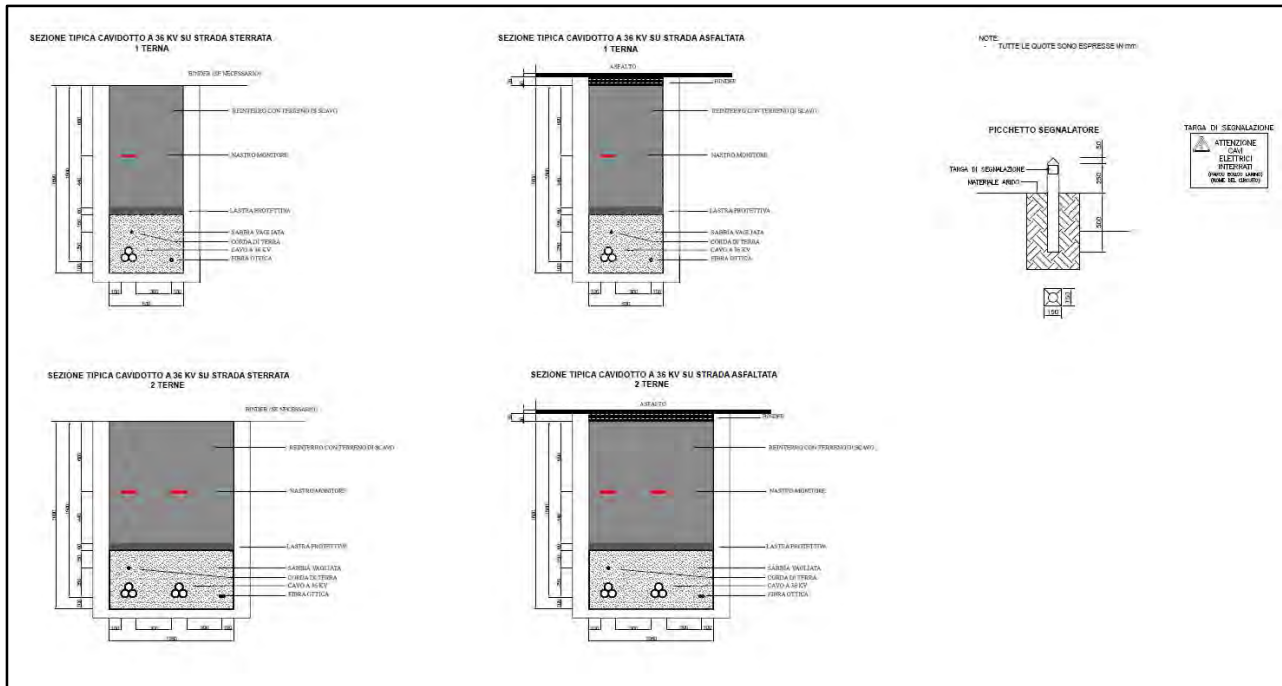
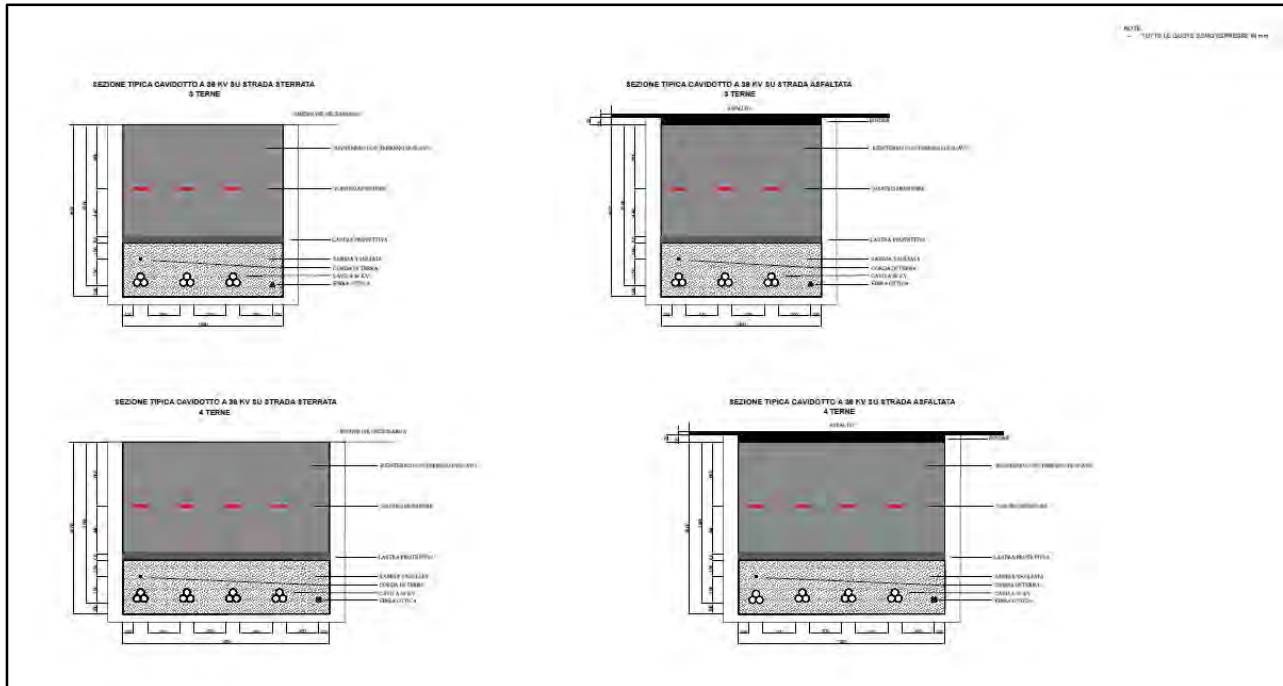


Figura 2.3.2.1: Sezioni tipiche delle trincee cavidotto per una o due terne di cavi in parallelo



**Figura 2.3.2.2:** Sezioni tipiche delle trincee cavidotto per 3 o 4 terne di cavi in parallelo

### 2.3.3 Opere di connessione alla RTN

Lo schema di allacciamento alla RTN prevede che la centrale eolica venga collegata in antenna a 36 kV con una nuova sezione a 36 kV della stazione elettrica di trasformazione (SE) della RTN 380/150/36 kV di Larino, previo ampliamento della stessa che prevede la realizzazione di un edificio, ove verranno collocati i quadri di attestazione cavi a 36 kV dei produttori e da cui si dipartono 3 linee a 36 kV verso rispettivamente 3 Trasformatori 380/36 kV per un totale di 250 MVA.

Tale ampliamento sarà esterno alla sottostazione Terna SE RTN 380/150 kV Larino esistente e verrà utilizzato da diversi produttori di energia elettrica.

### 2.3.4 Sistema di terra

Il sistema di terra del parco eolico è costituito da una maglia di terra formata dai sistemi di dispersori dei singoli aerogeneratori e dal conduttore di corda nuda che li collega. La maglia complessiva che si viene così a creare consente di ottenere un valore di resistenza di terra tale da garantire un sufficiente margine di sicurezza, adeguato alla normativa vigente. Il sistema di terra di ciascun aerogeneratore consisterà in più anelli dispersori concentrici, collegati radialmente fra loro, e collegati in più punti anche all'armatura del plinto di fondazione.



### 3. CARATTERISTICHE PRINCIPALI DEL PARCO EOLICO

L'impianto eolico sarà costituito essenzialmente da 14 aerogeneratori la cui posizione è stata stabilita a seguito di valutazioni che riguardano diversi aspetti quali l'esposizione a tutti i settori della rosa dei venti, la morfologia del territorio, la distanza da fabbricati e strade esistenti ed utilizzate da un elevato numero di veicoli, distanza dal centro abitato e da beni monumentali presenti nell'area oltre agli aspetti legati alla sicurezza e volti a minimizzare l'impatto sull'ambiente:

- ottemperare alle previsioni della normativa vigente e delle linee guida sia nazionali che regionali;
- minimizzare l'impatto visivo;
- migliorare in sistema viario esistente al fine di migliorare l'accessibilità ai terreni per lo sviluppo dell'agricoltura e dell'allevamento di animali;
- disposizione delle macchine ad una distanza reciproca minima pari ad almeno 530 m, atta a minimizzare l'effetto scia, l'effetto selva e l'impatto sull'avifauna;
- condizioni di massima sicurezza, sia in fase di installazione che di esercizio.

La disposizione finale del parco è stata verificata e confermata a seguito di uno studio di fattibilità condotto sulla base delle informazioni sugli aspetti vincolistici dal punto di vista ambientale e paesaggistico e sulla base dei sopralluoghi svolti sul posto per verificare le interferenze presenti in sito e la fattibilità di realizzazione delle opere.

Si riportano di seguito le coordinate delle posizioni scelte per l'installazione degli aerogeneratori:

| WTG    | Comune                  | Foglio | Particella | D rotore | Hhub | H tot | Coordinate UTM-WGS84<br>T33 |            |
|--------|-------------------------|--------|------------|----------|------|-------|-----------------------------|------------|
|        |                         |        |            | m        | m    | m     | E [m]                       | N [m]      |
| LAR 01 | Larino                  | 12     | 9          | 170      | 165  | 250   | 493204.97                   | 4632658.64 |
| LAR 02 | Larino                  | 5      | 13         | 170      | 165  | 250   | 493114.60                   | 4635127.67 |
| LAR 03 | Larino                  | 2      | 31         | 170      | 165  | 250   | 494426.77                   | 4634833.42 |
| LAR 04 | Larino                  | 31     | 26         | 170      | 165  | 250   | 495196.51                   | 4631516.56 |
| LAR 05 | Larino                  | 1      | 275        | 170      | 165  | 250   | 495300.24                   | 4636592.17 |
| LAR 06 | Larino                  | 1      | 113        | 170      | 165  | 250   | 496293.97                   | 4636378.26 |
| LAR 07 | Larino                  | 4      | 109        | 170      | 165  | 250   | 496265.03                   | 4635466.81 |
| LAR 08 | Larino                  | 15     | 355        | 170      | 165  | 250   | 496010.95                   | 4633043.65 |
| LAR 09 | Larino                  | 4      | 122        | 170      | 165  | 250   | 496085.50                   | 4634850.97 |
| LAR 10 | Larino                  | 1      | 104        | 170      | 165  | 250   | 496196.69                   | 4636907.72 |
| LAR 11 | San Martino in Pensilis | 1      | 3          | 170      | 165  | 250   | 496138.70                   | 4637688.19 |
| LAR 12 | San Martino in Pensilis | 2      | 101        | 170      | 165  | 250   | 496604.95                   | 4638286.76 |
| LAR 13 | Larino                  | 7      | 277        | 170      | 165  | 250   | 492237.76                   | 4634672.08 |
| LAR 14 | Larino                  | 7      | 24         | 170      | 165  | 250   | 492028.56                   | 4634053.39 |

**Tabella 3.1:** Localizzazione planimetrica degli aerogeneratori di progetto

Il progetto prevede l'adeguamento di tratti di strada esistenti, in particolare strade comunali, e la realizzazione di una nuova viabilità a servizio degli aerogeneratori di progetto, ossia di una rete viaria interna al parco che si snoderà seguendo lo sviluppo degli esistenti tratturi non vincolati dalla Soprintendenza.

La disponibilità delle aree, necessaria per l'installazione degli aerogeneratori e le relative opere connesse, è garantita grazie alla Dichiarazione di Pubblica utilità ai sensi degli artt. 52-quater "Disposizioni generali in materia di conformità urbanistica, apposizione del vincolo preordinato all'esproprio e pubblica utilità" e 52-quinquies "Disposizioni particolari per le infrastrutture lineari energetiche facenti parte delle reti energetiche nazionali" D.P.R. 327/2001 a conclusione del procedimento autorizzatorio di cui all'art.12, d.lgs. 387/2003 e gli effetti dell'Autorizzazione Unica ottenuta dopo opportuna conferenza di servizi.

Tutte le aree oggetto interessate dal progetto sono riportate nello specifico elaborato di progetto "LAREG011 Piano Particellare di esproprio descrittivo".

#### **4. FENOMENO DI SHADOW FLICKERING**

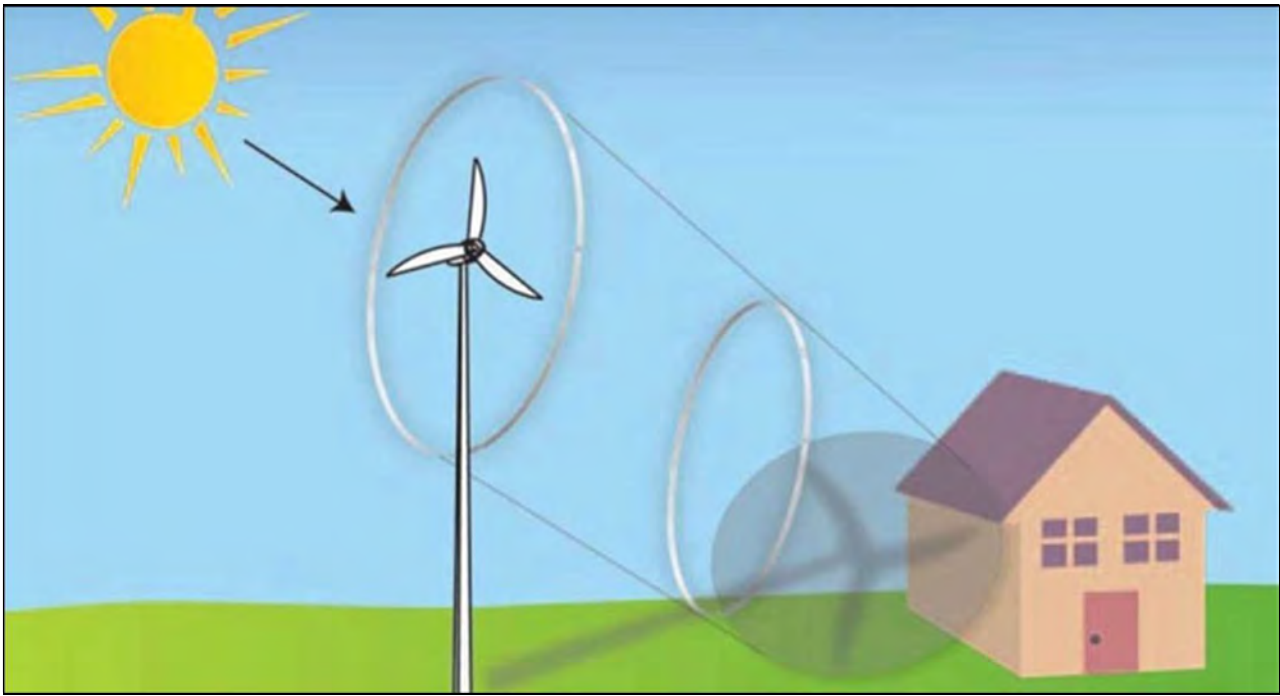
La presenza delle turbine eoliche provoca la proiezione dell'ombra sulle aree ad esse adiacenti in presenza di luce solare diretta.

Il fenomeno causa effetti quasi statici dovuti alla presenza della torre fissa ed effetti dinamici legati alla rotazione del rotore delle tre pale della turbina.

Gli effetti statici possono aumentare, nelle prime ed ultime ore del giorno, la probabilità di formazione di ghiaccio su eventuali strade asfaltate soggette a traffico.

Gli effetti dinamici si traducono in una variazione alternata di intensità luminosa che, a lungo andare, può provocare fastidio agli occupanti le abitazioni le cui finestre risultano esposte al fenomeno stesso.

Lo "**shadow flickering**" descrive appunto l'effetto stroboscopico delle ombre proiettate dalle pale rotanti degli aerogeneratori allorché il sole si trova alle loro spalle, come si evince dalla **Figura 4.1**.



**Figura 4.1:** Ombre proiettate dalle pale in rotazione di una turbina

Il conseguente effetto sugli individui è simile a quello che si sperimenterebbe in seguito alle variazioni di intensità luminosa di una lampada ad incandescenza a causa di continui sbalzi della tensione della rete di alimentazione elettrica.

Lo shadow flickering risulta assente nei casi di presenza di nuvole e nebbia che oscurano il sole e nei casi in cui le pale dell'aerogeneratore sono a riposo (per esempio in assenza del vento).

Per effettuare l'analisi del fenomeno vengono considerati alcuni parametri che ne influenzano la rilevanza.

Il primo di essi da tenere in conto è la frequenza di rotazione delle pale; in particolare, le frequenze che possono provocare un senso di fastidio sono comprese tra i 2,5 ed i 20 Hz.

Solitamente gli aerogeneratori tripala operano ad una velocità di rotazione inferiore ai 35 giri al minuto, corrispondente ad una frequenza di passaggio delle pale sulla verticale inferiore a 1,75 Hz, minore, quindi, della frequenza critica di 2,5 Hz.

Inoltre, i generatori di grande potenza (dal MW in su) raramente superano la velocità di rotazione di 20 giri al minuto, corrispondente a frequenze di passaggio delle pale ampiamente minori di quelle ritenute fastidiose per la maggioranza degli individui.

Un ulteriore aspetto da considerare per l'analisi della durata del fenomeno è la relazione spaziale tra un aerogeneratore ed un ricettore (abitazione), così come la direzione del vento.

Per distanze dell'ordine dei 300 m il fenomeno è più rilevante all'alba oppure al tramonto, ovvero in quelle ore in cui le ombre risultano molto lunghe per effetto della piccola elevazione solare. Al di là di

una certa distanza l'effetto delle ombre è meno consistente perché il diametro del sole risulta essere di gran lunga superiore rispetto allo spessore della singola pala.

In questo scenario la condizione più penalizzante corrisponde al caso in cui il piano del rotore risulta essere ortogonale alla congiungente tra sole e ricettore; infatti, in tali condizioni, l'ombra proiettata darà origine ad un cerchio di diametro pari al rotore dell'aerogeneratore.

L'effetto dello shadow flickering risulta evidente e fastidioso in quegli ambienti con finestrate rivolte verso le ombre.

In linea di massima, si può ritenere che l'area soggetta al fenomeno in questione non si estenda oltre i 500 ÷ 1000 m dall'aerogeneratore e le zone a maggiore impatto ricadono entro i 300 m di distanza dalle turbine.

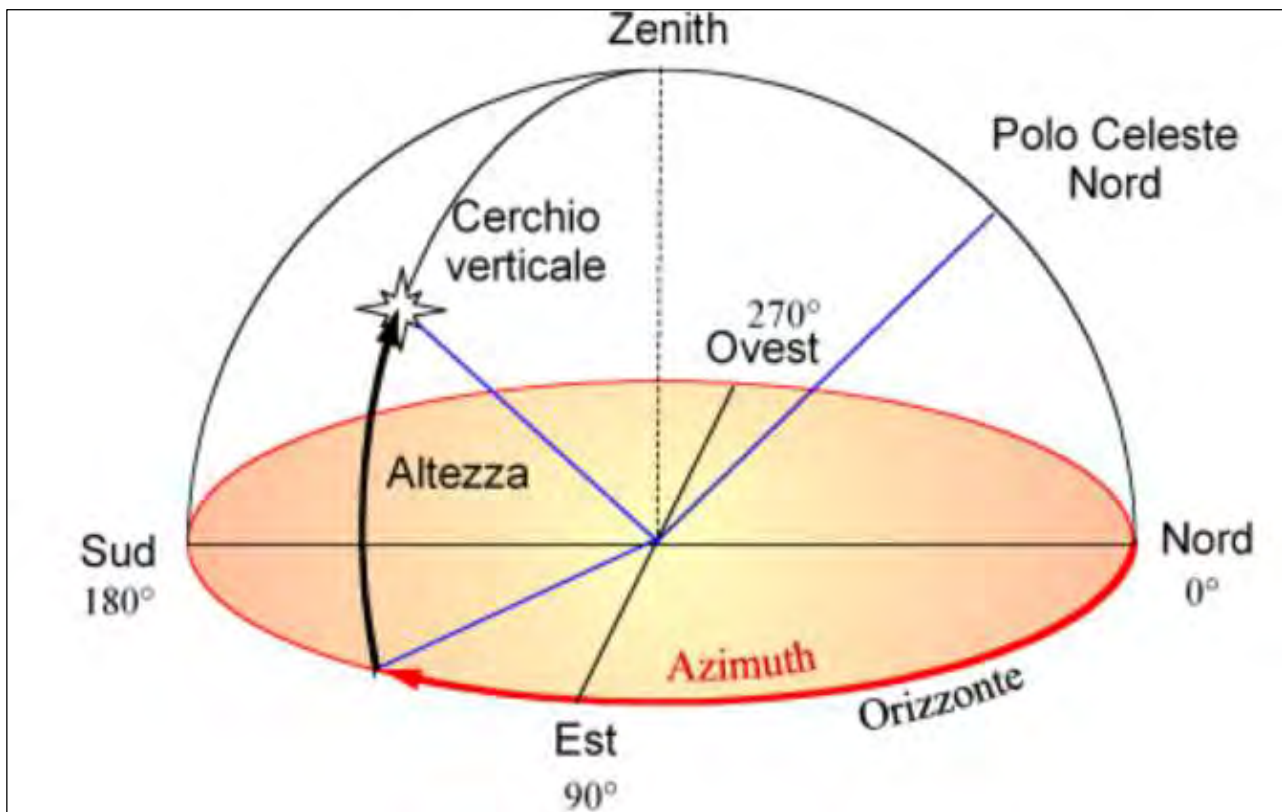
Al fine di analizzare qualitativamente e quantitativamente il fenomeno, risulta necessario individuare la posizione occupata dal sole in maniera univoca tramite due coordinate angolari, azimut ed altezza.

L'azimut per convenzione è l'angolo valutato sul piano orizzontale ed in senso orario, a partire dal nord geografico fino alla proiezione della congiungente (origine del sistema) - sole sul piano orizzontale stesso, ovvero il punto direttamente sotto al sole.

L'altezza o elevazione è misurata sul piano verticale, partendo da tale punto sino ad arrivare in corrispondenza del sole.

Tali coordinate variano con continuità grazie al moto della Terra intorno al sole e la traiettoria descritta nel cielo dal sole è assimilabile ad un arco; ogni giorno si caratterizza per un proprio arco, il quale si discosta, se pur di poco, da quello del giorno immediatamente precedente e successivo.





**Figura 4.2:** Coordinate azimuth ed altezza per identificare la posizione del sole

La durata del giorno non coincide con la durata della luce naturale in quanto prima dell'alba e dopo il tramonto sono individuabili due periodi, detti crepuscolo (rispettivamente crepuscolo mattutino e crepuscolo serale o serotino), durante i quali giunge a terra una luce diffusa naturale fornita dai livelli più esterni dell'atmosfera, i quali, trovandosi a quote più elevate, ricevono luce solare diretta per un tempo più lungo riflettendola in parte verso la terra.

Pertanto, la durata dell'illuminazione del sole è pari alla somma della durata del giorno e della durata del crepuscolo mattutino e serale.

## 5. RIFERIMENTI NORMATIVI

L'effetto Shadow – Flickering è più pronunciato alle latitudini settentrionali durante i mesi invernali; infatti, soprattutto nel Nord Europa, l'effetto della minore altezza del sole all'orizzonte è più rilevante.

Pertanto, alcuni paesi hanno adottato dei limiti di legge relativi all'esposizione all'effetto in questione.

In Italia non esistono specifiche norme o linee guida che regolamentino il fenomeno e definiscano i limiti di esposizione in termini di ore o giorni all'anno.

Tuttavia, al fine di fornire una valutazione dell'impatto del fenomeno anche in termini quantitativi, si è cercato di mantenere l'esposizione allo shadow – flickering di ogni ricettore al di sotto delle 30 ore annue, parametro considerato di qualità a livello internazionale.

In particolare, la seguente trattazione fa riferimento alle norme e linee guida tedesche, in base alle quali il fenomeno in questione deve essere valutato nei casi seguenti:

- Fino alle distanze in corrispondenza delle quali il rotore dell'aerogeneratore copre il 20 % del disco solare (per distanze superiori a quella menzionata lo shadow-flickering arreca danni considerati trascurabili);
- per angoli del sole sull'orizzonte superiori a 3°;
- ad un'altezza di 2 m dal suolo.

Inoltre, come anticipato, le linee guida tedesche stabiliscono i limiti di esposizione al fenomeno di:

- 30 ore all'anno;
- 30 minuti al giorno.

## 6. IPOTESI E METODO DI CALCOLO

L'obiettivo della trattazione è la stima quantitativa dell'effetto shadow flickering prodotto dall'impianto eolico, fenomeno per cui si genera una intermittenza dell'ombra a seguito del movimento del rotore dell'aerogeneratore quando in esercizio (in particolare quando il piano del rotore risulta perpendicolare alla congiungente tra l'osservatore e il sole) e che potrebbe risultare fastidioso per un osservatore.

Nell'analisi condotta sono stati considerati 14 aerogeneratori di nuova realizzazione e relativi al progetto del Parco Eolico Larino e 69 aerogeneratori esistenti.

Gli aerogeneratori di progetto hanno un'altezza al mozzo di 165 m, diametro del rotore di 170 m, potenza nominale di 6,0 MWp e 8,8 giri al minuto (RPM).

Nel file **allegato 1** alla relazione sono esplicitati anche i modelli delle 69 turbine eoliche esistenti e le relative coordinate, in quanto contribuiscono agli effetti provocati dal fenomeno shadow flickering così come quelle di nuova installazione, essendo prossime alle stesse.

La verifica è stata effettuata in corrispondenza di 83 ricettori, rappresentativi di fabbricati di "civile abitazione", riportati nella **Tabella 6.1**, sui quali l'effetto trattato potrebbe avere una certa rilevanza:

| Ricettore | Comune | Buffer | Distanza WTG più vicina [m] | WTG più vicina | Informazioni catastali |            |           | Tipologia  |
|-----------|--------|--------|-----------------------------|----------------|------------------------|------------|-----------|------------|
|           |        |        |                             |                | Foglio                 | Particella | Categoria |            |
| R04       | Larino | 400    | 500                         | WTG 14         | 7                      | 292        | A/4       | Abitazione |
| R06       | Larino | 400    | 575                         | WTG 01         | 11                     | 68         | A/3       | Abitazione |
| R08       | Larino | 400    | 620                         | WTG 01         | 12                     | 67-80      | A/4 - NA  | Abitazione |
| R09       | Larino | 400    | 505                         | WTG 01         | 12                     | 62         | A/3       | Abitazione |
| R10       | Larino | 400    | 1000                        | WTG 01         | 13                     | 553        | A/3       | Abitazione |
| R11       | Larino | 400    | 940                         | WTG 01         | 13                     | 536        | TERRENO   | Abitazione |

| Ricettore | Comune | Buffer | Distanza WTG più vicina [m] | WTG più vicina | Informazioni catastali |            |                            | Tipologia  |
|-----------|--------|--------|-----------------------------|----------------|------------------------|------------|----------------------------|------------|
|           |        |        |                             |                | Foglio                 | Particella | Categoria                  |            |
| R12       | Larino | 400    | 1140                        | WTG 04 - 01    | 13                     | 400        | A/7                        | Abitazione |
| R13       | Larino | 400    | 865                         | WTG 04         | 13                     | 339        | A/2                        | Abitazione |
| R14       | Larino | 400    | 830                         | WTG 04         | 29                     | 61         | A/4                        | Abitazione |
| R15       | Larino | 400    | 610                         | WTG 04         | 30                     | 73         | A/3                        | Abitazione |
| R16       | Larino | 400    | 465                         | WTG 04         | 20                     | 116        | A/3                        | Abitazione |
| R17       | Larino | 400    | 478                         | WTG 04         | 20                     | 112        | A/3                        | Abitazione |
| R18       | Larino | 400    | 500                         | WTG 04         | 31                     | 129        | A/7                        | Abitazione |
| R19       | Larino | 400    | 593                         | WTG 04         | 31                     | 143        | A/4                        | Abitazione |
| R20       | Larino | 400    | 640                         | WTG 04         | 31                     | 140        | D/10                       | Abitazione |
| R21       | Larino | 400    | 440                         | WTG 04         | 31                     | 138        | A/4                        | Abitazione |
| R22       | Larino | 400    | 927                         | WTG 04         | 13                     | 337        | A/3                        | Abitazione |
| R25       | Larino | 400    | 925                         | WTG 04         | 20                     | 128        | A/3                        | Abitazione |
| R26       | Larino | 400    | 1104                        | WTG 04         | 13                     | 108        | A/2                        | Abitazione |
| R26b      | Larino | 400    | 645                         | WTG 04         | 21                     | 31         | A/4                        | Abitazione |
| R27       | Larino | 400    | 690                         | WTG 04         | 21                     | 31         | A/4                        | Abitazione |
| R29       | Larino | 400    | 483                         | WTG 08         | 21                     | 39         | A/3                        | Abitazione |
| R31       | Larino | 400    | 1110                        | WTG 08         | 14                     | 99         | A/3                        | Abitazione |
| R33       | Larino | 400    | 615                         | WTG 08         | 14                     | 97-98      | A/3 - A/3                  | Abitazione |
| R34       | Larino | 400    | 620                         | WTG 08         | 14                     | 87-7       | A/3 - TERRENO (FUD ACCERT) | Abitazione |
| R35       | Larino | 400    | 605                         | WTG 08         | 15                     | 614        | A/4                        | Abitazione |
| R36       | Larino | 400    | 892                         | WTG 08         | 14                     | 86         | A/3                        | Abitazione |
| R37       | Larino | 400    | 960                         | WTG 08         | 13                     | 356-552    | A/2 - F/6                  | Abitazione |
| R37b      | Larino | 400    | 1200                        | WTG 08 - 03    | 13                     | 398        | A/7                        | Abitazione |
| R38       | Larino | 400    | 1150                        | WTG 03         | 13                     | 535-529    | A/3 - D/10                 | Abitazione |
| R40       | Larino | 400    | 1070                        | WTG 03         | 13                     | 347        | A/7                        | Abitazione |
| R42       | Larino | 400    | 923                         | WTG 09         | 6                      | 358        | A/3                        | Abitazione |
| R43       | Larino | 400    | 910                         | WTG 09         | 13                     | 303        | A/7                        | Abitazione |
| R44       | Larino | 400    | 785                         | WTG 09         | 6                      | 383        | A/3                        | Abitazione |
| R45       | Larino | 400    | 600                         | WTG 08         | 15                     | 383-620    | A/3 - C/2                  | Abitazione |
| R46       | Larino | 400    | 712                         | WTG 08         | 15                     | 564        | A/4                        | Abitazione |
| R47       | Larino | 400    | 914                         | WTG 09         | 15                     | 589        | A/3                        | Abitazione |
| R48       | Larino | 400    | 609                         | WTG 09         | 15                     | 619        | A/2                        | Abitazione |
| R50       | Larino | 400    | 654                         | WTG 09         | 6                      | 166        | A/3                        | Abitazione |
| R51       | Larino | 400    | 596                         | WTG 09         | 6                      | 381        | A/3                        | Abitazione |
| R53       | Larino | 400    | 741                         | WTG 09         | 6                      | 331-333    | C/2 - A/3                  | Abitazione |
| R54       | Larino | 400    | 846                         | WTG 09         | 6                      | 312        | A/3                        | Abitazione |
| R55       | Larino | 400    | 899                         | WTG 09         | 6                      | 387        | A/4                        | Abitazione |
| R59       | Larino | 400    | 638                         | WTG 03         | 6                      | 245        | A/4                        | Abitazione |

| Ricettore | Comune                     | Buffer | Distanza<br>WTG più<br>vicina [m] | WTG più<br>vicina | Informazioni catastali |            |                        | Tipologia  |
|-----------|----------------------------|--------|-----------------------------------|-------------------|------------------------|------------|------------------------|------------|
|           |                            |        |                                   |                   | Foglio                 | Particella | Categoria              |            |
| R61       | Larino                     | 400    | 739                               | WTG 03            | 6                      | 362        | A/3                    | Abitazione |
| R62       | Larino                     | 400    | 813                               | WTG 03 -<br>09    | 6                      | 372-382    | D/10 - A/3             | Abitazione |
| R63       | Larino                     | 400    | 522                               | WTG 09            | 6                      | 315        | A/7                    | Abitazione |
| R64       | Larino                     | 400    | 440                               | WTG 09            | 6                      | 310-347    | A/3 - D/6              | Abitazione |
| R65       | Larino                     | 400    | 640                               | WTG 09            | 6                      | 374        | F/3                    | Abitazione |
| R66       | San Martino in<br>Pensilis | 400    | 574                               | WTG 07            | 26                     | 237 sub 7  | A/3                    | Abitazione |
| R67       | Larino                     | 400    | 680                               | WTG 07            | 3                      | 321        | A/3                    | Abitazione |
| R68       | Larino                     | 400    | 893                               | WTG 09            | 6                      | 314        | TERRENO<br>(SOPPRESSO) | Abitazione |
| R69       | Larino                     | 400    | 1000                              | WTG 07 -<br>03    | 3                      | 356        | A/4                    | Abitazione |
| R70       | Larino                     | 400    | 755                               | WTG 07            | 3                      | 347        | A/3                    | Abitazione |
| R71       | Larino                     | 400    | 730                               | WTG 07            | 3                      | 234        | A/7                    | Abitazione |
| R72       | Larino                     | 400    | 889                               | WTG 03            | 3                      | 331        | A/3                    | Abitazione |
| R73       | Larino                     | 400    | 719                               | WTG 03            | 6                      | 316        | A/2                    | Abitazione |
| R74       | Larino                     | 400    | 753                               | WTG 03            | 6                      | 305        | A/3                    | Abitazione |
| R76       | Larino                     | 400    | 996                               | WTG 07            | 3                      | 359        | A/3                    | Abitazione |
| R77       | Larino                     | 400    | 1243                              | WTG 07            | 3                      | 345        | A/3                    | Abitazione |
| R78       | Larino                     | 400    | 1261                              | WTG 07            | 3                      | 327        | A/7                    | Abitazione |
| R79       | Larino                     | 400    | 687                               | WTG 01            | 13                     | 396        | A/4                    | Abitazione |
| R80       | Larino                     | 400    | 828                               | WTG 01            | 13                     | 369        | A/3                    | Abitazione |
| R81       | Larino                     | 400    | 961                               | WTG 01            | 13                     | 349        | A/4                    | Abitazione |
| R82       | Larino                     | 400    | 1155                              | WTG 01            | 13                     | 60         | A/3                    | Abitazione |
| R83       | Larino                     | 400    | 1088                              | WTG 03            | 13                     | 516        | A/4                    | Abitazione |
| R85       | Larino                     | 400    | 955                               | WTG 03            | 13                     | 533-534    | C/2 - A/4              | Abitazione |
| R86       | Larino                     | 400    | 1129                              | WTG 14            | 8                      | 128        | A/3                    | Abitazione |
| R87       | Larino                     | 400    | 1035                              | WTG 14            | 8                      | 124        | A/3                    | Abitazione |
| R88       | Larino                     | 400    | 918                               | WTG 02            | 5                      | 181        | A/3                    | Abitazione |
| R89       | Larino                     | 400    | 811                               | WTG 02            | 5                      | 194-176    | D/10 - C/2             | Abitazione |
| R90       | Larino                     | 400    | 677                               | WTG 03            | 2                      | 277        | A/3                    | Abitazione |
| R91       | Larino                     | 400    | 587                               | WTG 03            | 2                      | 279        | A/3                    | Abitazione |
| R92       | Larino                     | 400    | 552                               | WTG 03            | 2                      | 282        | A/4                    | Abitazione |
| R93       | Larino                     | 400    | 675                               | WTG 03            | 2                      | 281        | A/3                    | Abitazione |
| R98       | Larino                     | 400    | 1000                              | WTG 03            | 2                      | 266        | A/3                    | Abitazione |
| R100      | Larino                     | 400    | 835                               | WTG 05            | 3                      | 357        | A/3                    | Abitazione |
| R101      | Larino                     | 400    | 435                               | WTG 07            | 4                      | 150        | A/3                    | Abitazione |
| R107      | Larino                     | 400    | 575                               | WTG 03            | 2                      | 280        | A/3                    | Abitazione |
| R109      | Larino                     | 400    | 1345                              | WTG 08            | 13                     | 526        | A/3                    | Abitazione |
| R110      | Larino                     | 400    | 470                               | WTG 02            | 5                      | 189        | A/4                    | Abitazione |



| Ricettore | Comune                  | Buffer | Distanza WTG più vicina [m] | WTG più vicina | Informazioni catastali |            |           | Tipologia  |
|-----------|-------------------------|--------|-----------------------------|----------------|------------------------|------------|-----------|------------|
|           |                         |        |                             |                | Foglio                 | Particella | Categoria |            |
| R112      | San Martino in Pensilis | 400    | 630                         | WTG 07         | 26                     | 237 sub 8  | A/3       | Abitazione |
| R113      | San Martino in Pensilis | 400    | 535                         | WTG 07         | 26                     | 368        | A/4       | Abitazione |

Tabella 6.1: Ricettori oggetto di verifica

La distribuzione dei suddetti ricettori rispetto agli aerogeneratori è riportata nella figura seguente:

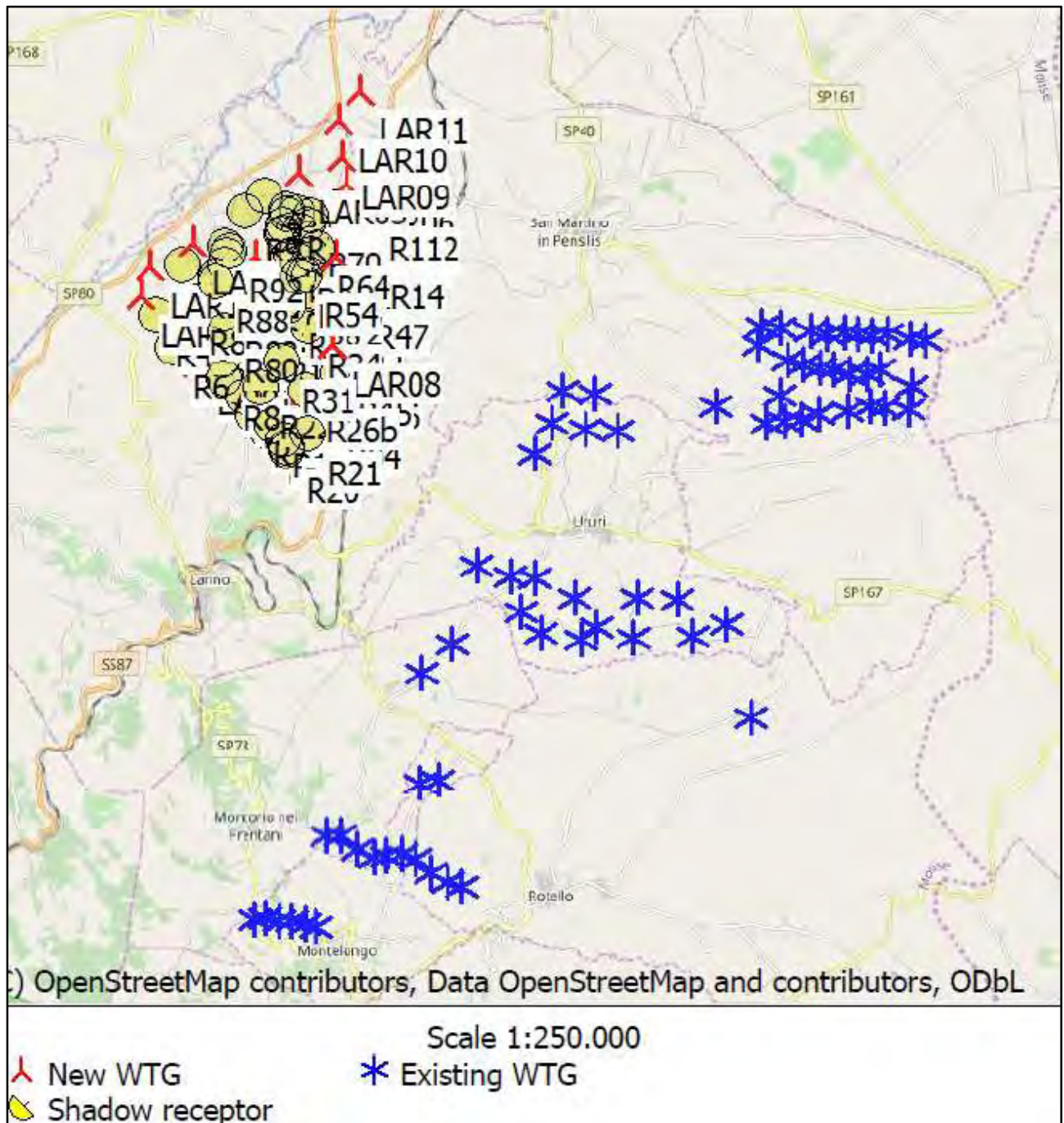
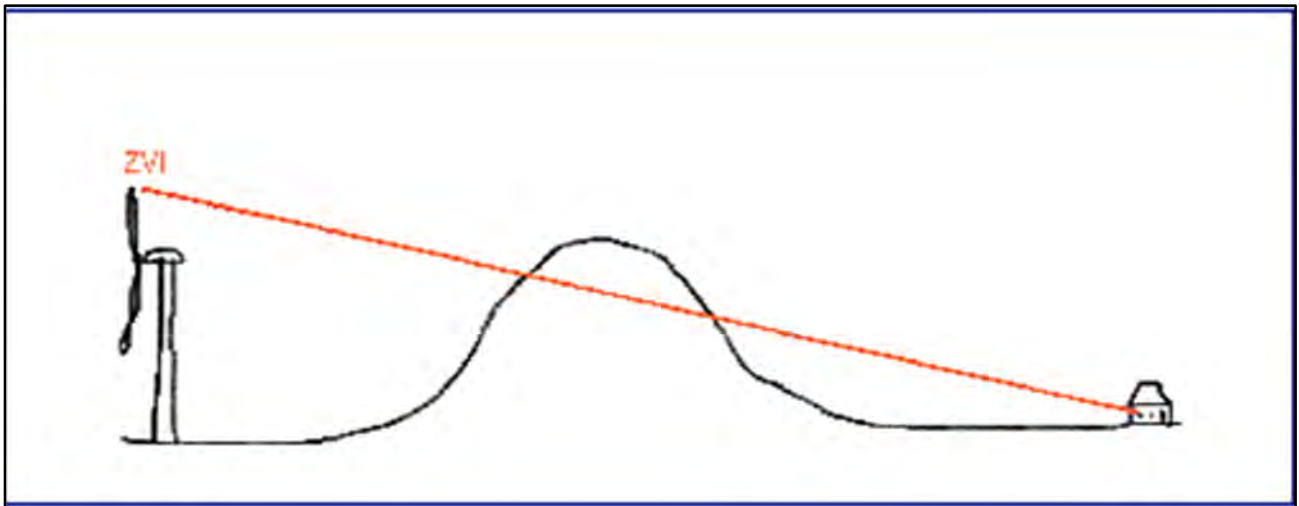


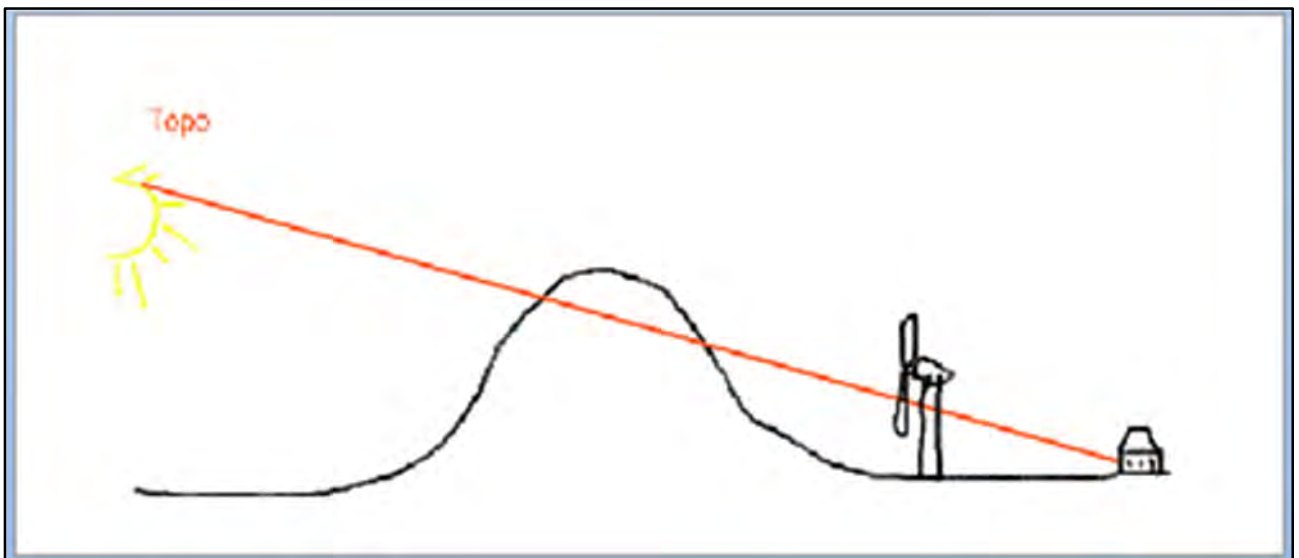
Figura 6.1: Localizzazione dei ricettori rispetto agli aerogeneratori

Il software impiegato per effettuare la verifica di sicurezza all'effetto shadow flickering è il WindPRO versione 3.4.

Tale software esegue la valutazione di zone di influenza degli aerogeneratori (ZVI), considerando l'orografia del terreno e altezza dell'osservatore (nel caso specifico altezza della finestra di un'abitazione) pari a 2 m, prima di effettuare il calcolo flicker in modo da escludere il contributo di quegli aerogeneratori che non sono visibili dal ricettore.



**Figura 6.2:** Impatto della ZVI, l'orografia del territorio può rendere non visibile l'aerogeneratore al ricettore



**Figura 6.3:** Impatto dell'orografia del territorio sull'ombreggiamento

Nella stima effettuata si assumono le seguenti ipotesi restrittive:

- altezza minima del sole sull'orizzonte pari a  $3^\circ$ ;
- piano del rotore sempre ortogonale alla congiungente tra l'osservatore e il sole;

- totale assenza di ostacoli o schermi vegetazionali presenti negli spazi circostanti i possibili ricettori e che potrebbero inficiare il fenomeno;
- ricettori in modalità “green house”, ovvero le finestre delle abitazioni attenzionate non orientate in una particolare direzione ma omnidirezionali.

Inoltre, allo scopo di pervenire a valori più realistici di impatto (**expected values**), si è impiegato il valore di eliofania, che tiene in conto del numero medio di ore di cielo libero da nubi durante il giorno, e le ore di funzionamento degli aerogeneratori in presenza del sole.

Per l’area in esame, con riferimento all’anno 2021 ed alla zona di Campobasso, i valori delle probabilità medie di eliofania per ognuno dei mesi e le ore di funzionamento degli aerogeneratori in presenza del sole in funzione della direzione del vento sono riportati nelle tabelle seguenti:

| MESE                  | gen  | feb  | mar  | apr  | mag  | giu  | lug  | ago  | set  | ott  | nov  | dic  |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| GIORNI                | 31   | 28   | 31   | 30   | 31   | 30   | 31   | 31   | 30   | 31   | 30   | 31   |
| PROB. MEDIA ELIOFANIA | 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

**Tabella 6.2:** Probabilità medie di eliofania

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Somma |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

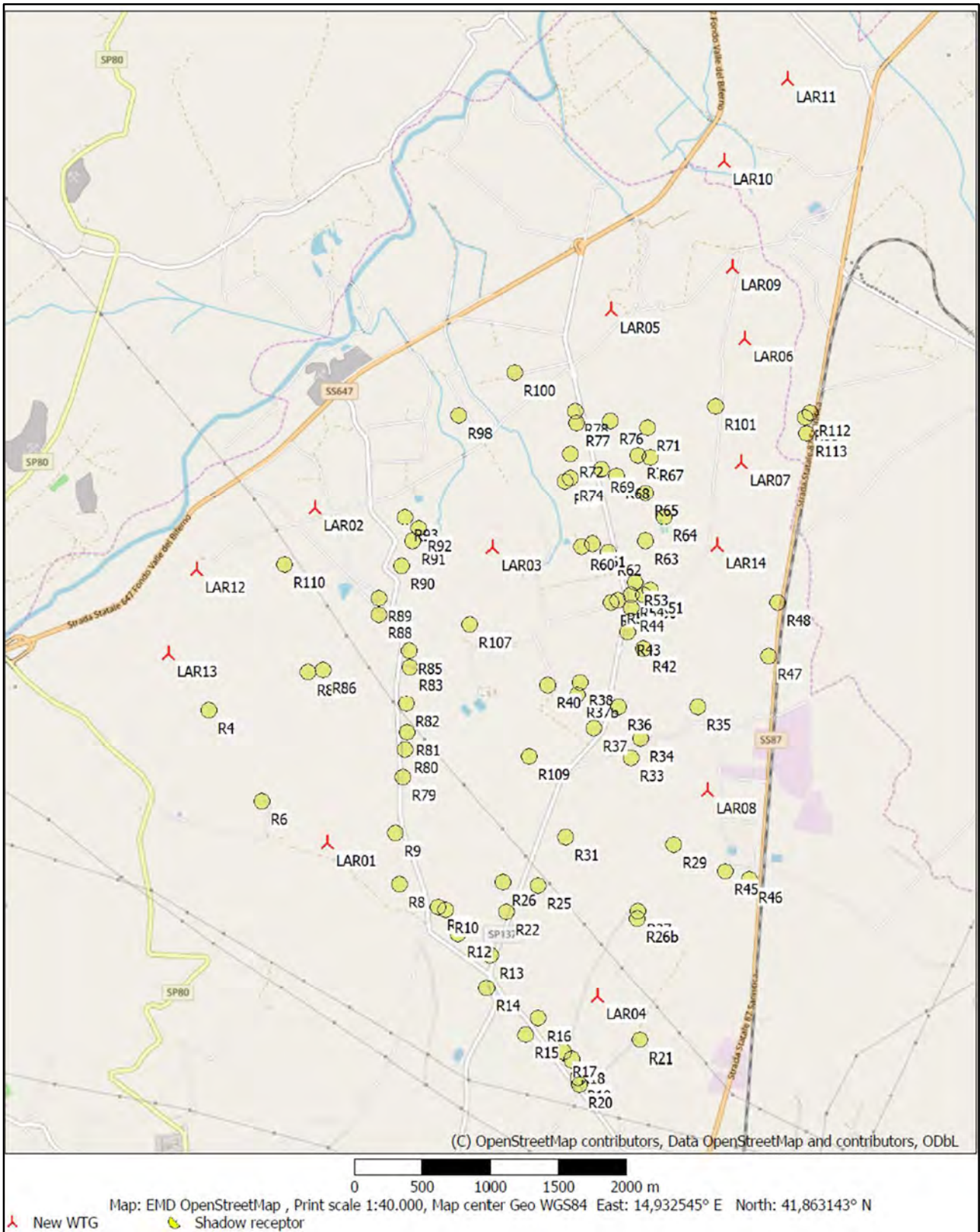
**Tabella 6.3:** Ore di funzionamento degli aerogeneratori in presenza del sole in funzione della direzione del vento (ipotesi di funzione dell’impianto 80% del totale ore annue)

Il modello numerico utilizzato, al pari degli altri presenti sul mercato, produce statisticamente un output relativo al valore atteso delle ore d’ombra per anno relativo ai ricettori.

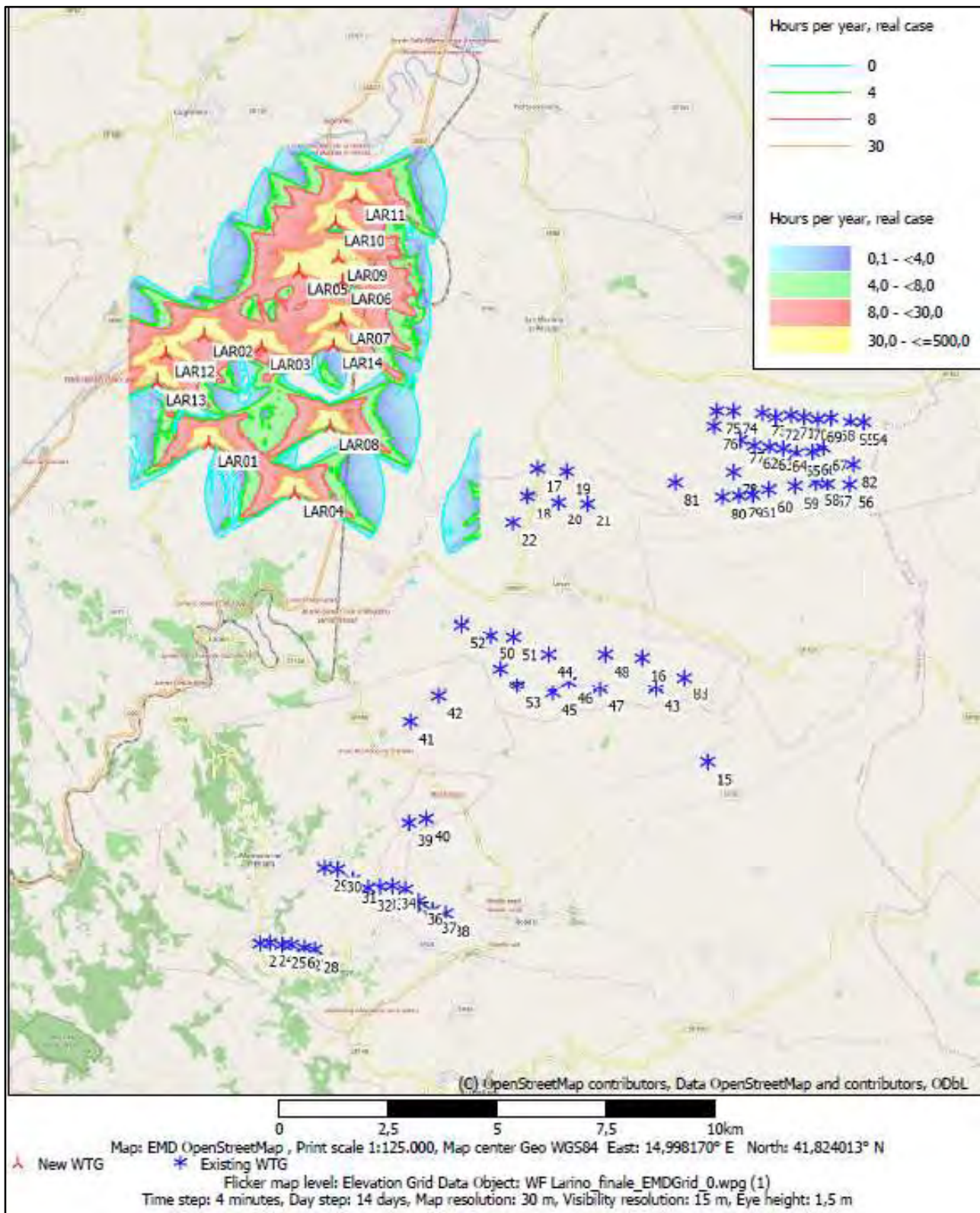


7. **CONCLUSIONI**

Nella **Figura 7.1** sono rappresentati i ricettori attenzionati rispetto alle posizioni degli aerogeneratori di progetto e quelli già esistenti.



**Figura 7.1:** Localizzazione dei ricettori attenzionati rispetto agli aerogeneratori di progetto ed esistenti



**Figura 7.2:** Mappe dello shadow flickering con distribuzione delle ore per anno rispetto agli aerogeneratori di progetto ed esistenti

Nella **Tabella 7.1** si riportano i valori attesi delle ore d’ombra intermittente per anno relativamente ai ricettori considerati nelle ipotesi precedentemente indicate:

| Ricettore | Stima ore d'ombra all'anno [h/anno] |
|-----------|-------------------------------------|
| R4        | 0:00                                |
| R6        | 19:19                               |
| R8        | 08:57                               |
| R9        | 22:59                               |
| R10       | 7:53                                |
| R11       | 7:00                                |
| R12       | 4:37                                |
| R13       | 7:20                                |
| R14       | 8:26                                |
| R15       | 2:37                                |
| R16       | 20:04                               |
| R17       | 0:00                                |
| R18       | 0:00                                |
| R19       | 0:00                                |
| R20       | 0:00                                |
| R21       | 0:00                                |
| R22       | 15:59                               |
| R25       | 4:43                                |
| R26       | 9:20                                |
| R26b      | 5:13                                |
| R27       | 0:41                                |
| R29       | 0:00                                |
| R31       | 9:41                                |
| R33       | 13:54                               |
| R34       | 18:14                               |
| R35       | 0:00                                |
| R36       | 11:03                               |
| R37       | 6:55                                |
| R37b      | 8:09                                |
| R38       | 5:51                                |
| R40       | 7:12                                |
| R42       | 0:00                                |
| R43       | 0:00                                |
| R44       | 10:57                               |
| R45       | 3:22                                |
| R46       | 5:00                                |
| R47       | 0:00                                |
| R48       | 0:00                                |
| R50       | 7:55                                |
| R51       | 6:21                                |
| R53       | 19:53                               |
| R54       | 12:27                               |

| Ricettore | Stima ore d'ombra all'anno [h/anno] |
|-----------|-------------------------------------|
| R55       | 15:00                               |
| R59       | 15:01                               |
| R60       | 26:01                               |
| R61       | 21:03                               |
| R62       | 19:04                               |
| R63       | 25:55                               |
| R64       | 27:43                               |
| R65       | 37:46                               |
| R66       | 17:04                               |
| R67       | 21:42                               |
| R68       | 23:17                               |
| R69       | 21:08                               |
| R70       | 20:58                               |
| R71       | 14:08                               |
| R72       | 13:32                               |
| R73       | 22:02                               |
| R74       | 21:19                               |
| R76       | 05:29                               |
| R77       | 14:16                               |
| R78       | 13:05                               |
| R79       | 15:37                               |
| R80       | 04:16                               |
| R81       | 01:37                               |
| R82       | 01:31                               |
| R83       | 05:07                               |
| R85       | 03:54                               |
| R86       | 04:28                               |
| R87       | 05:57                               |
| R88       | 04:54                               |
| R89       | 14:08                               |
| R90       | 25:12                               |
| R91       | 40:53                               |
| R92       | 31:55                               |
| R93       | 30:44                               |
| R98       | 4:16                                |
| R100      | 14:00                               |
| R101      | 27:32                               |
| R107      | 1:54                                |
| R109      | 4:23                                |
| R110      | 23:23                               |
| R112      | 17:45                               |
| R113      | 15:41                               |

**Tabella 7.1:** Ore d'ombra intermittente per anno sui ricettori nelle ipotesi sopra riportate



Dai risultati riportati nella **Tabella 7.1** si evince che, nelle ipotesi precedentemente elencate, per i ricettori attenzionati, il valore atteso delle ore d'ombra intermittente per anno è inferiore al valore di 30 ore/anno, parametro considerato di qualità a livello internazionale, eccetto che per i ricettori R65, R91, R92 e R93.

In particolare, per i ricettori R92 e R93 la stima delle ore d'ombra intermittente per anno si aggira intorno alle 30 ore/anno.

Tuttavia, le seguenti figure mostrano come tra i ricettori R91, R92 e R93 e l'aerogeneratore WTG 03 e tra il ricettore R65 e l'aerogeneratore WTG 09 si frapponga una fitta vegetazione che tende ad attenuare il fenomeno delle ombreggiature.



**Figura 7.2:** Localizzazione dei ricettori R91, R92 e R93 rispetto all' aerogeneratore WTG 03



**Figura 7.3:** Localizzazione del ricettore R65 rispetto all' aerogeneratore WTG 09

Come le immagini precedentemente riportate evidenziano, gli immobili R91, R92, R93 e R65 risultano essere schermati dagli alberi presenti nelle immediate vicinanze nelle direzioni verso gli aerogeneratori WTG 03 e WTG 09.

Tale situazione non è presa in considerazione nel calcolo sopra riportato e, pertanto, è possibile ritenere che l'effetto dello shadow flickering sugli immobili di cui sopra sia molto più attenuato di quello stimato.

Come detto, nell'analisi condotta sono state adottate ipotesi molto restrittive, tra le quali quella secondo cui il piano del rotore sia sempre ortogonale alla congiungente tra l'osservatore e il sole e ci sia totale assenza di ostacoli o schermi vegetazionali presenti negli spazi circostanti i possibili ricettori e che potrebbero attenuare il fenomeno.

Nella stima effettuata è stata considerata l'ulteriore ipotesi conservativa secondo la quale i ricettori siano in modalità "green house", ovvero le finestre delle abitazioni attenzionate siano omnidirezionali, situazione non sempre verificata nella realtà.

Nello scenario reale ci si aspetta che il fenomeno, quindi, risulti ulteriormente meno rilevante di quello a cui ha condotto la stima effettuata.

Pertanto, si può ragionevolmente affermare che l'effetto shadow flickering non abbia un impatto negativo sul territorio circostante, in particolare sui fabbricati adibiti a "civile abitazione".

8. ALLEGATO 1: SHADOW – MAIN RESULT – ELABORAZIONE MEDIANTE IL SOFTWARE WINDPRO 3.4

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## SHADOW - Main Result

### Assumptions for shadow calculations

Maximum distance for influence  
 Calculate only when more than 20 % of sun is covered by the blade  
 Please look in WTG table

Minimum sun height over horizon for influence 3 °  
 Day step for calculation 1 days  
 Time step for calculation 1 minutes

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time  
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

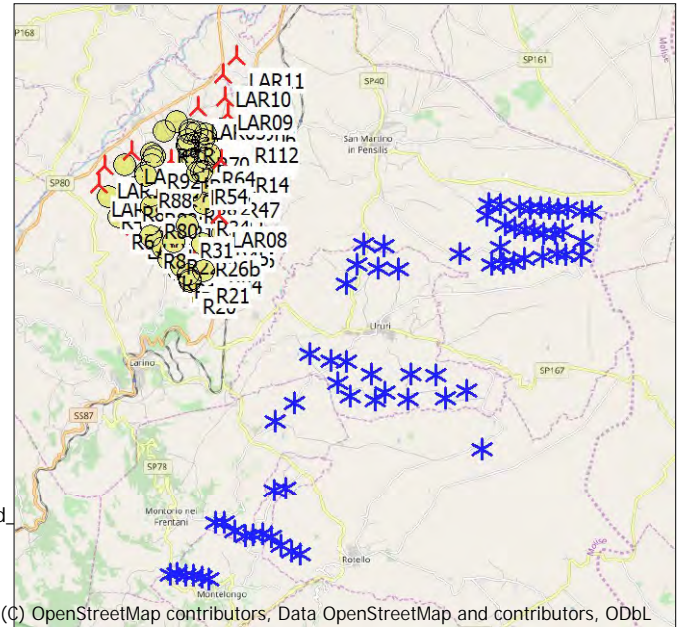
A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:  
 Height contours used: Elevation Grid Data Object: WF Larino\_finale\_EMDGrid  
 Obstacles used in calculation  
 Receiver grid resolution: 1,0 m  
 Topographic shadow included in calculation

All coordinates are in  
 Geo [deg]-WGS84

### WTGs

|    | Longitude    | Latitude     | Z [m] | Row data/Description      | WTG type |           | Type-generator             | Power, rated [kW] | Rotor diameter [m] | Hub height [m] | Shadow data              |           |
|----|--------------|--------------|-------|---------------------------|----------|-----------|----------------------------|-------------------|--------------------|----------------|--------------------------|-----------|
|    |              |              |       |                           | Valid    | Manufact. |                            |                   |                    |                | Calculation distance [m] | RPM [RPM] |
| 15 | 15,056530° E | 41,779952° N | 174,9 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 16 | 15,038353° E | 41,801684° N | 185,5 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 17 | 15,009447° E | 41,840687° N | 257,4 | REpower MM 92 2050 9...   | No       | REpower   | MM 92-2.050                | 2.050             | 92,5               | 80,0           | 1.626                    | 15,0      |
| 18 | 15,006659° E | 41,834853° N | 251,1 | REpower MM 92 2050 9...   | No       | REpower   | MM 92-2.050                | 2.050             | 92,5               | 80,0           | 1.626                    | 15,0      |
| 19 | 15,017467° E | 41,840054° N | 212,5 | REpower MM 92 2050 9...   | No       | REpower   | MM 92-2.050                | 2.050             | 92,5               | 80,0           | 1.626                    | 15,0      |
| 20 | 15,015257° E | 41,833608° N | 226,1 | REpower MM 92 2050 9...   | No       | REpower   | MM 92-2.050                | 2.050             | 92,5               | 80,0           | 1.626                    | 15,0      |
| 21 | 15,023250° E | 41,833315° N | 206,9 | REpower MM 92 2050 9...   | No       | REpower   | MM 92-2.050                | 2.050             | 92,5               | 80,0           | 1.626                    | 15,0      |
| 22 | 15,002504° E | 41,829215° N | 300,3 | REpower MM 92 2050 9...   | No       | REpower   | MM 92-2.050                | 2.050             | 92,5               | 80,0           | 1.626                    | 15,0      |
| 23 | 14,932429° E | 41,742388° N | 629,1 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 24 | 14,935239° E | 41,742545° N | 653,4 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 25 | 14,938587° E | 41,742130° N | 638,8 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 26 | 14,941264° E | 41,742167° N | 640,5 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 27 | 14,944891° E | 41,741616° N | 650,2 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 28 | 14,947741° E | 41,741123° N | 632,7 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 29 | 14,950275° E | 41,757976° N | 501,8 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 30 | 14,953911° E | 41,757721° N | 501,5 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 31 | 14,958186° E | 41,755557° N | 504,1 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 32 | 14,962369° E | 41,753838° N | 506,4 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 33 | 14,965536° E | 41,754131° N | 473,2 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 34 | 14,969279° E | 41,754345° N | 461,9 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 35 | 14,972754° E | 41,753659° N | 464,7 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 36 | 14,976490° E | 41,751203° N | 459,8 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 37 | 14,980378° E | 41,749326° N | 474,7 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 38 | 14,984020° E | 41,748549° N | 442,6 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 39 | 14,973796° E | 41,767368° N | 350,6 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 40 | 14,978435° E | 41,768159° N | 309,5 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 41 | 14,974121° E | 41,788246° N | 329,9 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 42 | 14,981949° E | 41,793516° N | 323,4 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 43 | 15,042122° E | 41,795090° N | 175,9 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 44 | 15,012484° E | 41,802277° N | 216,4 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 45 | 15,013708° E | 41,794236° N | 251,1 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 46 | 15,018078° E | 41,796672° N | 240,8 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 47 | 15,026744° E | 41,794951° N | 190,4 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 48 | 15,028332° E | 41,802273° N | 205,7 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 49 | 14,999003° E | 41,799347° N | 244,4 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 50 | 14,996407° E | 41,806252° N | 230,8 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 51 | 15,002672° E | 41,805836° N | 206,8 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 52 | 14,988249° E | 41,808257° N | 195,1 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 53 | 15,003776° E | 41,795710° N | 282,1 | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |
| 54 | 15,099886° E | 41,850244° N | 60,6  | VESTAS V90-2.0 GridStr... | No       | VESTAS    | V90-2.0 GridStreamer-2.000 | 2.000             | 90,0               | 80,0           | 1.507                    | 15,2      |

To be continued on next page...



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 Scale 1:250.000  
 New WTG  
 Shadow receptor

## SHADOW - Main Result

...continued from previous page

|       | Longitude    | Latitude     | Z<br>[m] | Row data/Description      | WTG type |                | Type-generator             | Power,<br>rated<br>[kW] | Rotor<br>diameter<br>[m] | Hub<br>height<br>[m] | Shadow data                    |              |
|-------|--------------|--------------|----------|---------------------------|----------|----------------|----------------------------|-------------------------|--------------------------|----------------------|--------------------------------|--------------|
|       |              |              |          |                           | Valid    | Manufact.      |                            |                         |                          |                      | Calculation<br>distance<br>[m] | RPM<br>[RPM] |
| 55    | 15,096133° E | 41,850313° N | 66,2     | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 56    | 15,095889° E | 41,837366° N | 62,6     | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 57    | 15,089717° E | 41,837494° N | 77,0     | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 58    | 15,086381° E | 41,837802° N | 86,9     | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 59    | 15,080871° E | 41,837067° N | 103,3    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 60    | 15,073373° E | 41,836325° N | 116,1    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 61    | 15,069146° E | 41,835278° N | 125,9    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 62    | 15,069425° E | 41,845426° N | 126,3    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 63    | 15,073774° E | 41,845085° N | 116,4    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 64    | 15,077486° E | 41,844707° N | 108,5    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 65    | 15,081195° E | 41,843718° N | 98,4     | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 66    | 15,085623° E | 41,844107° N | 90,0     | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 67    | 15,088762° E | 41,844865° N | 82,6     | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 68    | 15,090710° E | 41,851187° N | 76,9     | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 69    | 15,087084° E | 41,850812° N | 81,7     | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 70    | 15,083296° E | 41,851281° N | 92,2     | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 71    | 15,079596° E | 41,851691° N | 101,1    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 72    | 15,075540° E | 41,851217° N | 110,2    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 73    | 15,071671° E | 41,852007° N | 115,1    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 74    | 15,063617° E | 41,852540° N | 133,1    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 75    | 15,059212° E | 41,852579° N | 140,6    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 76    | 15,058331° E | 41,849319° N | 145,8    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 77    | 15,065633° E | 41,846513° N | 132,2    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 78    | 15,063574° E | 41,839934° N | 130,5    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 79    | 15,065156° E | 41,835033° N | 131,4    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 80    | 15,060642° E | 41,834822° N | 137,0    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 81    | 15,047677° E | 41,837823° N | 162,3    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 82    | 15,096882° E | 41,841604° N | 48,6     | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| 83    | 15,050146° E | 41,797540° N | 140,3    | VESTAS V90-2.0 GridStr... | No       | VESTAS         | V90-2.0 GridStreamer-2.000 | 2.000                   | 90,0                     | 80,0                 | 1.507                          | 15,2         |
| LAR01 | 14,918149° E | 41,845796° N | 126,8    | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |
| LAR02 | 14,917032° E | 41,868034° N | 74,2     | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |
| LAR03 | 14,932846° E | 41,865394° N | 121,3    | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |
| LAR04 | 14,942148° E | 41,835524° N | 176,9    | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |
| LAR05 | 14,943357° E | 41,881240° N | 58,8     | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |
| LAR06 | 14,955335° E | 41,879319° N | 101,9    | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |
| LAR07 | 14,954992° E | 41,871110° N | 106,8    | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |
| LAR08 | 14,951947° E | 41,849283° N | 133,8    | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |
| LAR09 | 14,954159° E | 41,884087° N | 74,6     | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |
| LAR10 | 14,953455° E | 41,891117° N | 34,8     | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 135,0                | 2.040                          | 8,8          |
| LAR11 | 14,959072° E | 41,896510° N | 27,5     | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |
| LAR12 | 14,906472° E | 41,863922° N | 81,2     | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |
| LAR13 | 14,903960° E | 41,858348° N | 90,5     | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |
| LAR14 | 14,952833° E | 41,865562° N | 109,7    | Siemens Gamesa SG 6.0...  | Yes      | Siemens Gamesa | SG 6.0-170-6-200           | 6.200                   | 170,0                    | 165,0                | 2.037                          | 8,8          |

### Shadow receptor-Input

| No.  | Longitude    | Latitude     | Z     | Width | Height | Elevation | Slope of | Direction mode     | Eye height   |
|------|--------------|--------------|-------|-------|--------|-----------|----------|--------------------|--------------|
|      |              |              | [m]   | [m]   | [m]    | a.g.l.    | window   |                    | (ZVI) a.g.l. |
|      |              |              |       |       |        | [m]       | [°]      |                    | [m]          |
| R10  | 14,928683° E | 41,841285° N | 161,7 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R100 | 14,934765° E | 41,877019° N | 59,0  | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R101 | 14,952735° E | 41,874785° N | 105,1 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R107 | 14,930861° E | 41,860310° N | 124,4 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R109 | 14,936060° E | 41,851513° N | 160,7 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R11  | 14,928032° E | 41,841474° N | 163,9 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R110 | 14,914397° E | 41,864281° N | 89,9  | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R112 | 14,961125° E | 41,874430° N | 101,1 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R113 | 14,960827° E | 41,872982° N | 101,2 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R12  | 14,929792° E | 41,839692° N | 162,5 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R13  | 14,932672° E | 41,838288° N | 170,5 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R14  | 14,932289° E | 41,836153° N | 178,9 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R15  | 14,935761° E | 41,832976° N | 183,1 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R16  | 14,936844° E | 41,834066° N | 179,5 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R17  | 14,939183° E | 41,831825° N | 198,6 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R18  | 14,939857° E | 41,831366° N | 199,1 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R19  | 14,940449° E | 41,830231° N | 200,4 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R20  | 14,940509° E | 41,829781° N | 200,7 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R21  | 14,945974° E | 41,832666° N | 175,7 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R22  | 14,934006° E | 41,841189° N | 168,7 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |
| R25  | 14,936883° E | 41,842920° N | 158,9 | 1,0   | 1,0    | 1,0       | 90,0     | "Green house mode" | 2,0          |

To be continued on next page...



## SHADOW - Main Result

...continued from previous page

| No.  | Longitude    | Latitude     | Z     | Width | Height | Elevation<br>a.g.l. | Slope of<br>window | Direction mode     | Eye height<br>(ZVI) a.g.l. |
|------|--------------|--------------|-------|-------|--------|---------------------|--------------------|--------------------|----------------------------|
|      |              |              | [m]   | [m]   | [m]    | [m]                 | [°]                |                    | [m]                        |
| R26  | 14,933764° E | 41,843144° N | 167,0 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R26b | 14,945666° E | 41,840745° N | 166,8 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R27  | 14,945750° E | 41,841213° N | 168,4 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R29  | 14,948926° E | 41,845646° N | 136,2 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R31  | 14,939338° E | 41,846137° N | 159,4 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R33  | 14,945211° E | 41,851427° N | 135,3 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R34  | 14,946018° E | 41,852661° N | 132,7 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R35  | 14,951124° E | 41,854780° N | 129,6 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R36  | 14,944028° E | 41,854777° N | 126,9 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R37  | 14,941812° E | 41,853416° N | 135,0 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R37b | 14,940413° E | 41,855595° N | 145,3 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R38  | 14,940617° E | 41,856469° N | 148,2 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R4   | 14,907597° E | 41,854618° N | 112,1 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R40  | 14,937750° E | 41,856242° N | 146,9 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R42  | 14,946338° E | 41,858705° N | 112,9 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R43  | 14,944819° E | 41,859812° N | 126,6 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R44  | 14,945179° E | 41,861398° N | 125,4 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R45  | 14,953553° E | 41,843856° N | 132,9 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R46  | 14,955734° E | 41,843343° N | 146,8 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R47  | 14,957483° E | 41,858178° N | 125,8 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R48  | 14,958227° E | 41,861790° N | 118,7 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R50  | 14,946287° E | 41,862254° N | 124,9 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R51  | 14,946865° E | 41,862605° N | 119,0 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R53  | 14,945503° E | 41,863082° N | 124,9 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R54  | 14,945214° E | 41,862244° N | 125,3 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R55  | 14,944010° E | 41,861874° N | 125,7 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R59  | 14,943383° E | 41,861766° N | 126,2 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R6   | 14,912316° E | 41,848551° N | 153,3 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R60  | 14,940705° E | 41,865467° N | 116,2 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R61  | 14,941765° E | 41,865683° N | 119,1 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R62  | 14,943091° E | 41,865062° N | 122,6 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R63  | 14,946452° E | 41,865866° N | 116,7 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R64  | 14,948066° E | 41,867371° N | 110,7 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R65  | 14,946498° E | 41,869018° N | 109,3 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R66  | 14,960738° E | 41,874095° N | 100,7 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R67  | 14,946881° E | 41,871432° N | 109,4 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R68  | 14,943918° E | 41,870215° N | 112,7 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R69  | 14,942544° E | 41,870664° N | 112,5 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R70  | 14,945773° E | 41,871522° N | 110,4 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R71  | 14,946615° E | 41,873386° N | 105,3 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R72  | 14,939771° E | 41,871699° N | 111,9 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R73  | 14,939303° E | 41,869834° N | 105,7 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R74  | 14,939761° E | 41,870069° N | 107,6 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R76  | 14,943276° E | 41,873835° N | 109,7 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R77  | 14,940264° E | 41,873726° N | 108,0 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R78  | 14,940227° E | 41,874473° N | 106,2 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R79  | 14,924938° E | 41,850101° N | 145,9 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R8   | 14,924621° E | 41,843021° N | 166,2 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R80  | 14,925117° E | 41,852010° N | 145,4 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R81  | 14,925272° E | 41,853118° N | 141,7 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R82  | 14,925161° E | 41,855027° N | 136,9 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R83  | 14,925508° E | 41,857451° N | 133,4 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R85  | 14,925422° E | 41,858567° N | 130,0 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R86  | 14,917810° E | 41,857274° N | 135,1 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R87  | 14,916424° E | 41,857147° N | 136,0 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R88  | 14,922745° E | 41,860916° N | 127,2 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R89  | 14,922804° E | 41,861988° N | 128,3 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R9   | 14,924220° E | 41,846434° N | 155,8 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R90  | 14,924777° E | 41,864214° N | 107,8 | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R91  | 14,925775° E | 41,865827° N | 97,7  | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R92  | 14,926305° E | 41,866665° N | 88,1  | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R93  | 14,925075° E | 41,867394° N | 84,5  | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |
| R98  | 14,929911° E | 41,874233° N | 67,0  | 1,0   | 1,0    | 1,0                 | 90,0               | "Green house mode" | 2,0                        |

## SHADOW - Main Result

### Calculation Results

Shadow receptor

#### Shadow, expected values

| No.  | Shadow hours<br>per year<br>[h/year] |
|------|--------------------------------------|
| R10  | 7:53                                 |
| R100 | 14:00                                |
| R101 | 27:32                                |
| R107 | 1:54                                 |
| R109 | 4:23                                 |
| R11  | 7:00                                 |
| R110 | 23:23                                |
| R112 | 17:45                                |
| R113 | 15:41                                |
| R12  | 4:37                                 |
| R13  | 7:20                                 |
| R14  | 8:26                                 |
| R15  | 2:37                                 |
| R16  | 20:04                                |
| R17  | 0:00                                 |
| R18  | 0:00                                 |
| R19  | 0:00                                 |
| R20  | 0:00                                 |
| R21  | 0:00                                 |
| R22  | 15:59                                |
| R25  | 4:43                                 |
| R26  | 9:20                                 |
| R26b | 5:13                                 |
| R27  | 0:41                                 |
| R29  | 0:00                                 |
| R31  | 9:41                                 |
| R33  | 13:54                                |
| R34  | 18:14                                |
| R35  | 0:00                                 |
| R36  | 11:03                                |
| R37  | 6:55                                 |
| R37b | 8:09                                 |
| R38  | 5:51                                 |
| R4   | 0:00                                 |
| R40  | 7:12                                 |
| R42  | 0:00                                 |
| R43  | 0:00                                 |
| R44  | 10:57                                |
| R45  | 3:22                                 |
| R46  | 5:00                                 |
| R47  | 0:00                                 |
| R48  | 0:00                                 |
| R50  | 7:55                                 |
| R51  | 6:21                                 |
| R53  | 19:53                                |
| R54  | 12:27                                |
| R55  | 15:00                                |
| R59  | 15:01                                |
| R6   | 19:19                                |
| R60  | 26:01                                |
| R61  | 21:03                                |
| R62  | 19:04                                |
| R63  | 25:55                                |
| R64  | 27:43                                |
| R65  | 37:46                                |
| R66  | 17:04                                |
| R67  | 21:42                                |
| R68  | 23:17                                |
| R69  | 21:08                                |
| R70  | 20:58                                |
| R71  | 14:08                                |
| R72  | 13:32                                |

To be continued on next page...

## SHADOW - Main Result

...continued from previous page

### Shadow, expected values

| No. | Shadow hours<br>per year<br>[h/year] |
|-----|--------------------------------------|
| R73 | 22:02                                |
| R74 | 21:19                                |
| R76 | 5:29                                 |
| R77 | 14:16                                |
| R78 | 13:05                                |
| R79 | 15:37                                |
| R8  | 8:57                                 |
| R80 | 4:16                                 |
| R81 | 1:37                                 |
| R82 | 1:31                                 |
| R83 | 5:07                                 |
| R85 | 3:54                                 |
| R86 | 4:28                                 |
| R87 | 5:57                                 |
| R88 | 4:54                                 |
| R89 | 14:08                                |
| R9  | 22:59                                |
| R90 | 25:12                                |
| R91 | 40:53                                |
| R92 | 31:55                                |
| R93 | 30:44                                |
| R98 | 4:16                                 |

Total amount of flickering on the shadow receptors caused by each WTG

| No. | Name  | Expected<br>[h/year] |
|-----|---|----------------------|
| 15  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (20) | 0:00                 |
| 16  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (21) | 0:00                 |
| 17  | REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (22)               | 0:00                 |
| 18  | REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (23)               | 0:00                 |
| 19  | REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (24)               | 0:00                 |
| 20  | REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (25)               | 0:00                 |
| 21  | REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (26)               | 0:00                 |
| 22  | REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (27)               | 0:00                 |
| 23  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (28) | 0:00                 |
| 24  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (29) | 0:00                 |
| 25  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (30) | 0:00                 |
| 26  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (31) | 0:00                 |
| 27  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (32) | 0:00                 |
| 28  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (33) | 0:00                 |
| 29  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (34) | 0:00                 |
| 30  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (35) | 0:00                 |
| 31  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (36) | 0:00                 |
| 32  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (37) | 0:00                 |
| 33  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (38) | 0:00                 |
| 34  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (39) | 0:00                 |
| 35  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (40) | 0:00                 |
| 36  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (41) | 0:00                 |
| 37  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (42) | 0:00                 |
| 38  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (43) | 0:00                 |
| 39  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (44) | 0:00                 |
| 40  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (45) | 0:00                 |
| 41  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (46) | 0:00                 |
| 42  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (47) | 0:00                 |
| 43  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (48) | 0:00                 |
| 44  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (49) | 0:00                 |
| 45  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (50) | 0:00                 |
| 46  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (51) | 0:00                 |
| 47  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (52) | 0:00                 |
| 48  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (53) | 0:00                 |
| 49  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (54) | 0:00                 |
| 50  | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (55) | 0:00                 |

To be continued on next page...

## SHADOW - Main Result

...continued from previous page

| No.   | Name  | Expected<br>[h/year] |
|-------|---|----------------------|
| 51    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (56) | 0:00                 |
| 52    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (57) | 0:00                 |
| 53    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (58) | 0:00                 |
| 54    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (59) | 0:00                 |
| 55    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (60) | 0:00                 |
| 56    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (61) | 0:00                 |
| 57    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (62) | 0:00                 |
| 58    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (63) | 0:00                 |
| 59    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (64) | 0:00                 |
| 60    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (65) | 0:00                 |
| 61    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (66) | 0:00                 |
| 62    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (67) | 0:00                 |
| 63    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (68) | 0:00                 |
| 64    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (69) | 0:00                 |
| 65    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (70) | 0:00                 |
| 66    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (71) | 0:00                 |
| 67    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (72) | 0:00                 |
| 68    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (73) | 0:00                 |
| 69    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (74) | 0:00                 |
| 70    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (75) | 0:00                 |
| 71    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (76) | 0:00                 |
| 72    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (77) | 0:00                 |
| 73    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (78) | 0:00                 |
| 74    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (79) | 0:00                 |
| 75    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (80) | 0:00                 |
| 76    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (81) | 0:00                 |
| 77    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (82) | 0:00                 |
| 78    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (83) | 0:00                 |
| 79    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (84) | 0:00                 |
| 80    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (85) | 0:00                 |
| 81    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (86) | 0:00                 |
| 82    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (87) | 0:00                 |
| 83    | VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (88) | 0:00                 |
| LAR01 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (1)  | 75:48                |
| LAR02 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (2)  | 48:06                |
| LAR03 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (3)  | 141:15               |
| LAR04 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (4)  | 68:30                |
| LAR05 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (5)  | 4:26                 |
| LAR06 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (6)  | 12:02                |
| LAR07 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (7)  | 111:43               |
| LAR08 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (8)  | 62:04                |
| LAR09 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (9)  | 4:41                 |
| LAR10 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (10) | 0:00                 |
| LAR11 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (11) | 0:00                 |
| LAR12 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (12) | 29:57                |
| LAR13 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (13) | 28:10                |
| LAR14 | Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (14) | 101:24               |

Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.

The calculation of the total expected values for a given receptor assumes a weighted average directional reduction for all WTGs contributing to shadow flicker within the same day. In the case where shadow flicker from different WTGs is not concurrent within the day, the total expected time at a given receptor may deviate marginally from the individual flicker time caused by each turbine separately.

## SHADOW - Calendar

**Shadow receptor:** R10 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March         | April          | May            | June           |                |
|---------------------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 07:45 (LAR04) | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 07:45 (LAR04) | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 5<br>20:29     |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 07:45 (LAR04) | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 11<br>20:30    |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 07:44 (LAR04) | 06:33<br>17:54 | 06:40<br>19:29 | 05:55<br>20:02 | 13<br>20:31    |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 07:44 (LAR04) | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 15<br>20:32    |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 07:44 (LAR04) | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 17<br>20:32    |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 07:45 (LAR04) | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 18<br>20:33    |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 07:45 (LAR04) | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 20<br>20:34    |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 07:45 (LAR04) | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 21<br>20:34    |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 07:46 (LAR04) | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 22<br>20:35    |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 07:47 (LAR04) | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 23<br>20:35    |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 07:48 (LAR04) | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 24<br>20:36    |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 07:49 (LAR04) | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 25<br>20:36    |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 07:51 (LAR04) | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 26<br>20:37    |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 07:53 (LAR04) | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 27<br>20:37    |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 07:56 (LAR04) | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 28<br>20:38    |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 08:04 (LAR04) | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 29<br>20:38    |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 |               | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 30<br>20:38    |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 |               | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 31<br>20:39    |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 |               | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 2<br>20:39     |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 |               | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 3<br>20:39     |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 07:55 (LAR04) | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 4<br>20:39     |
| 23                  | 07:22<br>17:04 | 06:47<br>17:43 | 07:59 (LAR04) | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 5<br>20:40     |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 08:03 (LAR04) | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 6<br>20:40     |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 08:05 (LAR04) | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 7<br>20:40     |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 08:08 (LAR04) | 05:56<br>18:18 | 06:05<br>19:53 | 05:32<br>20:24 | 8<br>20:40     |
| 27                  | 07:19<br>17:09 | 06:40<br>17:48 | 08:11 (LAR04) | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:25 | 9<br>20:40     |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 08:13 (LAR04) | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 10<br>20:40    |
| 29                  | 07:17<br>17:11 | 06:37<br>17:49 | 08:12 (LAR04) | 05:51<br>18:22 | 06:01<br>19:56 | 05:30<br>20:26 | 11<br>20:40    |
| 30                  | 07:16<br>17:12 | 06:35<br>17:49 | 08:12 (LAR04) | 05:50<br>18:23 | 06:00<br>19:57 | 05:29<br>20:27 | 12<br>20:40    |
| 31                  | 07:15<br>17:14 | 06:33<br>17:49 | 08:13 (LAR04) | 05:49<br>18:24 | 05:59<br>19:58 | 05:28<br>20:28 | 13<br>20:40    |
| Potential sun hours | 295            | 296            | 369           | 400            | 450            | 455            |                |
| Total, worst case   | 203            | 418            |               |                |                | 659            |                |
| Sun reduction       | 0,44           | 0,46           |               |                |                | 0,54           |                |
| Oper. time red.     | 0,70           | 0,70           |               |                |                | 0,70           |                |
| Wind dir. red.      | 0,67           | 0,67           |               |                |                | 0,67           |                |
| Total reduction     | 0,21           | 0,21           |               |                |                | 0,25           |                |
| Total, real         | 42             | 89             |               |                |                | 166            |                |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R10 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (5)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August        |       | September |       | October |               | November      |       | December |  |
|---------------------|-------|---------------|-------|-----------|-------|---------|---------------|---------------|-------|----------|--|
| 1                   | 05:29 | 19:51 (LAR01) | 05:54 | 06:25     | 06:57 | 06:32   | 07:16 (LAR04) | 07:08         |       |          |  |
|                     | 20:40 | 20:14 (LAR01) | 20:20 | 19:36     | 18:44 | 16:56   | 28            | 07:44 (LAR04) | 16:31 |          |  |
| 2                   | 05:29 | 19:52 (LAR01) | 05:55 | 06:27     | 06:58 | 06:33   |               | 07:15 (LAR04) | 07:09 |          |  |
|                     | 20:40 | 20:14 (LAR01) | 20:19 | 19:34     | 18:42 | 16:55   | 29            | 07:44 (LAR04) | 16:31 |          |  |
| 3                   | 05:30 | 19:52 (LAR01) | 05:56 | 06:28     | 06:59 | 06:34   |               | 07:14 (LAR04) | 07:10 |          |  |
|                     | 20:39 | 20:14 (LAR01) | 20:18 | 19:33     | 18:41 | 16:54   | 30            | 07:44 (LAR04) | 16:31 |          |  |
| 4                   | 05:31 | 19:53 (LAR01) | 05:57 | 06:29     | 07:00 | 06:36   |               | 07:15 (LAR04) | 07:11 |          |  |
|                     | 20:39 | 20:14 (LAR01) | 20:17 | 19:31     | 18:39 | 16:53   | 30            | 07:45 (LAR04) | 16:30 |          |  |
| 5                   | 05:31 | 19:53 (LAR01) | 05:58 | 06:30     | 07:01 | 06:37   |               | 07:14 (LAR04) | 07:12 |          |  |
|                     | 20:39 | 20:13 (LAR01) | 20:15 | 19:29     | 18:37 | 16:51   | 31            | 07:45 (LAR04) | 16:30 |          |  |
| 6                   | 05:32 | 19:55 (LAR01) | 05:59 | 06:31     | 07:02 | 06:38   |               | 07:14 (LAR04) | 07:13 |          |  |
|                     | 20:39 | 20:13 (LAR01) | 20:14 | 19:28     | 18:36 | 16:50   | 31            | 07:45 (LAR04) | 16:30 |          |  |
| 7                   | 05:32 | 19:55 (LAR01) | 06:00 | 06:32     | 07:03 | 06:39   |               | 07:15 (LAR04) | 07:14 |          |  |
|                     | 20:38 | 20:12 (LAR01) | 20:13 | 19:26     | 18:34 | 16:49   | 31            | 07:46 (LAR04) | 16:30 |          |  |
| 8                   | 05:33 | 19:56 (LAR01) | 06:01 | 06:33     | 07:04 | 06:41   |               | 07:14 (LAR04) | 07:15 |          |  |
|                     | 20:38 | 20:13 (LAR01) | 20:12 | 19:24     | 18:32 | 16:48   | 31            | 07:45 (LAR04) | 16:30 |          |  |
| 9                   | 05:34 | 19:58 (LAR01) | 06:02 | 06:34     | 07:05 | 06:42   |               | 07:15 (LAR04) | 07:16 |          |  |
|                     | 20:38 | 20:13 (LAR01) | 20:10 | 19:22     | 18:31 | 16:47   | 30            | 07:45 (LAR04) | 16:30 |          |  |
| 10                  | 05:34 | 19:59 (LAR01) | 06:03 | 06:35     | 07:06 | 06:43   |               | 07:16 (LAR04) | 07:17 |          |  |
|                     | 20:37 | 20:11 (LAR01) | 20:09 | 19:21     | 18:29 | 16:46   | 29            | 07:45 (LAR04) | 16:30 |          |  |
| 11                  | 05:35 | 20:02 (LAR01) | 06:04 | 06:36     | 07:07 | 06:44   |               | 07:16 (LAR04) | 07:17 |          |  |
|                     | 20:37 | 20:10 (LAR01) | 20:08 | 19:19     | 18:27 | 16:45   | 29            | 07:45 (LAR04) | 16:30 |          |  |
| 12                  | 05:36 |               | 06:05 | 06:37     | 07:09 | 06:45   |               | 07:16 (LAR04) | 07:18 |          |  |
|                     | 20:36 |               | 20:06 | 19:17     | 18:26 | 16:44   | 28            | 07:44 (LAR04) | 16:30 |          |  |
| 13                  | 05:37 |               | 06:06 | 06:38     | 07:10 | 06:47   |               | 07:18 (LAR04) | 07:19 |          |  |
|                     | 20:36 |               | 20:05 | 19:15     | 18:24 | 16:43   | 26            | 07:44 (LAR04) | 16:30 |          |  |
| 14                  | 05:37 |               | 06:07 | 06:39     | 07:11 | 06:48   |               | 07:18 (LAR04) | 07:20 |          |  |
|                     | 20:35 |               | 20:04 | 19:14     | 18:23 | 16:42   | 25            | 07:43 (LAR04) | 16:30 |          |  |
| 15                  | 05:38 |               | 06:08 | 06:40     | 07:12 | 06:49   |               | 07:19 (LAR04) | 07:21 |          |  |
|                     | 20:35 |               | 20:02 | 19:12     | 18:21 | 16:41   | 23            | 07:42 (LAR04) | 16:30 |          |  |
| 16                  | 05:39 |               | 06:09 | 06:41     | 07:13 | 06:50   |               | 07:21 (LAR04) | 07:21 |          |  |
|                     | 20:34 |               | 20:01 | 19:10     | 18:19 | 16:40   | 21            | 07:42 (LAR04) | 16:31 |          |  |
| 17                  | 05:40 |               | 06:10 | 06:42     | 07:14 | 06:52   |               | 07:22 (LAR04) | 07:22 |          |  |
|                     | 20:34 |               | 19:59 | 19:09     | 18:18 | 16:39   | 19            | 07:41 (LAR04) | 16:31 |          |  |
| 18                  | 05:41 |               | 06:11 | 06:43     | 07:15 | 06:53   |               | 07:24 (LAR04) | 07:23 |          |  |
|                     | 20:33 |               | 19:58 | 19:07     | 18:16 | 16:38   | 15            | 07:39 (LAR04) | 16:31 |          |  |
| 19                  | 05:41 |               | 06:12 | 06:44     | 07:17 | 06:54   |               | 07:26 (LAR04) | 07:23 |          |  |
|                     | 20:32 |               | 19:56 | 19:05     | 18:15 | 16:38   | 11            | 07:37 (LAR04) | 16:32 |          |  |
| 20                  | 05:42 |               | 06:13 | 06:45     | 07:18 | 06:55   |               | 07:30 (LAR04) | 07:24 |          |  |
|                     | 20:31 |               | 19:55 | 19:03     | 18:13 | 16:37   | 4             | 07:34 (LAR04) | 16:32 |          |  |
| 21                  | 05:43 |               | 06:14 | 06:46     | 07:19 | 06:56   |               | 07:24 (LAR04) | 07:24 |          |  |
|                     | 20:31 |               | 19:53 | 19:02     | 18:12 | 16:36   |               |               | 16:33 |          |  |
| 22                  | 05:44 |               | 06:15 | 06:47     | 07:20 | 06:58   |               |               | 07:25 |          |  |
|                     | 20:30 |               | 19:52 | 19:00     | 18:10 | 16:36   |               |               | 16:33 |          |  |
| 23                  | 05:45 |               | 06:16 | 06:48     | 07:21 | 06:59   |               |               | 07:26 |          |  |
|                     | 20:29 |               | 19:50 | 18:58     | 18:09 | 16:35   |               |               | 16:34 |          |  |
| 24                  | 05:46 |               | 06:17 | 06:49     | 07:22 | 07:00   |               |               | 07:26 |          |  |
|                     | 20:28 |               | 19:49 | 18:56     | 18:07 | 16:34   |               |               | 16:34 |          |  |
| 25                  | 05:47 |               | 06:18 | 06:50     | 06:24 | 07:01   |               |               | 07:26 |          |  |
|                     | 20:27 |               | 19:47 | 18:55     | 17:06 | 16:34   |               |               | 16:35 |          |  |
| 26                  | 05:48 |               | 06:19 | 06:51     | 06:25 | 07:02   |               | 07:24 (LAR04) | 07:27 |          |  |
|                     | 20:26 |               | 19:46 | 18:53     | 17:04 | 16:33   | 11            | 07:35 (LAR04) | 16:35 |          |  |
| 27                  | 05:49 |               | 06:20 | 06:52     | 06:26 | 07:03   |               | 07:21 (LAR04) | 07:27 |          |  |
|                     | 20:25 |               | 19:44 | 18:51     | 17:03 | 16:33   | 16            | 07:37 (LAR04) | 16:36 |          |  |
| 28                  | 05:50 |               | 06:21 | 06:53     | 06:27 | 07:04   |               | 07:20 (LAR04) | 07:27 |          |  |
|                     | 20:24 |               | 19:42 | 18:49     | 17:02 | 16:32   | 20            | 07:40 (LAR04) | 16:37 |          |  |
| 29                  | 05:51 |               | 06:22 | 06:54     | 06:28 | 07:06   |               | 07:18 (LAR04) | 07:28 |          |  |
|                     | 20:23 |               | 19:41 | 18:48     | 17:00 | 16:32   | 23            | 07:41 (LAR04) | 16:37 |          |  |
| 30                  | 05:52 |               | 06:23 | 06:56     | 06:30 | 07:07   |               | 07:17 (LAR04) | 07:28 |          |  |
|                     | 20:22 |               | 19:39 | 18:46     | 16:59 | 16:31   | 25            | 07:42 (LAR04) | 16:38 |          |  |
| 31                  | 05:53 |               | 06:24 |           | 06:31 |         |               | 07:17 (LAR04) | 07:28 |          |  |
|                     | 20:21 |               | 19:38 |           | 16:58 | 27      | 07:44 (LAR04) |               | 16:39 |          |  |
| Potential sun hours | 462   |               | 429   | 375       | 344   | 296     |               |               | 285   |          |  |
| Total, worst case   | 195   |               |       |           |       | 501     |               |               |       |          |  |
| Sun reduction       | 0,61  |               |       |           |       | 0,41    |               |               |       |          |  |
| Oper. time red.     | 0,70  |               |       |           |       | 0,70    |               |               |       |          |  |
| Wind dir. red.      | 0,67  |               |       |           |       | 0,67    |               |               |       |          |  |
| Total reduction     | 0,28  |               |       |           |       | 0,19    |               |               |       |          |  |
| Total, real         | 55    |               |       |           |       | 95      |               |               |       |          |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

Shadow receptor: R100 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (78)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| January             |       | February         |       | March |       | April |  | May   |  | June          |                  |
|---------------------|-------|------------------|-------|-------|-------|-------|--|-------|--|---------------|------------------|
| 1                   | 07:29 | 08:08 (LAR14)    | 07:14 |       | 06:37 | 06:45 |  | 05:58 |  | 05:29         | 05:51 (LAR09)    |
|                     | 16:40 | 28 16:12 (LAR02) | 17:15 |       | 17:50 | 19:25 |  | 19:58 |  | 20:29         | 22 06:13 (LAR09) |
| 2                   | 07:29 | 08:09 (LAR14)    | 07:13 |       | 06:36 | 06:44 |  | 05:57 |  | 05:28         | 05:52 (LAR09)    |
|                     | 16:41 | 29 16:14 (LAR02) | 17:16 |       | 17:51 | 19:26 |  | 19:59 |  | 20:30         | 22 06:14 (LAR09) |
| 3                   | 07:29 | 08:09 (LAR14)    | 07:12 |       | 06:34 | 06:42 |  | 05:56 |  | 05:28         | 05:52 (LAR09)    |
|                     | 16:42 | 31 16:15 (LAR02) | 17:17 |       | 17:52 | 19:27 |  | 20:00 |  | 20:30         | 23 06:15 (LAR09) |
| 4                   | 07:29 | 08:10 (LAR14)    | 07:11 |       | 06:33 | 06:40 |  | 05:54 |  | 05:27         | 05:51 (LAR09)    |
|                     | 16:42 | 31 16:16 (LAR02) | 17:19 |       | 17:54 | 19:29 |  | 20:02 |  | 20:31         | 23 06:14 (LAR09) |
| 5                   | 07:29 | 08:11 (LAR14)    | 07:10 |       | 06:31 | 06:39 |  | 05:53 |  | 05:27         | 05:52 (LAR09)    |
|                     | 16:43 | 32 16:17 (LAR02) | 17:20 |       | 17:55 | 19:30 |  | 20:03 |  | 20:32         | 23 06:15 (LAR09) |
| 6                   | 07:29 | 08:12 (LAR14)    | 07:09 |       | 06:29 | 06:37 |  | 05:52 |  | 05:27         | 05:52 (LAR09)    |
|                     | 16:44 | 32 16:18 (LAR02) | 17:21 |       | 17:56 | 19:31 |  | 20:04 |  | 20:32         | 23 06:15 (LAR09) |
| 7                   | 07:29 | 08:13 (LAR14)    | 07:08 |       | 06:28 | 06:35 |  | 05:51 |  | 05:26         | 05:51 (LAR09)    |
|                     | 16:45 | 32 16:19 (LAR02) | 17:23 |       | 17:57 | 19:32 |  | 20:05 |  | 20:33         | 24 06:15 (LAR09) |
| 8                   | 07:28 | 08:14 (LAR14)    | 07:07 |       | 06:26 | 06:34 |  | 05:49 |  | 05:26         | 05:52 (LAR09)    |
|                     | 16:46 | 32 16:20 (LAR02) | 17:24 |       | 17:58 | 19:33 |  | 20:06 |  | 20:34         | 23 06:15 (LAR09) |
| 9                   | 07:28 | 08:15 (LAR14)    | 07:06 |       | 06:24 | 06:32 |  | 05:48 |  | 05:26         | 05:52 (LAR09)    |
|                     | 16:47 | 33 16:22 (LAR02) | 17:25 |       | 17:59 | 19:34 |  | 20:07 |  | 20:34         | 24 06:16 (LAR09) |
| 10                  | 07:28 | 08:16 (LAR14)    | 07:04 |       | 06:23 | 06:30 |  | 05:47 |  | 05:25         | 05:52 (LAR09)    |
|                     | 16:48 | 31 16:22 (LAR02) | 17:26 |       | 18:01 | 19:35 |  | 20:08 |  | 20:35         | 24 06:16 (LAR09) |
| 11                  | 07:28 | 08:18 (LAR14)    | 07:03 |       | 06:21 | 06:29 |  | 05:46 |  | 05:25         | 05:53 (LAR09)    |
|                     | 16:49 | 30 16:23 (LAR02) | 17:28 |       | 18:02 | 19:36 |  | 20:09 |  | 20:35         | 23 06:16 (LAR09) |
| 12                  | 07:28 | 08:20 (LAR14)    | 07:02 |       | 06:19 | 06:27 |  | 05:45 |  | 05:25         | 05:53 (LAR09)    |
|                     | 16:50 | 28 16:24 (LAR02) | 17:29 |       | 18:03 | 19:37 |  | 20:10 |  | 20:36         | 24 06:17 (LAR09) |
| 13                  | 07:27 | 16:03 (LAR02)    | 07:01 |       | 06:18 | 06:25 |  | 05:44 |  | 05:25         | 05:53 (LAR09)    |
|                     | 16:52 | 21 16:24 (LAR02) | 17:30 |       | 18:04 | 19:39 |  | 20:11 |  | 20:36         | 24 06:17 (LAR09) |
| 14                  | 07:27 | 16:03 (LAR02)    | 06:59 |       | 06:16 | 06:24 |  | 05:43 |  | 05:25         | 05:54 (LAR09)    |
|                     | 16:53 | 23 16:26 (LAR02) | 17:31 |       | 18:05 | 19:40 |  | 20:12 |  | 20:37         | 23 06:17 (LAR09) |
| 15                  | 07:27 | 16:03 (LAR02)    | 06:58 |       | 06:14 | 06:22 |  | 05:42 |  | 05:25         | 05:54 (LAR09)    |
|                     | 16:54 | 23 16:26 (LAR02) | 17:33 |       | 18:06 | 19:41 |  | 20:13 |  | 20:37         | 23 06:17 (LAR09) |
| 16                  | 07:26 | 16:04 (LAR02)    | 06:57 |       | 06:13 | 06:21 |  | 05:41 |  | 05:25         | 05:54 (LAR09)    |
|                     | 16:55 | 23 16:27 (LAR02) | 17:34 |       | 18:07 | 19:42 |  | 20:14 |  | 20:38         | 23 06:17 (LAR09) |
| 17                  | 07:26 | 16:03 (LAR02)    | 06:55 |       | 06:11 | 06:19 |  | 05:40 |  | 05:25         | 05:54 (LAR09)    |
|                     | 16:56 | 24 16:27 (LAR02) | 17:35 |       | 18:09 | 19:43 |  | 20:15 |  | 20:38         | 24 06:18 (LAR09) |
| 18                  | 07:25 | 16:04 (LAR02)    | 06:54 |       | 06:09 | 06:17 |  | 05:39 |  | 05:25         | 05:54 (LAR09)    |
|                     | 16:57 | 24 16:28 (LAR02) | 17:36 |       | 18:10 | 19:44 |  | 20:16 |  | 20:38         | 24 06:18 (LAR09) |
| 19                  | 07:25 | 16:04 (LAR02)    | 06:52 |       | 06:08 | 06:16 |  | 05:38 |  | 05:25         | 05:54 (LAR09)    |
|                     | 16:59 | 24 16:28 (LAR02) | 17:38 |       | 18:11 | 19:45 |  | 20:17 |  | 20:39         | 24 06:18 (LAR09) |
| 20                  | 07:24 | 16:04 (LAR02)    | 06:51 |       | 06:06 | 06:14 |  | 05:37 |  | 05:25         | 05:54 (LAR09)    |
|                     | 17:00 | 24 16:28 (LAR02) | 17:39 |       | 18:12 | 19:46 |  | 20:18 |  | 20:39         | 24 06:18 (LAR09) |
| 21                  | 07:23 | 16:05 (LAR02)    | 06:50 |       | 06:04 | 06:13 |  | 05:36 |  | 05:25         | 05:54 (LAR09)    |
|                     | 17:01 | 23 16:28 (LAR02) | 17:40 |       | 18:13 | 19:47 |  | 20:19 |  | 20:39         | 24 06:18 (LAR09) |
| 22                  | 07:23 | 16:06 (LAR02)    | 06:48 |       | 06:02 | 06:11 |  | 05:35 |  | 05:26         | 05:55 (LAR09)    |
|                     | 17:02 | 22 16:28 (LAR02) | 17:41 |       | 18:14 | 19:48 |  | 20:20 |  | 20:39         | 24 06:19 (LAR09) |
| 23                  | 07:22 | 16:06 (LAR02)    | 06:47 |       | 06:01 | 06:10 |  | 05:34 |  | 05:26         | 05:55 (LAR09)    |
|                     | 17:03 | 22 16:28 (LAR02) | 17:43 |       | 18:15 | 19:50 |  | 20:21 |  | 20:40         | 24 06:19 (LAR09) |
| 24                  | 07:21 | 16:07 (LAR02)    | 06:45 |       | 05:59 | 06:08 |  | 05:34 |  | 05:26         | 05:55 (LAR09)    |
|                     | 17:05 | 20 16:27 (LAR02) | 17:44 |       | 18:16 | 19:51 |  | 20:22 |  | 20:40         | 24 06:19 (LAR09) |
| 25                  | 07:21 | 16:07 (LAR02)    | 06:44 |       | 05:57 | 06:07 |  | 05:33 |  | 05:26         | 05:55 (LAR09)    |
|                     | 17:06 | 20 16:27 (LAR02) | 17:45 |       | 18:18 | 19:52 |  | 20:23 |  | 20:40         | 24 06:19 (LAR09) |
| 26                  | 07:20 | 16:09 (LAR02)    | 06:42 |       | 05:56 | 06:05 |  | 05:32 |  | 05:27         | 05:56 (LAR09)    |
|                     | 17:07 | 18 16:27 (LAR02) | 17:46 |       | 18:19 | 19:53 |  | 20:24 |  | 20:40         | 24 06:20 (LAR09) |
| 27                  | 07:19 | 16:10 (LAR02)    | 06:40 |       | 05:54 | 06:04 |  | 05:31 |  | 05:27         | 05:56 (LAR09)    |
|                     | 17:08 | 16 16:26 (LAR02) | 17:48 |       | 18:20 | 19:54 |  | 20:25 |  | 20:40         | 23 06:19 (LAR09) |
| 28                  | 07:18 | 16:12 (LAR02)    | 06:39 |       | 05:52 | 06:03 |  | 05:31 |  | 05:28         | 05:57 (LAR09)    |
|                     | 17:10 | 13 16:25 (LAR02) | 17:49 |       | 18:21 | 19:55 |  | 20:25 |  | 20:40         | 23 06:20 (LAR09) |
| 29                  | 07:17 | 16:14 (LAR02)    |       |       | 06:50 | 06:01 |  | 05:30 |  | 05:28         | 05:56 (LAR09)    |
|                     | 17:11 | 10 16:24 (LAR02) |       |       | 19:22 | 19:56 |  | 20:26 |  | 20:40         | 24 06:20 (LAR09) |
| 30                  | 07:16 |                  |       |       | 06:49 | 06:00 |  | 05:30 |  | 05:28         | 05:56 (LAR09)    |
|                     | 17:12 |                  |       |       | 19:23 | 19:57 |  | 20:27 |  | 20:40         | 24 06:20 (LAR09) |
| 31                  | 07:15 |                  |       |       | 06:47 |       |  | 05:29 |  | 05:28         |                  |
|                     | 17:14 |                  |       |       | 19:24 |       |  | 20:28 |  | 06:13 (LAR09) |                  |
| Potential sun hours | 295   |                  | 296   |       | 369   | 400   |  | 451   |  | 455           |                  |
| Total, worst case   |       | 719              |       | 241   |       | 292   |  | 158   |  | 705           |                  |
| Sun reduction       |       | 0,44             |       | 0,46  |       | 0,48  |  | 0,47  |  | 0,54          |                  |
| Oper. time red.     |       | 0,70             |       | 0,70  |       | 0,70  |  | 0,70  |  | 0,70          |                  |
| Wind dir. red.      |       | 0,59             |       | 0,65  |       | 0,59  |  | 0,57  |  | 0,57          |                  |
| Total reduction     |       | 0,18             |       | 0,21  |       | 0,20  |  | 0,19  |  | 0,21          |                  |
| Total, real         |       | 131              |       | 51    |       | 58    |  | 29    |  | 151           |                  |

### Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R100 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (78)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  | August           | September        | October          | November        | December         |                  |                  |                  |                  |  |
|---------------------|-------|------------------|------------------|------------------|-----------------|------------------|------------------|------------------|------------------|------------------|--|
| 1                   | 05:29 | 05:57 (LAR09)    | 05:53            | 06:25            | 06:54 (LAR06)   | 06:57            | 06:32            | 07:08            | 08:00 (LAR14)    |                  |  |
|                     | 20:40 | 24 06:21 (LAR09) | 20:20            | 19:36            | 9 07:03 (LAR06) | 18:44            | 16:56            | 16:31            | 30 16:05 (LAR02) |                  |  |
| 2                   | 05:29 | 05:57 (LAR09)    | 05:54            | 06:26            | 06:58           | 06:33            | 06:33            | 07:09            | 07:59 (LAR14)    |                  |  |
|                     | 20:40 | 23 06:20 (LAR09) | 20:19            | 19:34            | 18:42           | 16:55            | 16:55            | 16:31            | 31 16:05 (LAR02) |                  |  |
| 3                   | 05:30 | 05:57 (LAR09)    | 05:55            | 06:27            | 06:59           | 06:34            | 06:34            | 07:10            | 07:58 (LAR14)    |                  |  |
|                     | 20:40 | 24 06:21 (LAR09) | 20:18            | 19:33            | 18:41           | 16:54            | 16:54            | 16:30            | 33 16:05 (LAR02) |                  |  |
| 4                   | 05:30 | 05:57 (LAR09)    | 05:56            | 06:29            | 07:00           | 06:36            | 06:36            | 07:11            | 07:58 (LAR14)    |                  |  |
|                     | 20:39 | 24 06:21 (LAR09) | 20:17            | 19:31            | 18:39           | 16:53            | 16:53            | 16:30            | 32 16:04 (LAR02) |                  |  |
| 5                   | 05:31 | 05:58 (LAR09)    | 05:57            | 06:30            | 07:01           | 06:37            | 06:37            | 07:12            | 07:58 (LAR14)    |                  |  |
|                     | 20:39 | 23 06:21 (LAR09) | 20:16            | 19:29            | 18:37           | 16:51            | 16:51            | 16:30            | 32 16:04 (LAR02) |                  |  |
| 6                   | 05:32 | 05:58 (LAR09)    | 05:59            | 06:31            | 07:02           | 06:38            | 06:38            | 07:13            | 07:58 (LAR14)    |                  |  |
|                     | 20:39 | 24 06:21 (LAR09) | 20:14            | 19:28            | 18:36           | 16:50            | 16:50            | 16:30            | 32 16:04 (LAR02) |                  |  |
| 7                   | 05:32 | 05:58 (LAR09)    | 06:00            | 06:32            | 07:03           | 06:39            | 06:39            | 07:14            | 07:58 (LAR14)    |                  |  |
|                     | 20:39 | 23 06:21 (LAR09) | 20:13            | 19:26            | 18:34           | 16:49            | 16:49            | 16:30            | 32 16:04 (LAR02) |                  |  |
| 8                   | 05:33 | 05:58 (LAR09)    | 06:01            | 06:33            | 07:04           | 06:41            | 06:41            | 07:15            | 07:58 (LAR14)    |                  |  |
|                     | 20:38 | 24 06:22 (LAR09) | 20:12            | 19:24            | 18:32           | 16:48            | 16:48            | 16:30            | 31 16:04 (LAR02) |                  |  |
| 9                   | 05:34 | 05:59 (LAR09)    | 06:02            | 06:34            | 07:05           | 06:42            | 06:42            | 07:16            | 07:58 (LAR14)    |                  |  |
|                     | 20:38 | 23 06:22 (LAR09) | 20:11            | 19:22            | 18:31           | 16:47            | 16:47            | 16:30            | 31 16:04 (LAR02) |                  |  |
| 10                  | 05:34 | 05:59 (LAR09)    | 06:03            | 06:35            | 07:06           | 06:43            | 06:43            | 07:17            | 07:59 (LAR14)    |                  |  |
|                     | 20:37 | 22 06:21 (LAR09) | 20:09            | 19:21            | 18:29           | 16:46            | 16:46            | 16:30            | 29 16:04 (LAR02) |                  |  |
| 11                  | 05:35 | 05:59 (LAR09)    | 06:04            | 06:36            | 07:07           | 06:44            | 06:44            | 07:18            | 07:59 (LAR14)    |                  |  |
|                     | 20:37 | 23 06:22 (LAR09) | 20:08            | 19:19            | 18:27           | 16:45            | 16:45            | 16:30            | 28 16:03 (LAR02) |                  |  |
| 12                  | 05:36 | 06:00 (LAR09)    | 06:05            | 06:37            | 07:09           | 06:46            | 06:46            | 07:18            | 08:00 (LAR14)    |                  |  |
|                     | 20:37 | 22 06:22 (LAR09) | 20:07            | 19:17            | 18:26           | 16:44            | 16:44            | 16:30            | 26 16:03 (LAR02) |                  |  |
| 13                  | 05:36 | 06:00 (LAR09)    | 06:06            | 06:38            | 07:10           | 06:47            | 06:47            | 07:19            | 07:59 (LAR14)    |                  |  |
|                     | 20:36 | 21 06:21 (LAR09) | 20:05            | 19:15            | 18:24           | 16:43            | 10 15:56 (LAR02) | 16:30            | 23 16:01 (LAR02) |                  |  |
| 14                  | 05:37 | 06:00 (LAR09)    | 06:07            | 06:39            | 07:11           | 06:48            | 15:44 (LAR02)    | 07:20            | 08:00 (LAR14)    |                  |  |
|                     | 20:35 | 21 06:21 (LAR09) | 20:04            | 19:14            | 18:23           | 16:42            | 13 15:57 (LAR02) | 16:30            | 20 08:20 (LAR14) |                  |  |
| 15                  | 05:38 | 06:01 (LAR09)    | 06:08            | 06:40            | 07:12           | 06:49            | 15:42 (LAR02)    | 07:21            | 08:00 (LAR14)    |                  |  |
|                     | 20:35 | 20 06:21 (LAR09) | 20:02            | 19:12            | 18:21           | 7 08:07 (LAR07)  | 16:41            | 16 15:58 (LAR02) | 16:30            | 21 08:21 (LAR14) |  |
| 16                  | 05:39 | 06:02 (LAR09)    | 06:09            | 06:41            | 07:13           | 07:57 (LAR07)    | 06:50            | 15:42 (LAR02)    | 07:21            | 08:00 (LAR14)    |  |
|                     | 20:34 | 19 06:21 (LAR09) | 20:01            | 19:10            | 18:19           | 13 08:10 (LAR07) | 16:40            | 18 16:00 (LAR02) | 16:31            | 21 08:21 (LAR14) |  |
| 17                  | 05:40 | 06:03 (LAR09)    | 06:10            | 06:42            | 07:14           | 07:55 (LAR07)    | 06:52            | 15:41 (LAR02)    | 07:22            | 08:01 (LAR14)    |  |
|                     | 20:34 | 17 06:20 (LAR09) | 19:59            | 10 07:07 (LAR06) | 18:18           | 16 08:11 (LAR07) | 16:39            | 20 16:01 (LAR02) | 16:31            | 21 08:22 (LAR14) |  |
| 18                  | 05:40 | 06:03 (LAR09)    | 06:11            | 06:43            | 07:15           | 07:53 (LAR07)    | 06:53            | 15:41 (LAR02)    | 07:23            | 08:02 (LAR14)    |  |
|                     | 20:33 | 16 06:19 (LAR09) | 19:58            | 14 07:09 (LAR06) | 18:16           | 19 08:12 (LAR07) | 16:38            | 20 16:01 (LAR02) | 16:31            | 20 08:22 (LAR14) |  |
| 19                  | 05:41 | 06:04 (LAR09)    | 06:12            | 06:44            | 07:17           | 07:53 (LAR07)    | 06:54            | 15:40 (LAR02)    | 07:23            | 08:01 (LAR14)    |  |
|                     | 20:32 | 14 06:18 (LAR09) | 19:56            | 17 07:10 (LAR06) | 18:15           | 20 08:13 (LAR07) | 16:38            | 22 16:02 (LAR02) | 16:32            | 21 08:23 (LAR14) |  |
| 20                  | 05:42 | 06:06 (LAR09)    | 06:13            | 06:45            | 07:18           | 07:52 (LAR07)    | 06:55            | 15:41 (LAR02)    | 07:24            | 08:02 (LAR14)    |  |
|                     | 20:31 | 11 06:17 (LAR09) | 19:55            | 19 07:11 (LAR06) | 18:13           | 21 08:13 (LAR07) | 16:37            | 22 16:03 (LAR02) | 16:32            | 21 08:23 (LAR14) |  |
| 21                  | 05:43 | 06:08 (LAR09)    | 06:14            | 06:46            | 07:19           | 07:51 (LAR07)    | 06:56            | 15:40 (LAR02)    | 07:25            | 08:02 (LAR14)    |  |
|                     | 20:31 | 8 06:16 (LAR09)  | 19:53            | 21 07:12 (LAR06) | 18:12           | 22 08:13 (LAR07) | 16:36            | 23 16:03 (LAR02) | 16:32            | 21 08:23 (LAR14) |  |
| 22                  | 05:44 | 06:15            | 06:47            | 06:47            | 07:20           | 07:51 (LAR07)    | 06:58            | 15:40 (LAR02)    | 07:25            | 08:03 (LAR14)    |  |
|                     | 20:30 | 19:52            | 22 07:12 (LAR06) | 19:00            | 18:10           | 22 08:13 (LAR07) | 16:35            | 24 16:04 (LAR02) | 16:33            | 21 08:24 (LAR14) |  |
| 23                  | 05:45 | 06:16            | 06:48            | 06:48            | 07:21           | 07:51 (LAR07)    | 06:59            | 15:41 (LAR02)    | 07:26            | 08:03 (LAR14)    |  |
|                     | 20:29 | 19:50            | 22 07:12 (LAR06) | 18:58            | 18:09           | 22 08:13 (LAR07) | 16:35            | 24 16:05 (LAR02) | 16:33            | 21 08:24 (LAR14) |  |
| 24                  | 05:46 | 06:17            | 06:49            | 06:49            | 07:22           | 07:53 (LAR07)    | 07:00            | 15:41 (LAR02)    | 07:26            | 08:04 (LAR14)    |  |
|                     | 20:28 | 19:49            | 23 07:12 (LAR06) | 18:56            | 18:07           | 20 08:13 (LAR07) | 16:34            | 24 16:05 (LAR02) | 16:34            | 21 08:25 (LAR14) |  |
| 25                  | 05:47 | 06:18            | 06:49            | 06:50            | 07:23           | 07:54 (LAR07)    | 07:01            | 15:41 (LAR02)    | 07:26            | 08:04 (LAR14)    |  |
|                     | 20:27 | 19:47            | 23 07:12 (LAR06) | 18:55            | 17:06           | 18 07:12 (LAR07) | 16:34            | 24 16:05 (LAR02) | 16:34            | 21 08:25 (LAR14) |  |
| 26                  | 05:48 | 06:19            | 06:49            | 06:51            | 07:24           | 07:55 (LAR07)    | 07:02            | 15:42 (LAR02)    | 07:27            | 08:05 (LAR14)    |  |
|                     | 20:26 | 19:46            | 22 07:11 (LAR06) | 18:53            | 17:04           | 15 07:11 (LAR07) | 16:33            | 23 16:05 (LAR02) | 16:35            | 21 08:26 (LAR14) |  |
| 27                  | 05:49 | 06:20            | 06:49            | 06:52            | 07:25           | 07:56 (LAR07)    | 07:03            | 15:42 (LAR02)    | 07:27            | 08:06 (LAR14)    |  |
|                     | 20:25 | 19:44            | 22 07:11 (LAR06) | 18:51            | 17:03           | 13 07:10 (LAR07) | 16:33            | 23 16:05 (LAR02) | 16:36            | 21 08:27 (LAR14) |  |
| 28                  | 05:50 | 06:21            | 06:49            | 06:53            | 07:26           | 07:57 (LAR07)    | 07:05            | 15:43 (LAR02)    | 07:28            | 08:06 (LAR14)    |  |
|                     | 20:24 | 19:42            | 21 07:10 (LAR06) | 18:49            | 17:02           | 10 07:09 (LAR07) | 16:32            | 23 16:06 (LAR02) | 16:36            | 21 08:27 (LAR14) |  |
| 29                  | 05:51 | 06:22            | 06:50            | 06:54            | 07:27           | 07:58 (LAR07)    | 07:06            | 15:44 (LAR02)    | 07:28            | 08:06 (LAR14)    |  |
|                     | 20:23 | 19:41            | 19 07:09 (LAR06) | 18:48            | 17:00           | 7 07:07 (LAR07)  | 16:32            | 21 16:05 (LAR02) | 16:37            | 21 08:27 (LAR14) |  |
| 30                  | 05:51 | 06:23            | 06:50            | 06:56            | 07:28           | 07:59 (LAR07)    | 07:07            | 15:44 (LAR02)    | 07:28            | 08:07 (LAR14)    |  |
|                     | 20:22 | 19:39            | 18 07:08 (LAR06) | 18:46            | 17:00           | 7 07:07 (LAR07)  | 16:32            | 21 16:05 (LAR02) | 16:37            | 21 08:27 (LAR14) |  |
| 31                  | 05:52 | 06:24            | 06:52            | 06:56            | 07:29           | 08:00 (LAR14)    | 07:07            | 15:44 (LAR02)    | 07:28            | 08:07 (LAR14)    |  |
|                     | 20:21 | 19:38            | 14 07:06 (LAR06) | 18:44            | 16:59           | 16:31            | 28 16:05 (LAR02) | 16:38            | 20 08:27 (LAR14) |                  |  |
| Potential sun hours | 462   | 430              | 375              | 344              | 296             | 285              |                  |                  |                  |                  |  |
| Total, worst case   | 426   | 287              | 9                | 245              | 378             | 769              |                  |                  |                  |                  |  |
| Sun reduction       | 0,61  | 0,67             | 0,58             | 0,44             | 0,41            | 0,36             |                  |                  |                  |                  |  |
| Oper. time red.     | 0,70  | 0,70             | 0,70             | 0,70             | 0,70            | 0,70             |                  |                  |                  |                  |  |
| Wind dir. red.      | 0,57  | 0,59             | 0,59             | 0,65             | 0,56            | 0,64             |                  |                  |                  |                  |  |
| Total reduction     | 0,24  | 0,28             | 0,24             | 0,20             | 0,16            | 0,16             |                  |                  |                  |                  |  |
| Total, real         | 103   | 79               | 2                | 49               | 60              | 127              |                  |                  |                  |                  |  |

#### Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R101 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (79)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     |       | January       |               | February      |       | March         |       | April |       | May   |  | June |  |
|---------------------|-------|---------------|---------------|---------------|-------|---------------|-------|-------|-------|-------|--|------|--|
| 1                   | 07:28 | 09:36 (LAR07) | 07:14         | 09:59 (LAR07) | 06:37 | 06:45         | 05:58 | 05:29 |       |       |  |      |  |
|                     | 16:40 | 89            | 11:05 (LAR07) | 17:15         | 64    | 16:29 (LAR03) | 17:50 | 19:25 | 05:57 | 05:28 |  |      |  |
| 2                   | 07:29 | 09:37 (LAR07) | 07:13         | 10:01 (LAR07) | 06:36 | 06:44         | 05:57 | 05:28 |       |       |  |      |  |
|                     | 16:41 | 89            | 11:06 (LAR07) | 17:16         | 56    | 10:57 (LAR07) | 17:51 | 19:26 | 05:59 | 05:29 |  |      |  |
| 3                   | 07:29 | 09:37 (LAR07) | 07:12         | 10:02 (LAR07) | 06:34 | 06:42         | 05:56 | 05:28 |       |       |  |      |  |
|                     | 16:41 | 89            | 11:06 (LAR07) | 17:17         | 53    | 10:55 (LAR07) | 17:52 | 19:27 | 06:00 | 05:30 |  |      |  |
| 4                   | 07:29 | 09:38 (LAR07) | 07:11         | 10:03 (LAR07) | 06:33 | 06:40         | 05:54 | 05:27 |       |       |  |      |  |
|                     | 16:42 | 88            | 11:06 (LAR07) | 17:19         | 49    | 10:52 (LAR07) | 17:53 | 19:29 | 06:01 | 05:31 |  |      |  |
| 5                   | 07:29 | 09:38 (LAR07) | 07:10         | 10:05 (LAR07) | 06:31 | 06:39         | 05:53 | 05:27 |       |       |  |      |  |
|                     | 16:43 | 89            | 11:07 (LAR07) | 17:20         | 45    | 10:50 (LAR07) | 17:55 | 19:30 | 06:02 | 05:32 |  |      |  |
| 6                   | 07:29 | 09:39 (LAR07) | 07:09         | 10:08 (LAR07) | 06:29 | 06:37         | 05:52 | 05:26 |       |       |  |      |  |
|                     | 16:44 | 88            | 11:07 (LAR07) | 17:21         | 39    | 10:47 (LAR07) | 17:56 | 19:31 | 06:03 | 05:33 |  |      |  |
| 7                   | 07:29 | 09:40 (LAR07) | 07:08         | 10:11 (LAR07) | 06:28 | 06:35         | 05:51 | 05:26 |       |       |  |      |  |
|                     | 16:45 | 88            | 11:08 (LAR07) | 17:22         | 33    | 10:44 (LAR07) | 17:57 | 19:32 | 06:04 | 05:34 |  |      |  |
| 8                   | 07:28 | 09:40 (LAR07) | 07:07         | 10:15 (LAR07) | 06:26 | 06:34         | 05:49 | 05:26 |       |       |  |      |  |
|                     | 16:46 | 88            | 11:08 (LAR07) | 17:24         | 25    | 10:40 (LAR07) | 17:58 | 19:33 | 06:05 | 05:35 |  |      |  |
| 9                   | 07:28 | 09:40 (LAR07) | 07:05         | 10:21 (LAR07) | 06:24 | 06:32         | 05:48 | 05:26 |       |       |  |      |  |
|                     | 16:47 | 88            | 11:08 (LAR07) | 17:25         | 10    | 10:31 (LAR07) | 17:59 | 19:34 | 06:06 | 05:36 |  |      |  |
| 10                  | 07:28 | 09:41 (LAR07) | 07:04         |               | 06:23 | 06:30         | 05:47 | 05:25 |       |       |  |      |  |
|                     | 16:48 | 92            | 16:22 (LAR03) | 17:26         |       | 18:00         | 19:35 | 20:08 | 06:07 | 05:37 |  |      |  |
| 11                  | 07:28 | 09:42 (LAR07) | 07:03         |               | 06:21 | 06:29         | 05:46 | 05:25 |       |       |  |      |  |
|                     | 16:49 | 95            | 16:24 (LAR03) | 17:28         |       | 18:02         | 19:36 | 20:09 | 06:08 | 05:39 |  |      |  |
| 12                  | 07:28 | 09:42 (LAR07) | 07:02         |               | 06:19 | 06:27         | 05:45 | 05:25 |       |       |  |      |  |
|                     | 16:50 | 96            | 16:24 (LAR03) | 17:29         |       | 18:03         | 19:37 | 20:10 | 06:09 | 05:40 |  |      |  |
| 13                  | 07:27 | 09:43 (LAR07) | 07:00         |               | 06:18 | 06:25         | 05:44 | 05:25 |       |       |  |      |  |
|                     | 16:52 | 98            | 16:26 (LAR03) | 17:30         |       | 18:04         | 19:38 | 20:11 | 06:10 | 05:41 |  |      |  |
| 14                  | 07:27 | 09:44 (LAR07) | 06:59         |               | 06:16 | 06:24         | 05:43 | 05:25 |       |       |  |      |  |
|                     | 16:53 | 98            | 16:27 (LAR03) | 17:31         |       | 18:05         | 19:40 | 20:12 | 06:11 | 05:42 |  |      |  |
| 15                  | 07:26 | 09:44 (LAR07) | 06:58         |               | 06:14 | 06:22         | 05:42 | 05:25 |       |       |  |      |  |
|                     | 16:54 | 100           | 16:28 (LAR03) | 17:33         |       | 18:06         | 19:41 | 20:13 | 06:12 | 05:43 |  |      |  |
| 16                  | 07:26 | 09:45 (LAR07) | 06:56         |               | 06:13 | 06:20         | 05:41 | 05:25 |       |       |  |      |  |
|                     | 16:55 | 101           | 16:30 (LAR03) | 17:34         |       | 18:07         | 19:42 | 20:14 | 06:13 | 05:44 |  |      |  |
| 17                  | 07:26 | 09:45 (LAR07) | 06:55         |               | 06:11 | 06:19         | 05:40 | 05:25 |       |       |  |      |  |
|                     | 16:56 | 101           | 16:30 (LAR03) | 17:35         |       | 18:08         | 19:43 | 20:15 | 06:14 | 05:45 |  |      |  |
| 18                  | 07:25 | 09:45 (LAR07) | 06:54         |               | 06:09 | 06:17         | 05:39 | 05:25 |       |       |  |      |  |
|                     | 16:57 | 102           | 16:31 (LAR03) | 17:36         |       | 18:10         | 19:44 | 20:16 | 06:15 | 05:46 |  |      |  |
| 19                  | 07:24 | 09:47 (LAR07) | 06:52         |               | 06:08 | 06:16         | 05:38 | 05:25 |       |       |  |      |  |
|                     | 16:58 | 102           | 16:33 (LAR03) | 17:38         |       | 18:11         | 19:45 | 20:17 | 06:16 | 05:47 |  |      |  |
| 20                  | 07:24 | 09:47 (LAR07) | 06:51         |               | 06:06 | 06:14         | 05:37 | 05:25 |       |       |  |      |  |
|                     | 17:00 | 101           | 16:33 (LAR03) | 17:39         |       | 18:12         | 19:46 | 20:18 | 06:17 | 05:48 |  |      |  |
| 21                  | 07:23 | 09:47 (LAR07) | 06:49         |               | 06:04 | 06:13         | 05:36 | 05:25 |       |       |  |      |  |
|                     | 17:01 | 101           | 16:34 (LAR03) | 17:40         |       | 18:13         | 19:47 | 20:19 | 06:18 | 05:49 |  |      |  |
| 22                  | 07:23 | 09:49 (LAR07) | 06:48         |               | 06:02 | 06:11         | 05:35 | 05:26 |       |       |  |      |  |
|                     | 17:02 | 100           | 16:35 (LAR03) | 17:41         |       | 18:14         | 19:48 | 20:20 | 06:19 | 05:51 |  |      |  |
| 23                  | 07:22 | 09:50 (LAR07) | 06:46         |               | 06:01 | 06:10         | 05:34 | 05:26 |       |       |  |      |  |
|                     | 17:03 | 98            | 16:35 (LAR03) | 17:43         |       | 18:15         | 19:49 | 20:21 | 06:20 | 05:52 |  |      |  |
| 24                  | 07:21 | 09:50 (LAR07) | 06:45         |               | 05:59 | 06:08         | 05:34 | 05:26 |       |       |  |      |  |
|                     | 17:05 | 97            | 16:35 (LAR03) | 17:44         |       | 18:16         | 19:51 | 20:22 | 06:21 | 05:53 |  |      |  |
| 25                  | 07:20 | 09:51 (LAR07) | 06:43         |               | 05:57 | 06:07         | 05:33 | 05:26 |       |       |  |      |  |
|                     | 17:06 | 96            | 16:35 (LAR03) | 17:45         |       | 18:17         | 19:52 | 20:23 | 06:22 | 05:54 |  |      |  |
| 26                  | 07:20 | 09:52 (LAR07) | 06:42         |               | 05:56 | 06:05         | 05:32 | 05:27 |       |       |  |      |  |
|                     | 17:07 | 93            | 16:34 (LAR03) | 17:46         |       | 18:19         | 19:53 | 20:24 | 06:23 | 05:55 |  |      |  |
| 27                  | 07:19 | 09:53 (LAR07) | 06:40         |               | 05:54 | 06:04         | 05:31 | 05:27 |       |       |  |      |  |
|                     | 17:08 | 91            | 16:35 (LAR03) | 17:47         |       | 18:20         | 19:54 | 20:25 | 06:24 | 05:56 |  |      |  |
| 28                  | 07:18 | 09:54 (LAR07) | 06:39         |               | 05:52 | 06:02         | 05:31 | 05:27 |       |       |  |      |  |
|                     | 17:10 | 88            | 16:35 (LAR03) | 17:49         |       | 18:21         | 19:55 | 20:25 | 06:25 | 05:57 |  |      |  |
| 29                  | 07:17 | 09:55 (LAR07) |               |               | 06:50 | 06:01         | 05:30 | 05:28 |       |       |  |      |  |
|                     | 17:11 | 84            | 16:34 (LAR03) |               |       | 19:22         | 19:56 | 20:26 | 06:26 | 05:58 |  |      |  |
| 30                  | 07:16 | 09:56 (LAR07) |               |               | 06:49 | 06:00         | 05:30 | 05:28 |       |       |  |      |  |
|                     | 17:12 | 80            | 16:33 (LAR03) |               |       | 19:23         | 19:57 | 20:27 | 06:27 | 05:59 |  |      |  |
| 31                  | 07:15 | 09:58 (LAR07) |               |               | 06:47 |               | 05:29 |       |       |       |  |      |  |
|                     | 17:13 | 73            | 16:32 (LAR03) |               |       | 19:24         |       | 20:28 | 06:28 | 06:00 |  |      |  |
| Potential sun hours | 295   |               | 296           |               | 369   | 400           | 451   | 455   |       |       |  |      |  |
| Total, worst case   | 2883  |               | 374           |               |       |               |       |       |       |       |  |      |  |
| Sun reduction       | 0,44  |               | 0,46          |               |       |               |       |       |       |       |  |      |  |
| Oper. time red.     | 0,70  |               | 0,70          |               |       |               |       |       |       |       |  |      |  |
| Wind dir. red.      | 0,69  |               | 0,71          |               |       |               |       |       |       |       |  |      |  |
| Total reduction     | 0,21  |               | 0,23          |               |       |               |       |       |       |       |  |      |  |
| Total, real         | 619   |               | 85            |               |       |               |       |       |       |       |  |      |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R101 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (79)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  | August | September | October | November | December      |
|---------------------|-------|--------|-----------|---------|----------|---------------|
| 1                   | 05:29 | 05:53  | 06:25     | 06:57   | 06:32    | 07:08         |
|                     | 20:40 | 20:20  | 19:36     | 18:44   | 16:56    | 16:31         |
| 2                   | 05:29 | 05:54  | 06:26     | 06:58   | 06:33    | 09:49 (LAR07) |
|                     | 20:40 | 20:19  | 19:34     | 18:42   | 16:55    | 10:03 (LAR07) |
| 3                   | 05:30 | 05:55  | 06:27     | 06:59   | 06:34    | 09:43 (LAR07) |
|                     | 20:39 | 20:18  | 19:33     | 18:41   | 16:54    | 10:09 (LAR07) |
| 4                   | 05:30 | 05:56  | 06:28     | 07:00   | 06:36    | 09:40 (LAR07) |
|                     | 20:39 | 20:17  | 19:31     | 18:39   | 16:52    | 10:14 (LAR07) |
| 5                   | 05:31 | 05:57  | 06:29     | 07:01   | 06:37    | 09:37 (LAR07) |
|                     | 20:39 | 20:15  | 19:29     | 18:37   | 16:51    | 10:18 (LAR07) |
| 6                   | 05:32 | 05:58  | 06:30     | 07:02   | 06:38    | 09:35 (LAR07) |
|                     | 20:39 | 20:14  | 19:27     | 18:36   | 16:50    | 10:20 (LAR07) |
| 7                   | 05:32 | 05:59  | 06:32     | 07:03   | 06:39    | 09:34 (LAR07) |
|                     | 20:38 | 20:13  | 19:26     | 18:34   | 16:49    | 10:24 (LAR07) |
| 8                   | 05:33 | 06:00  | 06:33     | 07:04   | 06:41    | 09:32 (LAR07) |
|                     | 20:38 | 20:12  | 19:24     | 18:32   | 16:48    | 10:26 (LAR07) |
| 9                   | 05:33 | 06:02  | 06:34     | 07:05   | 06:42    | 09:30 (LAR07) |
|                     | 20:38 | 20:10  | 19:22     | 18:31   | 16:47    | 10:27 (LAR07) |
| 10                  | 05:34 | 06:03  | 06:35     | 07:06   | 06:43    | 09:30 (LAR07) |
|                     | 20:37 | 20:09  | 19:21     | 18:29   | 16:46    | 16:00 (LAR03) |
| 11                  | 05:35 | 06:04  | 06:36     | 07:07   | 06:44    | 09:28 (LAR07) |
|                     | 20:37 | 20:08  | 19:19     | 18:27   | 16:45    | 16:03 (LAR03) |
| 12                  | 05:36 | 06:05  | 06:37     | 07:09   | 06:45    | 09:27 (LAR07) |
|                     | 20:36 | 20:06  | 19:17     | 18:26   | 16:44    | 16:04 (LAR03) |
| 13                  | 05:36 | 06:06  | 06:38     | 07:10   | 06:47    | 09:27 (LAR07) |
|                     | 20:36 | 20:05  | 19:15     | 18:24   | 16:43    | 16:06 (LAR03) |
| 14                  | 05:37 | 06:07  | 06:39     | 07:11   | 06:48    | 09:26 (LAR07) |
|                     | 20:35 | 20:04  | 19:14     | 18:22   | 16:42    | 16:07 (LAR03) |
| 15                  | 05:38 | 06:08  | 06:40     | 07:12   | 06:49    | 09:25 (LAR07) |
|                     | 20:35 | 20:02  | 19:12     | 18:21   | 16:41    | 16:07 (LAR03) |
| 16                  | 05:39 | 06:09  | 06:41     | 07:13   | 06:50    | 09:25 (LAR07) |
|                     | 20:34 | 20:01  | 19:10     | 18:19   | 16:40    | 16:08 (LAR03) |
| 17                  | 05:40 | 06:10  | 06:42     | 07:14   | 06:52    | 09:25 (LAR07) |
|                     | 20:34 | 19:59  | 19:08     | 18:18   | 16:39    | 16:09 (LAR03) |
| 18                  | 05:40 | 06:11  | 06:43     | 07:15   | 06:53    | 09:24 (LAR07) |
|                     | 20:33 | 19:58  | 19:07     | 18:16   | 16:38    | 16:09 (LAR03) |
| 19                  | 05:41 | 06:12  | 06:44     | 07:16   | 06:54    | 09:24 (LAR07) |
|                     | 20:32 | 19:56  | 19:05     | 18:15   | 16:37    | 16:09 (LAR03) |
| 20                  | 05:42 | 06:13  | 06:45     | 07:18   | 06:55    | 09:24 (LAR07) |
|                     | 20:31 | 19:55  | 19:03     | 18:13   | 16:37    | 16:10 (LAR03) |
| 21                  | 05:43 | 06:14  | 06:46     | 07:19   | 06:56    | 09:24 (LAR07) |
|                     | 20:31 | 19:53  | 19:01     | 18:12   | 16:36    | 16:10 (LAR03) |
| 22                  | 05:44 | 06:15  | 06:47     | 07:20   | 06:58    | 09:23 (LAR07) |
|                     | 20:30 | 19:52  | 19:00     | 18:10   | 16:35    | 16:09 (LAR03) |
| 23                  | 05:45 | 06:16  | 06:48     | 07:21   | 06:59    | 09:23 (LAR07) |
|                     | 20:29 | 19:50  | 18:58     | 18:09   | 16:35    | 16:09 (LAR03) |
| 24                  | 05:46 | 06:17  | 06:49     | 07:22   | 07:00    | 09:23 (LAR07) |
|                     | 20:28 | 19:49  | 18:56     | 18:07   | 16:34    | 16:09 (LAR03) |
| 25                  | 05:47 | 06:18  | 06:50     | 06:24   | 07:01    | 09:23 (LAR07) |
|                     | 20:27 | 19:47  | 18:54     | 17:06   | 16:34    | 16:09 (LAR03) |
| 26                  | 05:48 | 06:19  | 06:51     | 06:25   | 07:02    | 09:23 (LAR07) |
|                     | 20:26 | 19:46  | 18:53     | 17:04   | 16:33    | 16:08 (LAR03) |
| 27                  | 05:49 | 06:20  | 06:52     | 06:26   | 07:03    | 09:23 (LAR07) |
|                     | 20:25 | 19:44  | 18:51     | 17:03   | 16:32    | 16:07 (LAR03) |
| 28                  | 05:49 | 06:21  | 06:53     | 06:27   | 07:04    | 09:23 (LAR07) |
|                     | 20:24 | 19:42  | 18:49     | 17:02   | 16:32    | 16:06 (LAR03) |
| 29                  | 05:50 | 06:22  | 06:54     | 06:28   | 07:06    | 09:24 (LAR07) |
|                     | 20:23 | 19:41  | 18:48     | 17:00   | 16:32    | 16:07 (LAR03) |
| 30                  | 05:51 | 06:23  | 06:55     | 06:30   | 07:07    | 09:24 (LAR07) |
|                     | 20:22 | 19:39  | 18:46     | 16:59   | 16:31    | 16:06 (LAR03) |
| 31                  | 05:52 | 06:24  |           | 06:31   |          | 07:28         |
|                     | 20:21 | 19:38  |           | 16:58   |          | 16:39         |
| Potential sun hours | 462   | 430    | 375       | 344     | 296      | 285           |
| Total, worst case   |       |        |           |         | 2288     | 2769          |
| Sun reduction       |       |        |           |         | 0,41     | 0,36          |
| Oper. time red.     |       |        |           |         | 0,70     | 0,70          |
| Wind dir. red.      |       |        |           |         | 0,69     | 0,71          |
| Total reduction     |       |        |           |         | 0,20     | 0,18          |
| Total, real         |       |        |           |         | 447      | 502           |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R107 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (80)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June                           |                |
|---------------------|----------------|----------------|----------------|----------------|----------------|--------------------------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 06:18 (LAR14)<br>06:32 (LAR14) | 05:29<br>20:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 06:17 (LAR14)<br>06:32 (LAR14) | 05:28<br>20:29 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 06:15 (LAR14)<br>06:32 (LAR14) | 05:28<br>20:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:54<br>20:02 | 06:14 (LAR14)<br>06:32 (LAR14) | 05:27<br>20:31 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 06:13 (LAR14)<br>06:32 (LAR14) | 05:27<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 06:12 (LAR14)<br>06:32 (LAR14) | 05:27<br>20:32 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 06:11 (LAR14)<br>06:32 (LAR14) | 05:26<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 06:11 (LAR14)<br>06:31 (LAR14) | 05:26<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 06:11 (LAR14)<br>06:30 (LAR14) | 05:26<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 06:12 (LAR14)<br>06:30 (LAR14) | 05:26<br>20:35 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 06:13 (LAR14)<br>06:29 (LAR14) | 05:25<br>20:35 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 06:14 (LAR14)<br>06:28 (LAR14) | 05:25<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:39 | 05:44<br>20:11 | 06:16 (LAR14)<br>06:26 (LAR14) | 05:25<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 06:18 (LAR14)<br>06:23 (LAR14) | 05:25<br>20:37 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 |                                | 05:25<br>20:37 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 |                                | 05:25<br>20:38 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 |                                | 05:25<br>20:38 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 |                                | 05:25<br>20:38 |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 |                                | 05:25<br>20:39 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 |                                | 05:25<br>20:39 |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 |                                | 05:26<br>20:39 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 |                                | 05:26<br>20:39 |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:50 | 05:34<br>20:21 |                                | 05:26<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 |                                | 05:26<br>20:40 |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52 | 05:33<br>20:23 |                                | 05:27<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 |                                | 05:27<br>20:40 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:25 | 06:23 (LAR14)<br>06:27 (LAR14) | 05:27<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 06:22 (LAR14)<br>06:29 (LAR14) | 05:28<br>20:40 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 06:21 (LAR14)<br>06:31 (LAR14) | 05:28<br>20:40 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 06:19 (LAR14)<br>06:31 (LAR14) | 05:28<br>20:40 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                                |                |
| Potential sun hours | 295            | 296            | 369            | 400            | 451            |                                | 455            |
| Total, worst case   |                |                |                | 33             |                | 226                            |                |
| Sun reduction       |                |                |                | 0,48           |                | 0,47                           |                |
| Oper. time red.     |                |                |                | 0,70           |                | 0,70                           |                |
| Wind dir. red.      |                |                |                | 0,56           |                | 0,56                           |                |
| Total reduction     |                |                |                | 0,19           |                | 0,18                           |                |
| Total, real         |                |                |                | 6              |                | 41                             |                |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R107 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (80)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August           |                  | September |       | October |       | November |  | December |     |
|---------------------|-------|------------------|------------------|-----------|-------|---------|-------|----------|--|----------|-----|
| 1                   | 05:29 | 05:54            | 06:24 (LAR14)    | 06:25     | 06:57 | 06:32   | 07:08 |          |  |          |     |
|                     | 20:40 | 20:20            | 15 06:39 (LAR14) | 19:36     | 18:44 | 16:56   | 16:31 |          |  |          |     |
| 2                   | 05:29 | 05:55            | 06:23 (LAR14)    | 06:26     | 06:58 | 06:33   | 07:09 |          |  |          |     |
|                     | 20:40 | 20:19            | 17 06:40 (LAR14) | 19:34     | 18:42 | 16:55   | 16:31 |          |  |          |     |
| 3                   | 05:30 | 05:56            | 06:23 (LAR14)    | 06:28     | 06:59 | 06:34   | 07:10 |          |  |          |     |
|                     | 20:40 | 20:18            | 17 06:40 (LAR14) | 19:33     | 18:41 | 16:54   | 16:30 |          |  |          |     |
| 4                   | 05:30 | 05:57            | 06:22 (LAR14)    | 06:29     | 07:00 | 06:36   | 07:11 |          |  |          |     |
|                     | 20:39 | 20:17            | 19 06:41 (LAR14) | 19:31     | 18:39 | 16:53   | 16:30 |          |  |          |     |
| 5                   | 05:31 | 05:58            | 06:21 (LAR14)    | 06:30     | 07:01 | 06:37   | 07:12 |          |  |          |     |
|                     | 20:39 | 20:16            | 20 06:41 (LAR14) | 19:29     | 18:37 | 16:51   | 16:30 |          |  |          |     |
| 6                   | 05:32 | 05:59            | 06:21 (LAR14)    | 06:31     | 07:02 | 06:38   | 07:13 |          |  |          |     |
|                     | 20:39 | 20:14            | 21 06:42 (LAR14) | 19:28     | 18:36 | 16:50   | 16:30 |          |  |          |     |
| 7                   | 05:32 | 06:00            | 06:22 (LAR14)    | 06:32     | 07:03 | 06:39   | 07:14 |          |  |          |     |
|                     | 20:39 | 20:13            | 20 06:42 (LAR14) | 19:26     | 18:34 | 16:49   | 16:30 |          |  |          |     |
| 8                   | 05:33 | 06:01            | 06:23 (LAR14)    | 06:33     | 07:04 | 06:41   | 07:15 |          |  |          |     |
|                     | 20:38 | 20:12            | 19 06:42 (LAR14) | 19:24     | 18:32 | 16:48   | 16:30 |          |  |          |     |
| 9                   | 05:34 | 06:02            | 06:24 (LAR14)    | 06:34     | 07:05 | 06:42   | 07:16 |          |  |          |     |
|                     | 20:38 | 20:10            | 18 06:42 (LAR14) | 19:22     | 18:31 | 16:47   | 16:30 |          |  |          |     |
| 10                  | 05:34 | 06:03            | 06:25 (LAR14)    | 06:35     | 07:06 | 06:43   | 07:17 |          |  |          |     |
|                     | 20:37 | 20:09            | 16 06:41 (LAR14) | 19:21     | 18:29 | 16:46   | 16:30 |          |  |          |     |
| 11                  | 05:35 | 06:04            | 06:26 (LAR14)    | 06:36     | 07:08 | 06:44   | 07:17 |          |  |          |     |
|                     | 20:37 | 20:08            | 15 06:41 (LAR14) | 19:19     | 18:27 | 16:45   | 16:30 |          |  |          |     |
| 12                  | 05:36 | 06:05            | 06:27 (LAR14)    | 06:37     | 07:09 | 06:46   | 07:18 |          |  |          |     |
|                     | 20:36 | 20:06            | 13 06:40 (LAR14) | 19:17     | 18:26 | 16:44   | 16:30 |          |  |          |     |
| 13                  | 05:37 | 06:06            | 06:28 (LAR14)    | 06:38     | 07:10 | 06:47   | 07:19 |          |  |          |     |
|                     | 20:36 | 20:05            | 11 06:39 (LAR14) | 19:15     | 18:24 | 16:43   | 16:30 |          |  |          |     |
| 14                  | 05:37 | 06:07            | 06:29 (LAR14)    | 06:39     | 07:11 | 06:48   | 07:20 |          |  |          |     |
|                     | 20:35 | 20:04            | 9 06:38 (LAR14)  | 19:14     | 18:23 | 16:42   | 16:30 |          |  |          |     |
| 15                  | 05:38 | 06:08            | 06:30 (LAR14)    | 06:40     | 07:12 | 06:49   | 07:21 |          |  |          |     |
|                     | 20:35 | 20:02            | 6 06:36 (LAR14)  | 19:12     | 18:21 | 16:41   | 16:30 |          |  |          |     |
| 16                  | 05:39 | 06:09            | 06:31 (LAR14)    | 06:41     | 07:13 | 06:50   | 07:21 |          |  |          |     |
|                     | 20:34 | 20:01            | 3 06:34 (LAR14)  | 19:10     | 18:19 | 16:40   | 16:31 |          |  |          |     |
| 17                  | 05:40 | 06:10            |                  | 06:42     | 07:14 | 06:52   | 07:22 |          |  |          |     |
|                     | 20:34 | 19:59            |                  | 19:09     | 18:18 | 16:39   | 16:31 |          |  |          |     |
| 18                  | 05:41 | 06:11            |                  | 06:43     | 07:15 | 06:53   | 07:23 |          |  |          |     |
|                     | 20:33 | 19:58            |                  | 19:07     | 18:16 | 16:38   | 16:31 |          |  |          |     |
| 19                  | 05:41 | 06:12            |                  | 06:44     | 07:17 | 06:54   | 07:23 |          |  |          |     |
|                     | 20:32 | 19:56            |                  | 19:05     | 18:15 | 16:38   | 16:32 |          |  |          |     |
| 20                  | 05:42 | 06:13            |                  | 06:45     | 07:18 | 06:55   | 07:24 |          |  |          |     |
|                     | 20:31 | 19:55            |                  | 19:03     | 18:13 | 16:37   | 16:32 |          |  |          |     |
| 21                  | 05:43 | 06:14            |                  | 06:46     | 07:19 | 06:56   | 07:25 |          |  |          |     |
|                     | 20:31 | 19:53            |                  | 19:02     | 18:12 | 16:36   | 16:32 |          |  |          |     |
| 22                  | 05:44 | 06:15            |                  | 06:47     | 07:20 | 06:58   | 07:25 |          |  |          |     |
|                     | 20:30 | 19:52            |                  | 19:00     | 18:10 | 16:35   | 16:33 |          |  |          |     |
| 23                  | 05:45 | 06:16            |                  | 06:48     | 07:21 | 06:59   | 07:26 |          |  |          |     |
|                     | 20:29 | 19:50            |                  | 18:58     | 18:09 | 16:35   | 16:33 |          |  |          |     |
| 24                  | 05:46 | 06:17            |                  | 06:49     | 07:22 | 07:00   | 07:26 |          |  |          |     |
|                     | 20:28 | 19:49            |                  | 18:56     | 18:07 | 16:34   | 16:34 |          |  |          |     |
| 25                  | 05:47 | 06:18            |                  | 06:50     | 06:24 | 07:01   | 07:26 |          |  |          |     |
|                     | 20:27 | 19:47            |                  | 18:55     | 17:06 | 16:34   | 16:35 |          |  |          |     |
| 26                  | 05:48 | 06:19            |                  | 06:51     | 06:25 | 07:02   | 07:27 |          |  |          |     |
|                     | 20:26 | 19:46            |                  | 18:53     | 17:04 | 16:33   | 16:35 |          |  |          |     |
| 27                  | 05:49 | 06:20            |                  | 06:52     | 06:26 | 07:03   | 07:27 |          |  |          |     |
|                     | 20:25 | 19:44            |                  | 18:51     | 17:03 | 16:33   | 16:36 |          |  |          |     |
| 28                  | 05:50 | 06:21            |                  | 06:53     | 06:27 | 07:05   | 07:28 |          |  |          |     |
|                     | 20:24 | 19:42            |                  | 18:49     | 17:02 | 16:32   | 16:37 |          |  |          |     |
| 29                  | 05:51 | 06:22            |                  | 06:54     | 06:28 | 07:06   | 07:28 |          |  |          |     |
|                     | 20:23 | 19:41            |                  | 18:48     | 17:00 | 16:32   | 16:37 |          |  |          |     |
| 30                  | 05:52 | 06:28 (LAR14)    | 06:23            | 06:56     | 06:30 | 07:07   | 07:28 |          |  |          |     |
|                     | 20:22 | 7 06:35 (LAR14)  | 19:39            | 18:46     | 16:59 | 16:31   | 16:38 |          |  |          |     |
| 31                  | 05:53 | 06:26 (LAR14)    | 06:24            |           | 06:31 |         | 07:28 |          |  |          |     |
|                     | 20:21 | 11 06:37 (LAR14) | 19:38            |           | 16:58 |         | 16:39 |          |  |          |     |
| Potential sun hours | 462   |                  | 429              |           | 375   |         | 296   |          |  |          | 285 |
| Total, worst case   | 18    |                  | 239              |           |       |         |       |          |  |          |     |
| Sun reduction       | 0,61  |                  | 0,67             |           |       |         |       |          |  |          |     |
| Oper. time red.     | 0,70  |                  | 0,70             |           |       |         |       |          |  |          |     |
| Wind dir. red.      | 0,56  |                  | 0,56             |           |       |         |       |          |  |          |     |
| Total reduction     | 0,24  |                  | 0,26             |           |       |         |       |          |  |          |     |
| Total, real         | 4     |                  | 63               |           |       |         |       |          |  |          |     |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

Shadow receptor: R109 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (81)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March                  | April                  | May            | June           |
|---------------------|----------------|----------------|------------------------|------------------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50         | 06:58 (LAR08)<br>17:25 | 06:45<br>19:25 | 05:58<br>20:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51         | 06:55 (LAR08)<br>17:26 | 06:44<br>19:26 | 05:57<br>20:29 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 16:51 (LAR01)<br>17:52 | 06:53 (LAR08)<br>17:27 | 06:42<br>20:00 | 05:56<br>20:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 16:49 (LAR01)<br>17:54 | 06:52 (LAR08)<br>17:29 | 06:40<br>20:02 | 05:54<br>20:31 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 16:47 (LAR01)<br>17:55 | 06:50 (LAR08)<br>17:30 | 06:39<br>20:03 | 05:53<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 16:47 (LAR01)<br>17:56 | 06:48 (LAR08)<br>17:31 | 06:37<br>19:31 | 05:52<br>20:32 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 16:46 (LAR01)<br>17:57 | 06:47 (LAR08)<br>17:32 | 06:35<br>20:05 | 05:51<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 16:46 (LAR01)<br>17:58 | 06:45 (LAR08)<br>17:33 | 06:34<br>20:06 | 05:50<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 16:44 (LAR01)<br>17:59 | 06:43 (LAR08)<br>17:34 | 06:32<br>20:07 | 05:48<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 16:44 (LAR01)<br>18:01 | 06:42 (LAR08)<br>17:35 | 06:30<br>19:35 | 05:47<br>20:08 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 16:45 (LAR01)<br>18:02 | 06:42 (LAR08)<br>17:36 | 06:29<br>20:09 | 05:46<br>20:35 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 16:45 (LAR01)<br>18:03 | 06:41 (LAR08)<br>17:37 | 06:27<br>20:10 | 05:45<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 16:44 (LAR01)<br>18:04 | 06:42 (LAR08)<br>17:38 | 06:25<br>19:38 | 05:44<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 16:45 (LAR01)<br>18:05 | 06:42 (LAR08)<br>17:39 | 06:24<br>19:40 | 05:43<br>20:37 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 16:46 (LAR01)<br>18:06 | 06:42 (LAR08)<br>17:41 | 06:22<br>20:13 | 05:42<br>20:37 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 16:46 (LAR01)<br>18:07 | 06:44 (LAR08)<br>17:42 | 06:21<br>19:42 | 05:41<br>20:38 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 16:47 (LAR01)<br>18:09 | 06:45 (LAR08)<br>17:43 | 06:19<br>19:43 | 05:40<br>20:38 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 16:48 (LAR01)<br>18:10 | 06:46 (LAR08)<br>17:44 | 06:17<br>19:44 | 05:39<br>20:38 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 16:50 (LAR01)<br>18:11 | 06:48 (LAR08)<br>17:45 | 06:16<br>20:17 | 05:38<br>20:39 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 16:52 (LAR01)<br>18:12 | 06:06<br>19:46         | 06:14<br>20:18 | 05:37<br>20:39 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13         | 06:13<br>19:47         | 05:36<br>20:19 | 05:26<br>20:39 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14         | 06:11<br>19:48         | 05:35<br>20:20 | 05:26<br>20:39 |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15         | 06:10<br>19:49         | 05:34<br>20:21 | 05:26<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16         | 06:08<br>19:51         | 05:34<br>20:22 | 05:26<br>20:40 |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18         | 06:07<br>19:52         | 05:33<br>20:23 | 05:27<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19         | 06:05<br>19:53         | 05:32<br>20:24 | 05:27<br>20:40 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20         | 06:04<br>19:54         | 05:32<br>20:25 | 05:27<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21         | 06:03<br>19:55         | 05:31<br>20:25 | 05:28<br>20:40 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22         | 06:01<br>19:56         | 05:30<br>20:26 | 05:28<br>20:40 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23         | 06:00<br>19:57         | 05:30<br>20:27 | 05:28<br>20:40 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24         |                        | 05:29<br>20:28 |                |
| Potential sun hours | 295            | 296            | 369                    | 400                    | 451            | 455            |
| Total, worst case   |                | 285            | 397                    |                        |                |                |
| Sun reduction       |                | 0,46           | 0,44                   |                        |                |                |
| Oper. time red.     |                | 0,70           | 0,70                   |                        |                |                |
| Wind dir. red.      |                | 0,57           | 0,63                   |                        |                |                |
| Total reduction     |                | 0,18           | 0,19                   |                        |                |                |
| Total, real         |                | 52             | 77                     |                        |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R109 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (81)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  | August | September | October          | November         | December         |                  |       |
|---------------------|-------|--------|-----------|------------------|------------------|------------------|------------------|-------|
| 1                   | 05:29 | 05:54  | 06:25     | 06:57            | 07:21 (LAR08)    | 06:32            | 16:14 (LAR01)    | 07:08 |
|                     | 20:40 | 20:20  | 19:36     | 18:44            | 28 07:49 (LAR08) | 16:56            | 18 16:32 (LAR01) | 16:31 |
| 2                   | 05:29 | 05:55  | 06:26     | 06:58            | 07:20 (LAR08)    | 06:33            | 16:14 (LAR01)    | 07:09 |
|                     | 20:40 | 20:19  | 19:34     | 18:42            | 29 07:49 (LAR08) | 16:55            | 17 16:31 (LAR01) | 16:31 |
| 3                   | 05:30 | 05:56  | 06:27     | 06:59            | 07:20 (LAR08)    | 06:34            | 16:14 (LAR01)    | 07:10 |
|                     | 20:39 | 20:18  | 19:33     | 18:41            | 29 07:49 (LAR08) | 16:54            | 15 16:29 (LAR01) | 16:30 |
| 4                   | 05:31 | 05:57  | 06:29     | 07:00            | 07:20 (LAR08)    | 06:36            | 16:16 (LAR01)    | 07:11 |
|                     | 20:39 | 20:17  | 19:31     | 18:39            | 28 07:48 (LAR08) | 16:53            | 13 16:29 (LAR01) | 16:30 |
| 5                   | 05:31 | 05:58  | 06:30     | 07:01            | 07:21 (LAR08)    | 06:37            | 16:16 (LAR01)    | 07:12 |
|                     | 20:39 | 20:15  | 19:29     | 18:37            | 27 07:48 (LAR08) | 16:51            | 11 16:27 (LAR01) | 16:30 |
| 6                   | 05:32 | 05:59  | 06:31     | 07:02            | 07:22 (LAR08)    | 06:38            | 16:17 (LAR01)    | 07:13 |
|                     | 20:39 | 20:14  | 19:27     | 18:36            | 25 07:47 (LAR08) | 16:50            | 9 16:26 (LAR01)  | 16:30 |
| 7                   | 05:32 | 06:00  | 06:32     | 07:03            | 07:23 (LAR08)    | 06:39            | 16:20 (LAR01)    | 07:14 |
|                     | 20:38 | 20:13  | 19:26     | 18:34            | 23 07:46 (LAR08) | 16:49            | 5 16:25 (LAR01)  | 16:30 |
| 8                   | 05:33 | 06:01  | 06:33     | 07:04            | 07:25 (LAR08)    | 06:41            | 16:22 (LAR01)    | 07:15 |
|                     | 20:38 | 20:12  | 19:24     | 18:32            | 21 07:46 (LAR08) | 16:48            | 2 16:24 (LAR01)  | 16:30 |
| 9                   | 05:34 | 06:02  | 06:34     | 07:05            | 07:26 (LAR08)    | 06:42            |                  | 07:16 |
|                     | 20:38 | 20:10  | 19:22     | 18:31            | 18 07:44 (LAR08) | 16:47            |                  | 16:30 |
| 10                  | 05:34 | 06:03  | 06:35     | 07:06            | 07:27 (LAR08)    | 06:43            |                  | 07:17 |
|                     | 20:37 | 20:09  | 19:21     | 18:29            | 15 07:42 (LAR08) | 16:46            |                  | 16:30 |
| 11                  | 05:35 | 06:04  | 06:36     | 07:07            | 07:28 (LAR08)    | 06:44            |                  | 07:17 |
|                     | 20:37 | 20:08  | 19:19     | 18:27            | 12 07:40 (LAR08) | 16:45            |                  | 16:30 |
| 12                  | 05:36 | 06:05  | 06:37     | 07:09            | 07:29 (LAR08)    | 06:45            |                  | 07:18 |
|                     | 20:36 | 20:06  | 19:17     | 18:26            | 8 07:37 (LAR08)  | 16:44            |                  | 16:30 |
| 13                  | 05:37 | 06:06  | 06:38     | 07:10            |                  | 06:47            |                  | 07:19 |
|                     | 20:36 | 20:05  | 19:15     | 18:24            |                  | 16:43            |                  | 16:30 |
| 14                  | 05:37 | 06:07  | 06:39     | 07:11            |                  | 06:48            |                  | 07:20 |
|                     | 20:35 | 20:04  | 19:14     | 18:23            |                  | 16:42            |                  | 16:30 |
| 15                  | 05:38 | 06:08  | 06:40     | 07:12            |                  | 06:49            |                  | 07:21 |
|                     | 20:35 | 20:02  | 19:12     | 18:21            |                  | 16:41            |                  | 16:30 |
| 16                  | 05:39 | 06:09  | 06:41     | 07:13            |                  | 06:50            |                  | 07:21 |
|                     | 20:34 | 20:01  | 19:10     | 18:19            |                  | 16:40            |                  | 16:31 |
| 17                  | 05:40 | 06:10  | 06:42     | 07:14            |                  | 06:52            |                  | 07:22 |
|                     | 20:34 | 19:59  | 19:08     | 18:18            |                  | 16:39            |                  | 16:31 |
| 18                  | 05:41 | 06:11  | 06:43     | 07:15            |                  | 06:53            |                  | 07:23 |
|                     | 20:33 | 19:58  | 19:07     | 18:16            |                  | 16:38            |                  | 16:31 |
| 19                  | 05:41 | 06:12  | 06:44     | 07:17            |                  | 06:54            |                  | 07:23 |
|                     | 20:32 | 19:56  | 19:05     | 18:15            |                  | 16:38            |                  | 16:32 |
| 20                  | 05:42 | 06:13  | 06:45     | 07:18            |                  | 06:55            |                  | 07:24 |
|                     | 20:31 | 19:55  | 19:03     | 18:13            |                  | 16:37            |                  | 16:32 |
| 21                  | 05:43 | 06:14  | 06:46     | 07:19            |                  | 06:56            |                  | 07:24 |
|                     | 20:31 | 19:53  | 19:02     | 18:12            |                  | 16:36            |                  | 16:32 |
| 22                  | 05:44 | 06:15  | 06:47     | 07:20            |                  | 17:22 (LAR01)    | 06:58            | 07:25 |
|                     | 20:30 | 19:52  | 19:00     | 18:10            | 10 17:32 (LAR01) | 16:35            |                  | 16:33 |
| 23                  | 05:45 | 06:16  | 06:48     | 07:21            |                  | 17:19 (LAR01)    | 06:59            | 07:26 |
|                     | 20:29 | 19:50  | 18:58     | 18:09            | 15 17:34 (LAR01) | 16:35            |                  | 16:33 |
| 24                  | 05:46 | 06:17  | 06:49     | 07:22            |                  | 17:18 (LAR01)    | 07:00            | 07:26 |
|                     | 20:28 | 19:49  | 18:56     | 7 07:41 (LAR08)  | 18 17:36 (LAR01) | 16:34            |                  | 16:34 |
| 25                  | 05:47 | 06:18  | 06:50     | 07:30 (LAR08)    | 06:24            | 16:17 (LAR01)    | 07:01            | 07:26 |
|                     | 20:27 | 19:47  | 18:55     | 15 07:45 (LAR08) | 17:06            | 20 16:37 (LAR01) | 16:34            | 16:35 |
| 26                  | 05:48 | 06:19  | 06:51     | 07:28 (LAR08)    | 06:25            | 16:15 (LAR01)    | 07:02            | 07:27 |
|                     | 20:26 | 19:46  | 18:53     | 19 07:47 (LAR08) | 17:04            | 23 16:38 (LAR01) | 16:33            | 16:35 |
| 27                  | 05:49 | 06:20  | 06:52     | 07:26 (LAR08)    | 06:26            | 16:14 (LAR01)    | 07:03            | 07:27 |
|                     | 20:25 | 19:44  | 18:51     | 22 07:48 (LAR08) | 17:03            | 24 16:38 (LAR01) | 16:33            | 16:36 |
| 28                  | 05:50 | 06:21  | 06:53     | 07:24 (LAR08)    | 06:27            | 16:15 (LAR01)    | 07:04            | 07:27 |
|                     | 20:24 | 19:42  | 18:49     | 24 07:48 (LAR08) | 17:02            | 23 16:38 (LAR01) | 16:32            | 16:37 |
| 29                  | 05:51 | 06:22  | 06:54     | 07:23 (LAR08)    | 06:28            | 16:14 (LAR01)    | 07:06            | 07:28 |
|                     | 20:23 | 19:41  | 18:48     | 26 07:49 (LAR08) | 17:00            | 22 16:36 (LAR01) | 16:32            | 16:37 |
| 30                  | 05:52 | 06:23  | 06:56     | 07:22 (LAR08)    | 06:30            | 16:14 (LAR01)    | 07:07            | 07:28 |
|                     | 20:22 | 19:39  | 18:46     | 27 07:49 (LAR08) | 16:59            | 21 16:35 (LAR01) | 16:31            | 16:38 |
| 31                  | 05:53 | 06:24  |           | 06:31            |                  | 16:14 (LAR01)    |                  | 07:28 |
|                     | 20:21 | 19:38  |           | 16:58            | 20 16:34 (LAR01) |                  |                  | 16:39 |
| Potential sun hours | 462   | 429    | 375       | 344              | 296              | 285              |                  |       |
| Total, worst case   |       |        | 140       | 459              | 90               |                  |                  |       |
| Sun reduction       |       |        | 0,58      | 0,44             | 0,41             |                  |                  |       |
| Oper. time red.     |       |        | 0,70      | 0,70             | 0,70             |                  |                  |       |
| Wind dir. red.      |       |        | 0,63      | 0,60             | 0,57             |                  |                  |       |
| Total reduction     |       |        | 0,26      | 0,18             | 0,16             |                  |                  |       |
| Total, real         |       |        | 36        | 84               | 14               |                  |                  |       |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R11 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (6)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January | February      | March         | April | May   | June  |
|---------------------|---------|---------------|---------------|-------|-------|-------|
| 1                   | 07:28   | 07:14         | 07:43 (LAR04) | 06:37 | 06:45 | 05:58 |
|                     | 16:40   | 17:15         | 08:12 (LAR04) | 17:50 | 19:25 | 19:58 |
| 2                   | 07:29   | 07:13         | 07:43 (LAR04) | 06:36 | 06:44 | 05:57 |
|                     | 16:41   | 17:16         | 08:12 (LAR04) | 17:51 | 19:26 | 19:59 |
| 3                   | 07:29   | 07:12         | 07:43 (LAR04) | 06:34 | 06:42 | 05:56 |
|                     | 16:42   | 17:17         | 08:13 (LAR04) | 17:52 | 19:27 | 20:00 |
| 4                   | 07:29   | 07:11         | 07:42 (LAR04) | 06:33 | 06:40 | 05:55 |
|                     | 16:43   | 17:19         | 08:12 (LAR04) | 17:54 | 19:29 | 20:02 |
| 5                   | 07:29   | 07:10         | 07:42 (LAR04) | 06:31 | 06:39 | 05:53 |
|                     | 16:43   | 17:20         | 08:12 (LAR04) | 17:55 | 19:30 | 20:03 |
| 6                   | 07:29   | 07:09         | 07:43 (LAR04) | 06:29 | 06:37 | 05:52 |
|                     | 16:44   | 17:21         | 08:12 (LAR04) | 17:56 | 19:31 | 20:04 |
| 7                   | 07:29   | 07:08         | 07:43 (LAR04) | 06:28 | 06:35 | 05:51 |
|                     | 16:45   | 17:23         | 08:12 (LAR04) | 17:57 | 19:32 | 20:05 |
| 8                   | 07:28   | 07:07         | 07:44 (LAR04) | 06:26 | 06:34 | 05:50 |
|                     | 16:46   | 17:24         | 08:12 (LAR04) | 17:58 | 19:33 | 20:06 |
| 9                   | 07:28   | 07:06         | 07:44 (LAR04) | 06:24 | 06:32 | 05:48 |
|                     | 16:47   | 17:25         | 08:11 (LAR04) | 17:59 | 19:34 | 20:07 |
| 10                  | 07:28   | 07:04         | 07:44 (LAR04) | 06:23 | 06:30 | 05:47 |
|                     | 16:48   | 17:26         | 08:11 (LAR04) | 18:01 | 19:35 | 20:08 |
| 11                  | 07:28   | 07:03         | 07:46 (LAR04) | 06:21 | 06:29 | 05:46 |
|                     | 16:50   | 17:28         | 08:10 (LAR04) | 18:02 | 19:36 | 20:09 |
| 12                  | 07:28   | 07:02         | 07:47 (LAR04) | 06:19 | 06:27 | 05:45 |
|                     | 16:51   | 17:29         | 08:10 (LAR04) | 18:03 | 19:37 | 20:10 |
| 13                  | 07:27   | 07:01         | 07:48 (LAR04) | 06:18 | 06:25 | 05:44 |
|                     | 16:52   | 17:30         | 08:08 (LAR04) | 18:04 | 19:38 | 20:11 |
| 14                  | 07:27   | 06:59         | 07:50 (LAR04) | 06:16 | 06:24 | 05:43 |
|                     | 16:53   | 17:32         | 08:06 (LAR04) | 18:05 | 19:40 | 20:12 |
| 15                  | 07:26   | 06:58         | 07:53 (LAR04) | 06:14 | 06:22 | 05:42 |
|                     | 16:54   | 17:33         | 08:04 (LAR04) | 18:06 | 19:41 | 20:13 |
| 16                  | 07:26   | 06:57         |               | 06:13 | 06:21 | 05:41 |
|                     | 16:55   | 17:34         |               | 18:07 | 19:42 | 20:14 |
| 17                  | 07:26   | 06:55         |               | 06:11 | 06:19 | 05:40 |
|                     | 16:56   | 17:35         |               | 18:09 | 19:43 | 20:15 |
| 18                  | 07:25   | 06:54         |               | 06:09 | 06:17 | 05:39 |
|                     | 16:57   | 17:37         |               | 18:10 | 19:44 | 20:16 |
| 19                  | 07:24   | 06:52         |               | 06:08 | 06:16 | 05:38 |
|                     | 16:59   | 17:38         |               | 18:11 | 19:45 | 20:17 |
| 20                  | 07:24   | 06:51         |               | 06:06 | 06:14 | 05:37 |
|                     | 17:00   | 17:39         |               | 18:12 | 19:46 | 20:18 |
| 21                  | 07:23   | 06:49         |               | 06:04 | 06:13 | 05:36 |
|                     | 17:01   | 17:40         |               | 18:13 | 19:47 | 20:19 |
| 22                  | 07:23   | 06:48         |               | 06:02 | 06:11 | 05:35 |
|                     | 17:02   | 17:42         |               | 18:14 | 19:48 | 20:20 |
| 23                  | 07:22   | 07:50 (LAR04) | 06:47         | 06:01 | 06:10 | 05:35 |
|                     | 17:04   | 08:00 (LAR04) | 17:43         | 18:15 | 19:49 | 20:21 |
| 24                  | 07:21   | 07:48 (LAR04) | 06:45         | 05:59 | 06:08 | 05:34 |
|                     | 17:05   | 08:02 (LAR04) | 17:44         | 18:16 | 19:51 | 20:22 |
| 25                  | 07:20   | 07:47 (LAR04) | 06:44         | 05:57 | 06:07 | 05:33 |
|                     | 17:06   | 08:04 (LAR04) | 17:45         | 18:18 | 19:52 | 20:23 |
| 26                  | 07:20   | 07:45 (LAR04) | 06:42         | 05:56 | 06:05 | 05:32 |
|                     | 17:07   | 08:05 (LAR04) | 17:46         | 18:19 | 19:53 | 20:24 |
| 27                  | 07:19   | 07:45 (LAR04) | 06:40         | 05:54 | 06:04 | 05:32 |
|                     | 17:09   | 08:08 (LAR04) | 17:48         | 18:20 | 19:54 | 20:25 |
| 28                  | 07:18   | 07:45 (LAR04) | 06:39         | 05:52 | 06:03 | 05:31 |
|                     | 17:10   | 08:09 (LAR04) | 17:49         | 18:21 | 19:55 | 20:25 |
| 29                  | 07:17   | 07:44 (LAR04) |               | 06:51 | 06:01 | 05:30 |
|                     | 17:11   | 08:10 (LAR04) |               | 19:22 | 19:56 | 20:26 |
| 30                  | 07:16   | 07:44 (LAR04) |               | 06:49 | 06:00 | 05:30 |
|                     | 17:12   | 08:10 (LAR04) |               | 19:23 | 19:57 | 20:27 |
| 31                  | 07:15   | 07:43 (LAR04) |               | 06:47 |       | 05:29 |
|                     | 17:14   | 08:11 (LAR04) |               | 19:24 |       | 20:28 |
| Potential sun hours | 295     | 296           | 369           | 400   | 450   | 455   |
| Total, worst case   | 188     | 382           |               |       |       | 585   |
| Sun reduction       | 0,44    | 0,46          |               |       |       | 0,54  |
| Oper. time red.     | 0,70    | 0,70          |               |       |       | 0,70  |
| Wind dir. red.      | 0,67    | 0,67          |               |       |       | 0,67  |
| Total reduction     | 0,21    | 0,21          |               |       |       | 0,25  |
| Total, real         | 39      | 82            |               |       |       | 148   |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R11 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (6)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August        |       | September |       | October |               | November |               | December      |       |
|---------------------|-------|---------------|-------|-----------|-------|---------|---------------|----------|---------------|---------------|-------|
| 1                   | 05:29 | 19:53 (LAR01) | 05:54 | 06:25     | 06:57 |         |               | 06:32    | 07:14 (LAR04) | 07:08         |       |
|                     | 20:40 | 20:14 (LAR01) | 20:20 | 19:36     | 18:44 |         |               | 16:56    | 27            | 07:41 (LAR04) | 16:31 |
| 2                   | 05:29 | 19:54 (LAR01) | 05:55 | 06:27     | 06:58 |         |               | 06:33    |               | 07:13 (LAR04) | 07:09 |
|                     | 20:40 | 20:14 (LAR01) | 20:19 | 19:34     | 18:42 |         |               | 16:55    | 28            | 07:41 (LAR04) | 16:31 |
| 3                   | 05:30 | 19:54 (LAR01) | 05:56 | 06:28     | 06:59 |         |               | 06:34    |               | 07:13 (LAR04) | 07:10 |
|                     | 20:39 | 20:14 (LAR01) | 20:18 | 19:33     | 18:41 |         |               | 16:54    | 28            | 07:41 (LAR04) | 16:31 |
| 4                   | 05:31 | 19:56 (LAR01) | 05:57 | 06:29     | 07:00 |         |               | 06:36    |               | 07:13 (LAR04) | 07:11 |
|                     | 20:39 | 20:14 (LAR01) | 20:17 | 19:31     | 18:39 |         |               | 16:53    | 29            | 07:42 (LAR04) | 16:30 |
| 5                   | 05:31 | 19:56 (LAR01) | 05:58 | 06:30     | 07:01 |         |               | 06:37    |               | 07:12 (LAR04) | 07:12 |
|                     | 20:39 | 20:13 (LAR01) | 20:15 | 19:29     | 18:37 |         |               | 16:51    | 30            | 07:42 (LAR04) | 16:30 |
| 6                   | 05:32 | 19:58 (LAR01) | 05:59 | 06:31     | 07:02 |         |               | 06:38    |               | 07:12 (LAR04) | 07:13 |
|                     | 20:39 | 20:13 (LAR01) | 20:14 | 19:28     | 18:36 |         |               | 16:50    | 30            | 07:42 (LAR04) | 16:30 |
| 7                   | 05:32 | 19:58 (LAR01) | 06:00 | 06:32     | 07:03 |         |               | 06:39    |               | 07:13 (LAR04) | 07:14 |
|                     | 20:38 | 20:12 (LAR01) | 20:13 | 19:26     | 18:34 |         |               | 16:49    | 30            | 07:43 (LAR04) | 16:30 |
| 8                   | 05:33 | 20:00 (LAR01) | 06:01 | 06:33     | 07:04 |         |               | 06:41    |               | 07:13 (LAR04) | 07:15 |
|                     | 20:38 | 20:12 (LAR01) | 20:12 | 19:24     | 18:32 |         |               | 16:48    | 30            | 07:43 (LAR04) | 16:30 |
| 9                   | 05:34 | 20:04 (LAR01) | 06:02 | 06:34     | 07:05 |         |               | 06:42    |               | 07:13 (LAR04) | 07:16 |
|                     | 20:38 | 20:10 (LAR01) | 20:10 | 19:22     | 18:31 |         |               | 16:47    | 29            | 07:42 (LAR04) | 16:30 |
| 10                  | 05:34 |               | 06:03 | 06:35     | 07:06 |         |               | 06:43    |               | 07:14 (LAR04) | 07:17 |
|                     | 20:37 |               | 20:09 | 19:21     | 18:29 |         |               | 16:46    | 29            | 07:43 (LAR04) | 16:30 |
| 11                  | 05:35 |               | 06:04 | 06:36     | 07:07 |         |               | 06:44    |               | 07:14 (LAR04) | 07:17 |
|                     | 20:37 |               | 20:08 | 19:19     | 18:27 |         |               | 16:45    | 28            | 07:42 (LAR04) | 16:30 |
| 12                  | 05:36 |               | 06:05 | 06:37     | 07:09 |         |               | 06:45    |               | 07:14 (LAR04) | 07:18 |
|                     | 20:36 |               | 20:06 | 19:17     | 18:26 |         |               | 16:44    | 27            | 07:41 (LAR04) | 16:30 |
| 13                  | 05:37 |               | 06:06 | 06:38     | 07:10 |         |               | 06:47    |               | 07:16 (LAR04) | 07:19 |
|                     | 20:36 |               | 20:05 | 19:15     | 18:24 |         |               | 16:43    | 25            | 07:41 (LAR04) | 16:30 |
| 14                  | 05:37 |               | 06:07 | 06:39     | 07:11 |         |               | 06:48    |               | 07:17 (LAR04) | 07:20 |
|                     | 20:35 |               | 20:04 | 19:14     | 18:23 |         |               | 16:42    | 24            | 07:41 (LAR04) | 16:30 |
| 15                  | 05:38 |               | 06:08 | 06:40     | 07:12 |         |               | 06:49    |               | 07:17 (LAR04) | 07:21 |
|                     | 20:35 |               | 20:02 | 19:12     | 18:21 |         |               | 16:41    | 22            | 07:39 (LAR04) | 16:30 |
| 16                  | 05:39 |               | 06:09 | 06:41     | 07:13 |         |               | 06:50    |               | 07:19 (LAR04) | 07:21 |
|                     | 20:34 |               | 20:01 | 19:10     | 18:19 |         |               | 16:40    | 20            | 07:39 (LAR04) | 16:31 |
| 17                  | 05:40 |               | 06:10 | 06:42     | 07:14 |         |               | 06:52    |               | 07:21 (LAR04) | 07:22 |
|                     | 20:34 |               | 19:59 | 19:09     | 18:18 |         |               | 16:39    | 17            | 07:38 (LAR04) | 16:31 |
| 18                  | 05:41 |               | 06:11 | 06:43     | 07:15 |         |               | 06:53    |               | 07:22 (LAR04) | 07:23 |
|                     | 20:33 |               | 19:58 | 19:07     | 18:16 |         |               | 16:38    | 14            | 07:36 (LAR04) | 16:31 |
| 19                  | 05:41 |               | 06:12 | 06:44     | 07:17 |         |               | 06:54    |               | 07:24 (LAR04) | 07:23 |
|                     | 20:32 |               | 19:56 | 19:05     | 18:15 |         |               | 16:38    | 10            | 07:34 (LAR04) | 16:32 |
| 20                  | 05:42 |               | 06:13 | 06:45     | 07:18 |         |               | 06:55    |               |               | 07:24 |
|                     | 20:31 |               | 19:55 | 19:03     | 18:13 |         |               | 16:37    |               |               | 16:32 |
| 21                  | 05:43 |               | 06:14 | 06:46     | 07:19 |         |               | 06:56    |               |               | 07:24 |
|                     | 20:31 |               | 19:53 | 19:02     | 18:12 |         |               | 16:36    |               |               | 16:33 |
| 22                  | 05:44 |               | 06:15 | 06:47     | 07:20 |         |               | 06:58    |               |               | 07:25 |
|                     | 20:30 |               | 19:52 | 19:00     | 18:10 |         |               | 16:36    |               |               | 16:33 |
| 23                  | 05:45 |               | 06:16 | 06:48     | 07:21 |         |               | 06:59    |               |               | 07:26 |
|                     | 20:29 |               | 19:50 | 18:58     | 18:09 |         |               | 16:35    |               |               | 16:34 |
| 24                  | 05:46 |               | 06:17 | 06:49     | 07:22 |         |               | 07:00    |               |               | 07:26 |
|                     | 20:28 |               | 19:49 | 18:56     | 18:07 |         |               | 16:34    |               |               | 16:34 |
| 25                  | 05:47 |               | 06:18 | 06:50     | 06:24 |         |               | 07:01    |               |               | 07:26 |
|                     | 20:27 |               | 19:47 | 18:55     | 17:06 |         |               | 16:34    |               |               | 16:35 |
| 26                  | 05:48 |               | 06:19 | 06:51     | 06:25 |         | 07:26 (LAR04) | 07:02    |               |               | 07:27 |
|                     | 20:26 |               | 19:46 | 18:53     | 17:04 | 2       | 07:28 (LAR04) | 16:33    |               |               | 16:35 |
| 27                  | 05:49 |               | 06:20 | 06:52     | 06:26 |         | 07:21 (LAR04) | 07:03    |               |               | 07:27 |
|                     | 20:25 |               | 19:44 | 18:51     | 17:03 | 12      | 07:33 (LAR04) | 16:33    |               |               | 16:36 |
| 28                  | 05:50 |               | 06:21 | 06:53     | 06:27 |         | 07:19 (LAR04) | 07:04    |               |               | 07:27 |
|                     | 20:24 |               | 19:42 | 18:49     | 17:02 | 17      | 07:36 (LAR04) | 16:32    |               |               | 16:37 |
| 29                  | 05:51 |               | 06:22 | 06:54     | 06:28 |         | 07:17 (LAR04) | 07:06    |               |               | 07:28 |
|                     | 20:23 |               | 19:41 | 18:48     | 17:00 | 21      | 07:38 (LAR04) | 16:32    |               |               | 16:37 |
| 30                  | 05:52 |               | 06:23 | 06:56     | 06:30 |         | 07:15 (LAR04) | 07:07    |               |               | 07:28 |
|                     | 20:22 |               | 19:39 | 18:46     | 16:59 | 24      | 07:39 (LAR04) | 16:31    |               |               | 16:38 |
| 31                  | 05:53 |               | 06:24 |           | 06:31 |         | 07:15 (LAR04) |          |               |               | 07:28 |
|                     | 20:21 |               | 19:38 |           | 16:58 | 25      | 07:40 (LAR04) |          |               |               | 16:39 |
| Potential sun hours | 462   |               | 429   |           | 375   |         | 344           |          | 296           |               | 285   |
| Total, worst case   | 143   |               |       |           |       |         |               | 101      |               | 477           |       |
| Sun reduction       | 0,61  |               |       |           |       |         |               | 0,44     |               | 0,41          |       |
| Oper. time red.     | 0,70  |               |       |           |       |         |               | 0,70     |               | 0,70          |       |
| Wind dir. red.      | 0,67  |               |       |           |       |         |               | 0,67     |               | 0,67          |       |
| Total reduction     | 0,28  |               |       |           |       |         |               | 0,20     |               | 0,19          |       |
| Total, real         | 41    |               |       |           |       |         |               | 21       |               | 91            |       |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R110 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (82)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January |                  | February |                  | March |       | April            |       | May   |  | June |  |
|---------------------|---------|------------------|----------|------------------|-------|-------|------------------|-------|-------|--|------|--|
| 1                   | 07:29   | 15:35 (LAR13)    | 07:14    | 15:49 (LAR13)    | 06:37 | 06:45 | 17:47 (LAR12)    | 05:58 | 05:29 |  |      |  |
|                     | 16:40   | 30 16:05 (LAR13) | 17:15    | 26 16:15 (LAR13) | 17:50 | 19:25 | 57 18:44 (LAR12) | 19:58 | 20:29 |  |      |  |
| 2                   | 07:29   | 15:36 (LAR13)    | 07:13    | 15:50 (LAR13)    | 06:36 | 06:44 | 17:47 (LAR12)    | 05:57 | 05:28 |  |      |  |
|                     | 16:41   | 31 16:07 (LAR13) | 17:16    | 24 16:14 (LAR13) | 17:51 | 19:26 | 56 18:43 (LAR12) | 19:59 | 20:30 |  |      |  |
| 3                   | 07:29   | 15:36 (LAR13)    | 07:12    | 15:52 (LAR13)    | 06:34 | 06:42 | 07:09 (LAR03)    | 05:56 | 05:28 |  |      |  |
|                     | 16:42   | 31 16:07 (LAR13) | 17:17    | 20 16:12 (LAR13) | 17:52 | 19:28 | 66 18:44 (LAR12) | 20:01 | 20:30 |  |      |  |
| 4                   | 07:29   | 15:36 (LAR13)    | 07:11    | 15:55 (LAR13)    | 06:33 | 06:40 | 07:05 (LAR03)    | 05:55 | 05:27 |  |      |  |
|                     | 16:43   | 32 16:08 (LAR13) | 17:19    | 15 16:10 (LAR13) | 17:54 | 19:29 | 73 18:44 (LAR12) | 20:02 | 20:31 |  |      |  |
| 5                   | 07:29   | 15:36 (LAR13)    | 07:10    | 15:58 (LAR13)    | 06:31 | 06:39 | 07:03 (LAR03)    | 05:53 | 05:27 |  |      |  |
|                     | 16:43   | 33 16:09 (LAR13) | 17:20    | 7 16:05 (LAR13)  | 17:55 | 19:30 | 76 18:43 (LAR12) | 20:03 | 20:32 |  |      |  |
| 6                   | 07:29   | 15:36 (LAR13)    | 07:09    |                  | 06:29 | 06:37 | 07:02 (LAR03)    | 05:52 | 05:27 |  |      |  |
|                     | 16:44   | 33 16:09 (LAR13) | 17:21    |                  | 17:56 | 19:31 | 78 18:43 (LAR12) | 20:04 | 20:32 |  |      |  |
| 7                   | 07:29   | 15:37 (LAR13)    | 07:08    |                  | 06:28 | 06:35 | 07:00 (LAR03)    | 05:51 | 05:26 |  |      |  |
|                     | 16:45   | 33 16:10 (LAR13) | 17:23    |                  | 17:57 | 19:32 | 81 18:43 (LAR12) | 20:05 | 20:33 |  |      |  |
| 8                   | 07:29   | 15:37 (LAR13)    | 07:07    |                  | 06:26 | 06:34 | 06:59 (LAR03)    | 05:50 | 05:26 |  |      |  |
|                     | 16:46   | 34 16:11 (LAR13) | 17:24    |                  | 17:58 | 19:33 | 81 18:42 (LAR12) | 20:06 | 20:34 |  |      |  |
| 9                   | 07:28   | 15:37 (LAR13)    | 07:06    |                  | 06:25 | 06:32 | 06:59 (LAR03)    | 05:48 | 05:26 |  |      |  |
|                     | 16:47   | 35 16:12 (LAR13) | 17:25    |                  | 17:59 | 19:34 | 81 18:42 (LAR12) | 20:07 | 20:34 |  |      |  |
| 10                  | 07:28   | 15:37 (LAR13)    | 07:04    |                  | 06:23 | 06:30 | 06:58 (LAR03)    | 05:47 | 05:26 |  |      |  |
|                     | 16:48   | 35 16:12 (LAR13) | 17:26    |                  | 18:01 | 19:35 | 80 18:41 (LAR12) | 20:08 | 20:35 |  |      |  |
| 11                  | 07:28   | 15:37 (LAR13)    | 07:03    |                  | 06:21 | 06:29 | 06:57 (LAR03)    | 05:46 | 05:25 |  |      |  |
|                     | 16:50   | 36 16:13 (LAR13) | 17:28    |                  | 18:02 | 19:36 | 81 18:40 (LAR12) | 20:09 | 20:35 |  |      |  |
| 12                  | 07:28   | 15:38 (LAR13)    | 07:02    |                  | 06:20 | 06:27 | 06:58 (LAR03)    | 05:45 | 05:25 |  |      |  |
|                     | 16:51   | 36 16:14 (LAR13) | 17:29    |                  | 18:03 | 19:37 | 79 18:40 (LAR12) | 20:10 | 20:36 |  |      |  |
| 13                  | 07:27   | 15:37 (LAR13)    | 07:01    |                  | 06:18 | 06:25 | 06:57 (LAR03)    | 05:44 | 05:25 |  |      |  |
|                     | 16:52   | 37 16:14 (LAR13) | 17:30    |                  | 18:04 | 19:39 | 78 18:39 (LAR12) | 20:11 | 20:36 |  |      |  |
| 14                  | 07:27   | 15:38 (LAR13)    | 06:59    |                  | 06:16 | 06:24 | 06:58 (LAR03)    | 05:43 | 05:25 |  |      |  |
|                     | 16:53   | 37 16:15 (LAR13) | 17:32    |                  | 18:05 | 19:40 | 75 18:38 (LAR12) | 20:12 | 20:37 |  |      |  |
| 15                  | 07:27   | 15:38 (LAR13)    | 06:58    |                  | 06:14 | 06:22 | 06:58 (LAR03)    | 05:42 | 05:25 |  |      |  |
|                     | 16:54   | 37 16:15 (LAR13) | 17:33    |                  | 18:06 | 19:41 | 71 18:37 (LAR12) | 20:13 | 20:37 |  |      |  |
| 16                  | 07:26   | 15:38 (LAR13)    | 06:57    |                  | 06:13 | 06:21 | 06:59 (LAR03)    | 05:41 | 05:25 |  |      |  |
|                     | 16:55   | 38 16:16 (LAR13) | 17:34    |                  | 18:08 | 19:42 | 68 18:36 (LAR12) | 20:14 | 20:38 |  |      |  |
| 17                  | 07:26   | 15:38 (LAR13)    | 06:55    |                  | 06:11 | 06:19 | 07:00 (LAR03)    | 05:40 | 05:25 |  |      |  |
|                     | 16:56   | 38 16:16 (LAR13) | 17:35    |                  | 18:09 | 19:43 | 64 18:35 (LAR12) | 20:15 | 20:38 |  |      |  |
| 18                  | 07:25   | 15:39 (LAR13)    | 06:54    |                  | 06:09 | 06:18 | 07:01 (LAR03)    | 05:39 | 05:25 |  |      |  |
|                     | 16:57   | 38 16:17 (LAR13) | 17:37    |                  | 18:10 | 19:44 | 57 18:33 (LAR12) | 20:16 | 20:38 |  |      |  |
| 19                  | 07:25   | 15:39 (LAR13)    | 06:52    |                  | 06:08 | 06:16 | 07:03 (LAR03)    | 05:38 | 05:25 |  |      |  |
|                     | 16:59   | 38 16:17 (LAR13) | 17:38    |                  | 18:11 | 19:45 | 51 18:32 (LAR12) | 20:17 | 20:39 |  |      |  |
| 20                  | 07:24   | 15:39 (LAR13)    | 06:51    |                  | 06:06 | 06:14 | 06:59 (LAR03)    | 05:37 | 05:25 |  |      |  |
|                     | 17:00   | 38 16:17 (LAR13) | 17:39    |                  | 18:12 | 19:46 | 38 18:30 (LAR12) | 20:18 | 20:39 |  |      |  |
| 21                  | 07:23   | 15:40 (LAR13)    | 06:50    |                  | 06:04 | 06:13 | 07:00 (LAR03)    | 05:36 | 05:26 |  |      |  |
|                     | 17:01   | 38 16:18 (LAR13) | 17:40    |                  | 18:13 | 19:47 | 35 18:29 (LAR12) | 20:19 | 20:39 |  |      |  |
| 22                  | 07:23   | 15:40 (LAR13)    | 06:48    |                  | 06:03 | 06:11 | 06:59 (LAR03)    | 05:35 | 05:26 |  |      |  |
|                     | 17:02   | 38 16:18 (LAR13) | 17:42    |                  | 18:14 | 19:48 | 31 18:26 (LAR12) | 20:20 | 20:39 |  |      |  |
| 23                  | 07:22   | 15:41 (LAR13)    | 06:47    |                  | 06:01 | 06:10 | 06:58 (LAR03)    | 05:35 | 05:26 |  |      |  |
|                     | 17:04   | 37 16:18 (LAR13) | 17:43    |                  | 18:15 | 19:50 | 26 18:24 (LAR12) | 20:21 | 20:40 |  |      |  |
| 24                  | 07:21   | 15:41 (LAR13)    | 06:45    |                  | 05:59 | 06:08 | 06:59 (LAR03)    | 05:34 | 05:26 |  |      |  |
|                     | 17:05   | 37 16:18 (LAR13) | 17:44    |                  | 18:16 | 19:51 | 21 18:22 (LAR12) | 20:22 | 20:40 |  |      |  |
| 25                  | 07:21   | 15:41 (LAR13)    | 06:44    |                  | 05:57 | 06:07 | 06:59 (LAR03)    | 05:33 | 05:27 |  |      |  |
|                     | 17:06   | 36 16:17 (LAR13) | 17:45    |                  | 18:18 | 19:52 | 13 18:17 (LAR12) | 20:23 | 20:40 |  |      |  |
| 26                  | 07:20   | 15:43 (LAR13)    | 06:42    |                  | 05:56 | 06:05 |                  | 05:32 | 05:27 |  |      |  |
|                     | 17:07   | 35 16:18 (LAR13) | 17:46    |                  | 18:19 | 19:53 |                  | 20:24 | 20:40 |  |      |  |
| 27                  | 07:19   | 15:44 (LAR13)    | 06:41    |                  | 05:54 | 06:04 |                  | 05:32 | 05:27 |  |      |  |
|                     | 17:09   | 34 16:18 (LAR13) | 17:48    |                  | 18:20 | 19:54 |                  | 20:25 | 20:40 |  |      |  |
| 28                  | 07:18   | 15:44 (LAR13)    | 06:39    |                  | 05:52 | 06:03 |                  | 05:31 | 05:28 |  |      |  |
|                     | 17:10   | 33 16:17 (LAR13) | 17:49    |                  | 18:21 | 19:55 |                  | 20:26 | 20:40 |  |      |  |
| 29                  | 07:17   | 15:45 (LAR13)    |          |                  | 06:51 | 06:01 |                  | 05:30 | 05:28 |  |      |  |
|                     | 17:11   | 32 16:17 (LAR13) |          |                  | 19:22 | 19:56 |                  | 20:26 | 20:40 |  |      |  |
| 30                  | 07:16   | 15:46 (LAR13)    |          |                  | 06:49 | 06:00 |                  | 05:30 | 05:29 |  |      |  |
|                     | 17:12   | 30 16:16 (LAR13) |          |                  | 19:23 | 19:57 |                  | 20:27 | 20:40 |  |      |  |
| 31                  | 07:15   | 15:47 (LAR13)    |          |                  | 06:47 |       |                  | 05:29 |       |  |      |  |
|                     | 17:14   | 29 16:16 (LAR13) |          |                  | 19:24 |       |                  | 20:28 |       |  |      |  |
| Potential sun hours | 295     |                  | 296      |                  | 369   |       | 400              |       | 451   |  | 455  |  |
| Total, worst case   | 1079    |                  | 92       |                  | 562   |       | 1517             |       |       |  |      |  |
| Sun reduction       | 0,44    |                  | 0,46     |                  | 0,44  |       | 0,48             |       |       |  |      |  |
| Oper. time red.     | 0,70    |                  | 0,70     |                  | 0,70  |       | 0,70             |       |       |  |      |  |
| Wind dir. red.      | 0,55    |                  | 0,55     |                  | 0,61  |       | 0,61             |       |       |  |      |  |
| Total reduction     | 0,17    |                  | 0,18     |                  | 0,19  |       | 0,20             |       |       |  |      |  |
| Total, real         | 183     |                  | 16       |                  | 104   |       | 306              |       |       |  |      |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

Shadow receptor: R110 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (82)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September                      | October                        | November       | December       |                |
|---------------------|----------------|----------------|--------------------------------|--------------------------------|----------------|----------------|----------------|
| 1                   | 05:29<br>20:40 | 05:54<br>20:20 | 06:26<br>19:36                 | 06:57 (LAR03)<br>18:40 (LAR12) | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 05:29<br>20:40 | 05:55<br>20:19 | 06:27<br>19:34                 | 06:57 (LAR03)<br>18:40 (LAR12) | 06:58<br>18:43 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 05:30<br>20:40 | 05:56<br>20:18 | 06:28<br>19:33                 | 06:57 (LAR03)<br>18:40 (LAR12) | 06:59<br>18:41 | 06:35<br>16:54 | 07:10<br>16:31 |
| 4                   | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31                 | 06:57 (LAR03)<br>18:40 (LAR12) | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 05:31<br>20:39 | 05:58<br>20:16 | 06:30<br>19:29                 | 06:57 (LAR03)<br>18:40 (LAR12) | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:28                 | 06:58 (LAR03)<br>18:39 (LAR12) | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 05:32<br>20:39 | 06:00<br>20:13 | 06:32<br>19:26                 | 06:59 (LAR03)<br>18:39 (LAR12) | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24                 | 07:00 (LAR03)<br>18:39 (LAR12) | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:11 | 06:34<br>19:22                 | 07:02 (LAR03)<br>18:38 (LAR12) | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21                 | 07:40 (LAR12)<br>18:37 (LAR12) | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19                 | 07:40 (LAR12)<br>18:36 (LAR12) | 07:08<br>18:27 | 06:44<br>16:45 | 07:18<br>16:30 |
| 12                  | 05:36<br>20:37 | 06:05<br>20:07 | 06:37<br>19:17                 | 07:40 (LAR12)<br>18:35 (LAR12) | 07:09<br>18:26 | 06:46<br>16:44 | 07:18<br>16:30 |
| 13                  | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:16                 | 07:40 (LAR12)<br>18:34 (LAR12) | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14                 | 07:40 (LAR12)<br>18:33 (LAR12) | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12                 | 07:40 (LAR12)<br>18:32 (LAR12) | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10                 | 07:40 (LAR12)<br>18:31 (LAR12) | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:09                 | 07:41 (LAR12)<br>18:30 (LAR12) | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07                 | 07:42 (LAR12)<br>18:25 (LAR12) | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 05:41<br>20:32 | 06:12<br>19:57 | 06:44<br>19:05                 | 07:44 (LAR12)<br>18:28 (LAR12) | 07:17<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 05:42<br>20:32 | 06:13<br>19:55 | 06:45<br>19:03                 | 07:45 (LAR12)<br>18:30 (LAR12) | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 05:43<br>20:31 | 06:14<br>19:54 | 06:46<br>19:02                 | 07:46 (LAR12)<br>18:32 (LAR12) | 07:19<br>18:12 | 06:57<br>16:36 | 07:25<br>16:32 |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00                 | 07:48 (LAR12)<br>18:34 (LAR12) | 07:20<br>18:10 | 06:58<br>16:36 | 07:25<br>16:33 |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58                 | 07:50 (LAR12)<br>18:35 (LAR12) | 07:21<br>18:09 | 06:59<br>16:35 | 07:26<br>16:33 |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56                 | 07:52 (LAR12)<br>18:36 (LAR12) | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55                 | 07:54 (LAR03)<br>18:37 (LAR12) | 06:24<br>17:06 | 07:01<br>16:34 | 07:27<br>16:35 |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53                 | 07:03 (LAR03)<br>18:38 (LAR12) | 06:51<br>18:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51                 | 07:01 (LAR03)<br>18:38 (LAR12) | 06:52<br>18:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 05:50<br>20:24 | 06:21<br>19:43 | 06:53<br>18:49                 | 07:00 (LAR03)<br>18:39 (LAR12) | 06:53<br>18:02 | 07:05<br>16:32 | 07:28<br>16:37 |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:55<br>18:48                 | 06:59 (LAR03)<br>18:39 (LAR12) | 06:55<br>18:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 05:52<br>20:22 | 06:23<br>19:39 | 06:56<br>18:46                 | 06:58 (LAR03)<br>18:40 (LAR12) | 06:56<br>18:00 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 05:53<br>20:21 | 06:24<br>19:38 | 06:58 (LAR03)<br>18:40 (LAR12) |                                | 06:58<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours | 462            | 429            | 375                            | 344                            | 296            | 285            |                |
| Total, worst case   |                | 715            | 1386                           |                                | 811            | 922            |                |
| Sun reduction       |                | 0,67           | 0,58                           |                                | 0,41           | 0,36           |                |
| Oper. time red.     |                | 0,70           | 0,70                           |                                | 0,70           | 0,70           |                |
| Wind dir. red.      |                | 0,61           | 0,61                           |                                | 0,55           | 0,55           |                |
| Total reduction     |                | 0,28           | 0,24                           |                                | 0,16           | 0,14           |                |
| Total, real         |                | 201            | 338                            |                                | 126            | 129            |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R112 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (83)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January                 | February                | March   | April                   | May   | June                    |                         |   |
|---------------------|-------------------------|-------------------------|---|-------------------------|---|-------------------------|-------------------------|---|
| 1                   | 07:28<br>16:40<br>16:41 | 07:14<br>17:15<br>07:13 | 15:19 (LAR07)<br>16:18 (LAR07)<br>15:19 (LAR07) | 06:37<br>17:50<br>06:36 | 15:39 (LAR07)<br>16:00 (LAR07)<br>15:45 (LAR07) | 06:45<br>19:25<br>06:44 | 05:58<br>19:58<br>05:57 | 19:47 (LAR05)<br>20:03 (LAR05)<br>19:48 (LAR05) |
| 2                   | 07:29<br>16:41<br>16:41 | 07:13<br>17:16<br>07:12 | 15:18 (LAR07)<br>16:18 (LAR07)<br>15:18 (LAR07) | 06:34<br>17:51<br>06:34 | 15:56 (LAR07)<br>19:26<br>15:56 (LAR07)         | 06:42<br>19:27<br>06:42 | 05:56<br>20:00<br>05:56 | 19:47 (LAR05)<br>20:04 (LAR05)<br>19:47 (LAR05) |
| 3                   | 07:29<br>16:41<br>16:41 | 07:12<br>17:17<br>07:11 | 15:18 (LAR07)<br>16:18 (LAR07)<br>15:18 (LAR07) | 06:33<br>17:52<br>06:33 | 15:56 (LAR07)<br>19:27<br>15:56 (LAR07)         | 06:42<br>19:27<br>06:42 | 05:56<br>20:00<br>05:56 | 19:47 (LAR05)<br>20:04 (LAR05)<br>19:48 (LAR05) |
| 4                   | 07:29<br>16:42<br>16:42 | 07:11<br>17:19<br>07:10 | 15:18 (LAR07)<br>16:18 (LAR07)<br>15:18 (LAR07) | 06:33<br>17:53<br>06:31 | 15:56 (LAR07)<br>19:28<br>15:56 (LAR07)         | 06:40<br>19:28<br>06:38 | 05:54<br>20:01<br>05:53 | 19:48 (LAR05)<br>20:05 (LAR05)<br>19:48 (LAR05) |
| 5                   | 07:29<br>16:43<br>16:43 | 07:10<br>17:20<br>07:09 | 15:18 (LAR07)<br>16:19 (LAR07)<br>15:18 (LAR07) | 06:31<br>17:55<br>06:29 | 15:56 (LAR07)<br>19:29<br>15:56 (LAR07)         | 06:38<br>19:30<br>06:37 | 05:53<br>20:03<br>05:52 | 19:48 (LAR05)<br>20:06 (LAR05)<br>19:48 (LAR05) |
| 6                   | 07:29<br>16:44<br>16:44 | 07:09<br>17:21<br>07:08 | 15:18 (LAR07)<br>16:19 (LAR07)<br>15:18 (LAR07) | 06:29<br>17:56<br>06:28 | 15:56 (LAR07)<br>19:31<br>15:56 (LAR07)         | 06:37<br>19:31<br>06:35 | 05:52<br>20:04<br>05:51 | 19:48 (LAR05)<br>20:07 (LAR05)<br>19:48 (LAR05) |
| 7                   | 07:28<br>16:45<br>16:45 | 07:08<br>17:22<br>07:07 | 15:18 (LAR07)<br>16:20 (LAR07)<br>15:19 (LAR07) | 06:28<br>17:57<br>06:26 | 15:56 (LAR07)<br>19:32<br>15:56 (LAR07)         | 06:35<br>19:32<br>06:33 | 05:51<br>20:05<br>05:49 | 19:48 (LAR05)<br>20:07 (LAR05)<br>19:48 (LAR05) |
| 8                   | 07:28<br>16:46<br>16:46 | 07:07<br>17:24<br>07:05 | 15:19 (LAR07)<br>16:20 (LAR07)<br>15:18 (LAR07) | 06:26<br>17:58<br>06:24 | 15:56 (LAR07)<br>19:33<br>15:56 (LAR07)         | 06:33<br>19:33<br>06:32 | 05:49<br>20:06<br>05:48 | 19:48 (LAR05)<br>20:08 (LAR05)<br>19:49 (LAR05) |
| 9                   | 07:28<br>16:47<br>16:47 | 07:05<br>17:25<br>07:04 | 15:18 (LAR07)<br>16:20 (LAR07)<br>15:18 (LAR07) | 06:24<br>17:59<br>06:23 | 15:56 (LAR07)<br>19:34<br>15:56 (LAR07)         | 06:32<br>19:34<br>06:30 | 05:48<br>20:07<br>05:47 | 19:49 (LAR05)<br>20:09 (LAR05)<br>19:49 (LAR05) |
| 10                  | 07:28<br>16:48<br>16:48 | 07:04<br>17:26<br>07:03 | 15:18 (LAR07)<br>16:20 (LAR07)<br>15:19 (LAR07) | 06:23<br>18:00<br>06:21 | 15:56 (LAR07)<br>19:35<br>15:56 (LAR07)         | 06:30<br>19:35<br>06:29 | 05:47<br>20:08<br>05:46 | 19:49 (LAR05)<br>20:09 (LAR05)<br>19:49 (LAR05) |
| 11                  | 07:28<br>16:49<br>16:49 | 07:03<br>17:28<br>07:02 | 15:19 (LAR07)<br>16:20 (LAR07)<br>15:19 (LAR07) | 06:21<br>18:02<br>06:19 | 15:56 (LAR07)<br>19:36<br>15:56 (LAR07)         | 06:29<br>19:36<br>06:27 | 05:46<br>20:09<br>05:45 | 19:49 (LAR05)<br>20:10 (LAR05)<br>19:50 (LAR05) |
| 12                  | 07:27<br>16:50<br>16:50 | 07:02<br>17:29<br>07:00 | 15:19 (LAR07)<br>16:21 (LAR07)<br>15:19 (LAR07) | 06:19<br>18:03<br>06:18 | 15:56 (LAR07)<br>19:37<br>15:56 (LAR07)         | 06:27<br>19:37<br>06:25 | 05:45<br>20:10<br>05:44 | 19:50 (LAR05)<br>20:10 (LAR05)<br>19:49 (LAR05) |
| 13                  | 07:27<br>16:51<br>16:51 | 07:00<br>17:30<br>06:59 | 15:19 (LAR07)<br>16:20 (LAR07)<br>15:20 (LAR07) | 06:18<br>18:04<br>06:16 | 15:56 (LAR07)<br>19:38<br>15:56 (LAR07)         | 06:25<br>19:38<br>06:24 | 05:44<br>20:11<br>05:43 | 19:49 (LAR05)<br>20:10 (LAR05)<br>19:49 (LAR05) |
| 14                  | 07:27<br>16:53<br>16:53 | 06:59<br>17:31<br>06:58 | 15:20 (LAR07)<br>16:20 (LAR07)<br>15:20 (LAR07) | 06:16<br>18:05<br>06:14 | 15:56 (LAR07)<br>19:39<br>15:56 (LAR07)         | 06:24<br>19:39<br>06:22 | 05:43<br>20:12<br>05:42 | 19:49 (LAR05)<br>20:10 (LAR05)<br>19:49 (LAR05) |
| 15                  | 07:26<br>16:54<br>16:54 | 06:58<br>17:33<br>06:56 | 15:20 (LAR07)<br>16:19 (LAR07)<br>15:21 (LAR07) | 06:14<br>18:06<br>06:13 | 15:56 (LAR07)<br>19:41<br>15:56 (LAR07)         | 06:22<br>19:41<br>06:20 | 05:42<br>20:13<br>05:41 | 19:49 (LAR05)<br>20:11 (LAR05)<br>19:51 (LAR05) |
| 16                  | 07:26<br>16:55<br>16:55 | 06:56<br>17:34<br>06:55 | 15:21 (LAR07)<br>16:19 (LAR07)<br>15:22 (LAR07) | 06:13<br>18:07<br>06:11 | 15:56 (LAR07)<br>19:42<br>15:56 (LAR07)         | 06:20<br>19:42<br>06:19 | 05:41<br>20:14<br>05:40 | 19:51 (LAR05)<br>20:12 (LAR05)<br>19:51 (LAR05) |
| 17                  | 07:26<br>16:56<br>16:56 | 06:55<br>17:35<br>06:54 | 15:22 (LAR07)<br>16:19 (LAR07)<br>15:22 (LAR07) | 06:11<br>18:08<br>06:09 | 15:56 (LAR07)<br>19:43<br>15:56 (LAR07)         | 06:19<br>19:43<br>06:17 | 05:40<br>20:15<br>05:39 | 19:51 (LAR05)<br>20:12 (LAR05)<br>19:51 (LAR05) |
| 18                  | 07:25<br>16:57<br>16:57 | 06:54<br>17:36<br>06:52 | 15:22 (LAR07)<br>16:18 (LAR07)<br>15:23 (LAR07) | 06:09<br>18:10<br>06:07 | 15:56 (LAR07)<br>19:44<br>15:56 (LAR07)         | 06:17<br>19:44<br>06:16 | 05:39<br>20:16<br>05:38 | 19:51 (LAR05)<br>20:13 (LAR05)<br>20:13 (LAR05) |
| 19                  | 07:24<br>16:58<br>16:58 | 06:52<br>17:38<br>06:51 | 15:23 (LAR07)<br>16:18 (LAR07)<br>15:23 (LAR07) | 06:07<br>18:11<br>06:06 | 15:56 (LAR07)<br>19:45<br>15:56 (LAR07)         | 06:16<br>19:45<br>06:14 | 05:38<br>20:17<br>05:37 | 19:51 (LAR05)<br>20:13 (LAR05)<br>19:51 (LAR05) |
| 20                  | 07:24<br>17:00<br>17:00 | 06:51<br>17:39<br>06:49 | 15:23 (LAR07)<br>16:16 (LAR07)<br>15:25 (LAR07) | 06:06<br>18:12<br>06:04 | 15:56 (LAR07)<br>19:46<br>15:56 (LAR07)         | 06:14<br>19:46<br>06:13 | 05:37<br>20:18<br>05:36 | 19:51 (LAR05)<br>20:13 (LAR05)<br>19:51 (LAR05) |
| 21                  | 07:23<br>17:01<br>17:01 | 06:49<br>17:40<br>06:48 | 15:25 (LAR07)<br>16:16 (LAR07)<br>15:25 (LAR07) | 06:04<br>18:13<br>06:02 | 15:56 (LAR07)<br>19:47<br>15:56 (LAR07)         | 06:13<br>19:47<br>06:11 | 05:36<br>20:19<br>05:35 | 19:51 (LAR05)<br>20:13 (LAR05)<br>19:51 (LAR05) |
| 22                  | 07:23<br>17:02<br>17:02 | 06:48<br>17:41<br>06:46 | 15:25 (LAR07)<br>16:14 (LAR07)<br>15:27 (LAR07) | 06:02<br>18:14<br>06:01 | 15:56 (LAR07)<br>19:48<br>15:56 (LAR07)         | 06:11<br>19:48<br>06:10 | 05:35<br>20:20<br>05:34 | 19:51 (LAR05)<br>20:13 (LAR05)<br>19:52 (LAR05) |
| 23                  | 07:22<br>17:03<br>17:03 | 06:46<br>17:43<br>06:45 | 15:27 (LAR07)<br>16:14 (LAR07)<br>15:28 (LAR07) | 06:01<br>18:15<br>05:59 | 15:56 (LAR07)<br>19:49<br>15:56 (LAR07)         | 06:10<br>19:49<br>06:08 | 05:34<br>20:21<br>05:34 | 19:52 (LAR05)<br>20:14 (LAR05)<br>19:52 (LAR05) |
| 24                  | 07:21<br>17:05<br>17:05 | 06:45<br>17:44<br>06:43 | 15:28 (LAR07)<br>16:12 (LAR07)<br>15:30 (LAR07) | 05:59<br>18:16<br>05:57 | 15:56 (LAR07)<br>19:51<br>15:56 (LAR07)         | 06:08<br>19:51<br>06:07 | 05:34<br>20:22<br>05:33 | 19:52 (LAR05)<br>20:14 (LAR05)<br>19:52 (LAR05) |
| 25                  | 07:20<br>17:06<br>17:06 | 06:43<br>17:45<br>06:42 | 15:30 (LAR07)<br>16:11 (LAR07)<br>15:31 (LAR07) | 05:57<br>18:17<br>05:56 | 15:56 (LAR07)<br>19:52<br>15:56 (LAR07)         | 06:07<br>19:52<br>06:05 | 05:33<br>20:23<br>05:32 | 19:52 (LAR05)<br>20:14 (LAR05)<br>19:53 (LAR05) |
| 26                  | 07:20<br>17:07<br>17:07 | 06:42<br>17:46<br>06:40 | 15:31 (LAR07)<br>16:09 (LAR07)<br>15:34 (LAR07) | 05:56<br>18:19<br>05:54 | 15:56 (LAR07)<br>19:53<br>15:56 (LAR07)         | 06:05<br>19:53<br>06:04 | 05:32<br>20:24<br>05:31 | 19:53 (LAR05)<br>20:14 (LAR05)<br>19:52 (LAR05) |
| 27                  | 07:19<br>17:08<br>17:08 | 06:40<br>17:47<br>06:39 | 15:34 (LAR07)<br>16:07 (LAR07)<br>15:36 (LAR07) | 05:54<br>18:20<br>05:52 | 15:56 (LAR07)<br>19:54<br>15:56 (LAR07)         | 06:04<br>19:54<br>06:02 | 05:31<br>20:25<br>05:31 | 19:52 (LAR05)<br>20:14 (LAR05)<br>19:52 (LAR05) |
| 28                  | 07:18<br>17:10<br>17:10 | 06:39<br>17:49<br>06:38 | 15:36 (LAR07)<br>16:04 (LAR07)<br>15:37 (LAR07) | 05:52<br>18:21<br>05:51 | 15:56 (LAR07)<br>19:55<br>15:56 (LAR07)         | 06:02<br>19:55<br>06:01 | 05:31<br>20:26<br>05:30 | 19:52 (LAR05)<br>20:14 (LAR05)<br>19:53 (LAR05) |
| 29                  | 07:17<br>17:11<br>17:11 | 06:37<br>17:50<br>06:36 | 15:37 (LAR07)<br>16:03 (LAR07)<br>15:38 (LAR07) | 05:51<br>18:22<br>05:50 | 15:56 (LAR07)<br>19:56<br>15:56 (LAR07)         | 06:02<br>19:56<br>06:00 | 05:30<br>20:27<br>05:29 | 19:53 (LAR05)<br>20:14 (LAR05)<br>19:53 (LAR05) |
| 30                  | 07:16<br>17:12<br>17:12 | 06:35<br>17:51<br>06:34 | 15:38 (LAR07)<br>16:02 (LAR07)<br>15:39 (LAR07) | 05:50<br>18:23<br>05:49 | 15:56 (LAR07)<br>19:57<br>15:56 (LAR07)         | 06:01<br>19:57<br>06:00 | 05:29<br>20:28<br>05:28 | 19:53 (LAR05)<br>20:14 (LAR05)<br>19:53 (LAR05) |
| 31                  | 07:15<br>17:13<br>17:13 | 06:33<br>17:52<br>06:32 | 15:39 (LAR07)<br>16:01 (LAR07)<br>15:40 (LAR07) | 05:49<br>18:24<br>05:48 | 15:56 (LAR07)<br>19:58<br>15:56 (LAR07)         | 06:00<br>19:58<br>06:00 | 05:28<br>20:29<br>05:27 | 19:53 (LAR05)<br>20:14 (LAR05)<br>19:53 (LAR05) |
| Potential sun hours | 295                     | 296                     | 369   | 400                     | 451   | 455                     |                         |   |
| Total, worst case   | 831                     | 1520                    | 32  |                         | 104   |                         | 612                     |   |
| Sun reduction       | 0,44                    | 0,46                    | 0,44  |                         | 0,47  |                         | 0,54                    |   |
| Oper. time red.     | 0,70                    | 0,70                    | 0,70  |                         | 0,70  |                         | 0,70                    |   |
| Wind dir. red.      | 0,55                    | 0,55                    | 0,55  |                         | 0,67  |                         | 0,67                    |   |
| Total reduction     | 0,17                    | 0,18                    | 0,17  |                         | 0,22  |                         | 0,25                    |   |
| Total, real         | 141                     | 267                     | 5   |                         | 22  |                         | 153                     |   |

### Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R112 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (83)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August           |       | September |                  | October |               | November |                  | December |                 |
|---------------------|-------|------------------|-------|-----------|------------------|---------|---------------|----------|------------------|----------|-----------------|
| 1                   | 05:29 | 19:53 (LAR05)    | 05:53 | 06:25     | 06:56            |         |               | 06:32    | 14:48 (LAR07)    | 07:08    | 15:20 (LAR07)   |
|                     | 20:40 | 21 20:14 (LAR05) | 20:20 | 19:36     | 18:44            |         |               | 16:56    | 62 15:50 (LAR07) | 16:31    | 9 15:29 (LAR07) |
| 2                   | 05:29 | 19:53 (LAR05)    | 05:54 | 06:26     | 06:58            |         |               | 06:33    | 14:48 (LAR07)    | 07:09    |                 |
|                     | 20:40 | 21 20:14 (LAR05) | 20:19 | 19:34     | 18:42            |         |               | 16:55    | 61 15:49 (LAR07) | 16:31    |                 |
| 3                   | 05:30 | 19:54 (LAR05)    | 05:55 | 06:27     | 06:59            |         |               | 06:34    | 14:47 (LAR07)    | 07:10    |                 |
|                     | 20:39 | 20 20:14 (LAR05) | 20:18 | 19:32     | 18:41            |         |               | 16:54    | 62 15:49 (LAR07) | 16:30    |                 |
| 4                   | 05:30 | 19:53 (LAR05)    | 05:56 | 06:28     | 07:00            |         |               | 06:36    | 14:48 (LAR07)    | 07:11    |                 |
|                     | 20:39 | 20 20:13 (LAR05) | 20:17 | 19:31     | 18:39            |         |               | 16:52    | 62 15:50 (LAR07) | 16:30    |                 |
| 5                   | 05:31 | 19:54 (LAR05)    | 05:57 | 06:29     | 07:01            |         |               | 06:37    | 14:48 (LAR07)    | 07:12    |                 |
|                     | 20:39 | 19 20:13 (LAR05) | 20:15 | 19:29     | 18:37            |         |               | 16:51    | 61 15:49 (LAR07) | 16:30    |                 |
| 6                   | 05:32 | 19:55 (LAR05)    | 05:58 | 06:30     | 07:02            |         |               | 06:38    | 14:48 (LAR07)    | 07:13    |                 |
|                     | 20:39 | 19 20:14 (LAR05) | 20:14 | 19:27     | 18:36            |         |               | 16:50    | 61 15:49 (LAR07) | 16:30    |                 |
| 7                   | 05:32 | 19:54 (LAR05)    | 05:59 | 06:31     | 07:03            |         |               | 06:39    | 14:49 (LAR07)    | 07:14    |                 |
|                     | 20:38 | 19 20:13 (LAR05) | 20:13 | 19:26     | 18:34            |         |               | 16:49    | 60 15:49 (LAR07) | 16:30    |                 |
| 8                   | 05:33 | 19:55 (LAR05)    | 06:00 | 06:33     | 07:04            |         |               | 06:41    | 14:49 (LAR07)    | 07:15    |                 |
|                     | 20:38 | 18 20:13 (LAR05) | 20:12 | 19:24     | 18:32            |         |               | 16:48    | 60 15:49 (LAR07) | 16:30    |                 |
| 9                   | 05:33 | 19:54 (LAR05)    | 06:01 | 06:34     | 07:05            |         |               | 06:42    | 14:49 (LAR07)    | 07:16    |                 |
|                     | 20:38 | 18 20:12 (LAR05) | 20:10 | 19:22     | 18:31            |         |               | 16:47    | 59 15:48 (LAR07) | 16:30    |                 |
| 10                  | 05:34 | 19:55 (LAR05)    | 06:03 | 06:35     | 07:06            |         |               | 06:43    | 14:50 (LAR07)    | 07:17    |                 |
|                     | 20:37 | 17 20:12 (LAR05) | 20:09 | 19:21     | 18:29            |         |               | 16:46    | 58 15:48 (LAR07) | 16:30    |                 |
| 11                  | 05:35 | 19:55 (LAR05)    | 06:04 | 06:36     | 07:07            |         |               | 06:44    | 14:50 (LAR07)    | 07:17    |                 |
|                     | 20:37 | 17 20:12 (LAR05) | 20:08 | 19:19     | 18:27            |         |               | 16:45    | 58 15:48 (LAR07) | 16:30    |                 |
| 12                  | 05:36 | 19:56 (LAR05)    | 06:05 | 06:37     | 07:09            |         | 16:15 (LAR07) | 06:45    | 14:51 (LAR07)    | 07:18    |                 |
|                     | 20:36 | 15 20:11 (LAR05) | 20:06 | 19:17     | 18:26            | 17      | 16:32 (LAR07) | 16:44    | 56 15:47 (LAR07) | 16:30    |                 |
| 13                  | 05:36 | 19:56 (LAR05)    | 06:06 | 06:38     | 07:10            |         | 16:11 (LAR07) | 06:47    | 14:52 (LAR07)    | 07:19    |                 |
|                     | 20:36 | 14 20:10 (LAR05) | 20:05 | 19:15     | 18:24            | 24      | 16:35 (LAR07) | 16:43    | 55 15:47 (LAR07) | 16:30    |                 |
| 14                  | 05:37 | 19:56 (LAR05)    | 06:07 | 06:39     | 07:11            |         | 16:07 (LAR07) | 06:48    | 14:53 (LAR07)    | 07:20    |                 |
|                     | 20:35 | 14 20:10 (LAR05) | 20:04 | 19:14     | 18:22            | 31      | 16:38 (LAR07) | 16:42    | 54 15:47 (LAR07) | 16:30    |                 |
| 15                  | 05:38 | 19:57 (LAR05)    | 06:08 | 06:40     | 07:12            |         | 16:05 (LAR07) | 06:49    | 14:53 (LAR07)    | 07:21    |                 |
|                     | 20:35 | 13 20:10 (LAR05) | 20:02 | 19:12     | 18:21            | 35      | 16:40 (LAR07) | 16:41    | 53 15:46 (LAR07) | 16:30    |                 |
| 16                  | 05:39 | 19:58 (LAR05)    | 06:09 | 06:41     | 07:13            |         | 16:03 (LAR07) | 06:50    | 14:55 (LAR07)    | 07:21    |                 |
|                     | 20:34 | 11 20:09 (LAR05) | 20:01 | 19:10     | 18:19            | 39      | 16:42 (LAR07) | 16:40    | 51 15:46 (LAR07) | 16:30    |                 |
| 17                  | 05:40 | 19:57 (LAR05)    | 06:10 | 06:42     | 07:14            |         | 16:01 (LAR07) | 06:52    | 14:55 (LAR07)    | 07:22    |                 |
|                     | 20:33 | 11 20:08 (LAR05) | 19:59 | 19:08     | 18:18            | 42      | 16:43 (LAR07) | 16:39    | 50 15:45 (LAR07) | 16:31    |                 |
| 18                  | 05:40 | 19:58 (LAR05)    | 06:11 | 06:43     | 07:15            |         | 15:59 (LAR07) | 06:53    | 14:56 (LAR07)    | 07:23    |                 |
|                     | 20:33 | 10 20:08 (LAR05) | 19:58 | 19:07     | 18:16            | 45      | 16:44 (LAR07) | 16:38    | 48 15:44 (LAR07) | 16:31    |                 |
| 19                  | 05:41 | 19:59 (LAR05)    | 06:12 | 06:44     | 07:16            |         | 15:57 (LAR07) | 06:54    | 14:57 (LAR07)    | 07:23    |                 |
|                     | 20:32 | 8 20:07 (LAR05)  | 19:56 | 19:05     | 18:15            | 47      | 16:44 (LAR07) | 16:37    | 46 15:43 (LAR07) | 16:31    |                 |
| 20                  | 05:42 | 20:00 (LAR05)    | 06:13 | 06:45     | 07:18            |         | 15:56 (LAR07) | 06:55    | 14:59 (LAR07)    | 07:24    |                 |
|                     | 20:31 | 7 20:07 (LAR05)  | 19:55 | 19:03     | 18:13            | 50      | 16:46 (LAR07) | 16:37    | 44 15:43 (LAR07) | 16:32    |                 |
| 21                  | 05:43 | 20:01 (LAR05)    | 06:14 | 06:46     | 07:19            |         | 15:55 (LAR07) | 06:56    | 15:00 (LAR07)    | 07:24    |                 |
|                     | 20:31 | 5 20:06 (LAR05)  | 19:53 | 19:01     | 18:12            | 52      | 16:47 (LAR07) | 16:36    | 42 15:42 (LAR07) | 16:32    |                 |
| 22                  | 05:44 | 20:03 (LAR05)    | 06:15 | 06:47     | 07:20            |         | 15:53 (LAR07) | 06:58    | 15:01 (LAR07)    | 07:25    |                 |
|                     | 20:30 | 2 20:05 (LAR05)  | 19:52 | 19:00     | 18:10            | 54      | 16:47 (LAR07) | 16:35    | 40 15:41 (LAR07) | 16:33    |                 |
| 23                  | 05:45 |                  | 06:16 | 06:48     | 07:21            |         | 15:52 (LAR07) | 06:59    | 15:02 (LAR07)    | 07:25    |                 |
|                     | 20:29 |                  | 19:50 | 18:58     | 18:09            | 55      | 16:47 (LAR07) | 16:35    | 38 15:40 (LAR07) | 16:33    |                 |
| 24                  | 05:46 |                  | 06:17 | 06:49     | 07:22            |         | 15:52 (LAR07) | 07:00    | 15:04 (LAR07)    | 07:26    |                 |
|                     | 20:28 |                  | 19:49 | 18:56     | 18:07            | 57      | 16:49 (LAR07) | 16:34    | 36 15:40 (LAR07) | 16:34    |                 |
| 25                  | 05:47 |                  | 06:18 | 06:50     | 06:23            |         | 14:51 (LAR07) | 07:01    | 15:05 (LAR07)    | 07:26    |                 |
|                     | 20:27 |                  | 19:47 | 18:54     | 17:06            | 58      | 15:49 (LAR07) | 16:33    | 34 15:39 (LAR07) | 16:34    |                 |
| 26                  | 05:48 |                  | 06:19 | 06:51     | 06:25            |         | 14:50 (LAR07) | 07:02    | 15:07 (LAR07)    | 07:27    |                 |
|                     | 20:26 |                  | 19:46 | 18:53     | 17:04            | 59      | 15:49 (LAR07) | 16:33    | 31 15:38 (LAR07) | 16:35    |                 |
| 27                  | 05:48 |                  | 06:20 | 06:52     | 06:26            |         | 14:49 (LAR07) | 07:03    | 15:09 (LAR07)    | 07:27    |                 |
|                     | 20:25 |                  | 19:44 | 18:51     | 17:03            | 60      | 15:49 (LAR07) | 16:32    | 27 15:36 (LAR07) | 16:36    |                 |
| 28                  | 05:49 |                  | 06:21 | 06:53     | 06:27            |         | 14:49 (LAR07) | 07:04    | 15:10 (LAR07)    | 07:27    |                 |
|                     | 20:24 |                  | 19:42 | 18:49     | 17:01            | 61      | 15:50 (LAR07) | 16:32    | 25 15:35 (LAR07) | 16:36    |                 |
| 29                  | 05:50 |                  | 06:22 | 06:54     | 06:28            |         | 14:49 (LAR07) | 07:06    | 15:13 (LAR07)    | 07:28    |                 |
|                     | 20:23 |                  | 19:41 | 18:48     | 17:00            | 61      | 15:50 (LAR07) | 16:32    | 21 15:34 (LAR07) | 16:37    |                 |
| 30                  | 05:51 |                  | 06:23 | 06:55     | 06:29            |         | 14:48 (LAR07) | 07:07    | 15:16 (LAR07)    | 07:28    |                 |
|                     | 20:22 |                  | 19:39 | 18:46     | 16:59            | 61      | 15:49 (LAR07) | 16:31    | 16 15:32 (LAR07) | 16:38    |                 |
| 31                  | 05:52 |                  | 06:24 | 06:31     | 06:31            |         | 14:49 (LAR07) |          |                  | 07:28    |                 |
|                     | 20:21 |                  | 19:37 | 16:57     | 61 15:50 (LAR07) |         |               |          |                  | 16:39    |                 |
| Potential sun hours | 462   |                  | 430   | 375       | 344              |         | 296           |          |                  | 285      |                 |
| Total, worst case   |       | 319              |       |           |                  | 969     |               | 1431     |                  |          | 9               |
| Sun reduction       |       | 0,61             |       |           |                  | 0,44    |               | 0,41     |                  |          | 0,36            |
| Oper. time red.     |       | 0,70             |       |           |                  | 0,70    |               | 0,70     |                  |          | 0,70            |
| Wind dir. red.      |       | 0,67             |       |           |                  | 0,55    |               | 0,55     |                  |          | 0,55            |
| Total reduction     |       | 0,28             |       |           |                  | 0,17    |               | 0,16     |                  |          | 0,14            |
| Total, real         |       | 89               |       |           |                  | 162     |               | 223      |                  |          | 1               |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R113 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (84)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March                          | April                          | May                            | June           |
|---------------------|----------------|----------------|--------------------------------|--------------------------------|--------------------------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50                 | 15:44 (LAR07)<br>16:50 (LAR07) | 06:45<br>19:25                 | 05:58<br>20:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51                 | 15:44 (LAR07)<br>16:51 (LAR07) | 06:44<br>19:26                 | 05:57<br>20:29 |
| 3                   | 07:29<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52                 | 15:43 (LAR07)<br>16:51 (LAR07) | 06:42<br>19:27                 | 05:56<br>20:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53                 | 15:44 (LAR07)<br>16:52 (LAR07) | 06:40<br>19:28                 | 05:54<br>20:31 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55                 | 15:43 (LAR07)<br>16:52 (LAR07) | 06:38<br>19:30                 | 05:53<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56                 | 15:42 (LAR07)<br>16:52 (LAR07) | 06:37<br>19:31                 | 05:52<br>20:32 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57                 | 15:42 (LAR07)<br>16:52 (LAR07) | 06:35<br>19:32                 | 05:51<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58                 | 15:42 (LAR07)<br>16:52 (LAR07) | 06:33<br>19:33                 | 05:49<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59                 | 15:41 (LAR07)<br>16:51 (LAR07) | 06:32<br>19:34                 | 05:48<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00                 | 15:42 (LAR07)<br>16:52 (LAR07) | 06:30<br>19:35                 | 05:47<br>20:35 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02                 | 15:42 (LAR07)<br>16:51 (LAR07) | 06:29<br>19:36                 | 05:46<br>20:35 |
| 12                  | 07:27<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03                 | 15:42 (LAR07)<br>16:50 (LAR07) | 06:27<br>19:37                 | 05:45<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04                 | 15:42 (LAR07)<br>16:51 (LAR07) | 06:25<br>19:38                 | 05:44<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 16:13 (LAR07)<br>16:25 (LAR07) | 06:16<br>18:05                 | 15:42 (LAR07)<br>16:50 (LAR07) | 06:24<br>19:39 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 16:07 (LAR07)<br>16:30 (LAR07) | 06:14<br>18:06                 | 15:42 (LAR07)<br>16:49 (LAR07) | 06:22<br>19:41 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 16:04 (LAR07)<br>16:34 (LAR07) | 06:13<br>18:07                 | 15:43 (LAR07)<br>16:48 (LAR07) | 06:20<br>19:42 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 16:01 (LAR07)<br>16:37 (LAR07) | 06:11<br>18:08                 | 15:44 (LAR07)<br>16:48 (LAR07) | 06:19<br>19:43 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 15:59 (LAR07)<br>16:39 (LAR07) | 06:09<br>18:10                 | 15:44 (LAR07)<br>16:47 (LAR07) | 06:17<br>19:44 |
| 19                  | 07:24<br>16:58 | 06:52<br>17:38 | 15:57 (LAR07)<br>16:41 (LAR07) | 06:07<br>18:11                 | 15:44 (LAR07)<br>16:45 (LAR07) | 06:16<br>19:45 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 15:55 (LAR07)<br>16:42 (LAR07) | 06:06<br>18:12                 | 15:46 (LAR07)<br>16:45 (LAR07) | 06:14<br>19:46 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 15:54 (LAR07)<br>16:44 (LAR07) | 06:04<br>18:13                 | 15:46 (LAR07)<br>16:44 (LAR07) | 06:13<br>19:47 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 15:52 (LAR07)<br>16:45 (LAR07) | 06:02<br>18:14                 | 15:47 (LAR07)<br>16:42 (LAR07) | 06:11<br>19:48 |
| 23                  | 07:22<br>17:03 | 06:46<br>17:43 | 15:51 (LAR07)<br>16:47 (LAR07) | 06:01<br>18:15                 | 15:48 (LAR07)<br>16:40 (LAR07) | 06:10<br>19:49 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 15:49 (LAR07)<br>16:47 (LAR07) | 05:59<br>18:16                 | 15:50 (LAR07)<br>16:39 (LAR07) | 06:08<br>19:51 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 15:49 (LAR07)<br>16:48 (LAR07) | 05:57<br>18:17                 | 15:51 (LAR07)<br>16:37 (LAR07) | 06:07<br>19:52 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 15:47 (LAR07)<br>16:49 (LAR07) | 05:56<br>18:19                 | 15:52 (LAR07)<br>16:35 (LAR07) | 06:05<br>19:53 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:47 | 15:47 (LAR07)<br>16:50 (LAR07) | 05:54<br>18:20                 | 15:55 (LAR07)<br>16:34 (LAR07) | 06:04<br>19:54 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 15:46 (LAR07)<br>16:50 (LAR07) | 05:52<br>18:21                 | 15:57 (LAR07)<br>16:31 (LAR07) | 06:02<br>19:55 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22                 | 29                             | 16:59 (LAR07)<br>17:28 (LAR07) | 06:01<br>19:56 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23                 | 22                             | 17:02 (LAR07)<br>17:24 (LAR07) | 06:00<br>19:57 |
| 31                  | 07:15<br>17:13 |                | 06:47<br>19:24                 | 9                              | 17:09 (LAR07)<br>17:18 (LAR07) | 05:29<br>20:28 |
| Potential sun hours | 295            | 296            | 369                            | 400                            | 451                            | 455            |
| Total, worst case   |                | 697            | 1777                           |                                |                                |                |
| Sun reduction       |                | 0,46           | 0,44                           |                                |                                |                |
| Oper. time red.     |                | 0,70           | 0,70                           |                                |                                |                |
| Wind dir. red.      |                | 0,57           | 0,57                           |                                |                                |                |
| Total reduction     |                | 0,18           | 0,17                           |                                |                                |                |
| Total, real         |                | 126            | 310                            |                                |                                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R113 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (84)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                     | July           | August         | September      | October                        | November                       | December       |   |
|---------------------|----------------|----------------|----------------|--------------------------------|--------------------------------|----------------|---|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44                 | 16:21 (LAR07)<br>17:30 (LAR07) | 06:32<br>16:56 | 07:08<br>16:31                            |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42                 | 16:21 (LAR07)<br>17:30 (LAR07) | 06:33<br>16:55 | 07:09<br>16:31                            |
| 3                   | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:32 | 06:59<br>18:41                 | 16:20 (LAR07)<br>17:29 (LAR07) | 06:34<br>16:54 | 07:10<br>16:30                            |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 07:00<br>18:39                 | 16:19 (LAR07)<br>17:29 (LAR07) | 06:36<br>16:52 | 07:11<br>16:30                            |
| 5                   | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37                 | 16:19 (LAR07)<br>17:28 (LAR07) | 06:37<br>16:51 | 07:12<br>16:30                            |
| 6                   | 05:32<br>20:39 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:36                 | 16:18 (LAR07)<br>17:28 (LAR07) | 06:38<br>16:50 | 07:13<br>16:30                            |
| 7                   | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:26 | 07:03<br>18:34                 | 16:18 (LAR07)<br>17:27 (LAR07) | 06:39<br>16:49 | 07:14<br>16:30                            |
| 8                   | 05:33<br>20:38 | 06:00<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32                 | 16:18 (LAR07)<br>17:28 (LAR07) | 06:41<br>16:48 | 07:15<br>16:30                            |
| 9                   | 05:33<br>20:38 | 06:01<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31                 | 16:18 (LAR07)<br>17:27 (LAR07) | 06:42<br>16:47 | 07:16<br>16:30                            |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29                 | 16:18 (LAR07)<br>17:26 (LAR07) | 06:43<br>16:46 | 07:17<br>16:30                            |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27                 | 16:18 (LAR07)<br>17:25 (LAR07) | 06:44<br>16:45 | 07:17<br>16:30                            |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 17:02 (LAR07)<br>17:08 (LAR07) | 07:09<br>18:26                 | 06:45<br>16:44 | 07:18<br>16:30                            |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 16:54 (LAR07)<br>17:14 (LAR07) | 07:10<br>18:24                 | 06:47<br>16:43 | 07:19<br>16:30                            |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 16:50 (LAR07)<br>17:18 (LAR07) | 07:11<br>18:22                 | 06:48<br>16:42 | 07:20<br>16:30                            |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 16:47 (LAR07)<br>17:20 (LAR07) | 07:12<br>18:21                 | 06:49<br>16:41 | 07:21<br>14:50 (LAR14)<br>6 14:56 (LAR14) |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 16:44 (LAR07)<br>17:22 (LAR07) | 07:13<br>18:19                 | 06:50<br>16:40 | 07:21<br>16:30<br>8 14:57 (LAR14)         |
| 17                  | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 16:41 (LAR07)<br>17:23 (LAR07) | 07:14<br>18:18                 | 06:52<br>16:39 | 07:22<br>16:31<br>10 14:59 (LAR14)        |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 16:39 (LAR07)<br>17:24 (LAR07) | 07:15<br>18:16                 | 06:53<br>16:38 | 07:23<br>16:31<br>11 15:00 (LAR14)        |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 16:37 (LAR07)<br>17:25 (LAR07) | 07:16<br>18:15                 | 06:54<br>16:37 | 07:23<br>16:31<br>11 15:00 (LAR14)        |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 16:35 (LAR07)<br>17:26 (LAR07) | 07:18<br>18:13                 | 06:55<br>16:37 | 07:24<br>16:32<br>12 15:01 (LAR14)        |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 16:33 (LAR07)<br>17:27 (LAR07) | 07:19<br>18:12                 | 06:56<br>16:36 | 07:24<br>16:32<br>12 15:01 (LAR14)        |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 16:31 (LAR07)<br>17:28 (LAR07) | 07:20<br>18:10                 | 06:58<br>16:35 | 07:25<br>16:33<br>12 15:02 (LAR14)        |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 16:30 (LAR07)<br>17:28 (LAR07) | 07:21<br>18:09                 | 06:59<br>16:35 | 07:25<br>16:33<br>12 15:02 (LAR14)        |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 16:28 (LAR07)<br>17:29 (LAR07) | 07:22<br>18:07                 | 07:00<br>16:34 | 07:26<br>16:34<br>12 15:03 (LAR14)        |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 16:27 (LAR07)<br>17:29 (LAR07) | 06:23<br>17:06                 | 07:01<br>16:34 | 07:26<br>16:34<br>11 15:03 (LAR14)        |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 16:26 (LAR07)<br>17:30 (LAR07) | 06:25<br>17:04                 | 07:02<br>16:33 | 07:27<br>16:35<br>10 15:03 (LAR14)        |
| 27                  | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 16:25 (LAR07)<br>17:30 (LAR07) | 06:26<br>17:03                 | 07:03<br>16:32 | 07:27<br>16:36<br>9 15:03 (LAR14)         |
| 28                  | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 16:24 (LAR07)<br>17:30 (LAR07) | 06:27<br>17:01                 | 07:04<br>16:32 | 07:27<br>16:36<br>6 15:02 (LAR14)         |
| 29                  | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 16:23 (LAR07)<br>17:30 (LAR07) | 06:28<br>17:00                 | 07:06<br>16:32 | 07:28<br>16:37<br>3 15:01 (LAR14)         |
| 30                  | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 16:22 (LAR07)<br>17:30 (LAR07) | 06:29<br>16:59                 | 07:07<br>16:31 | 07:28<br>16:38                            |
| 31                  | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:57                 |                                | 07:28<br>16:39 |   |
| Potential sun hours | 462            | 430            | 375            | 344                            | 296                            | 285            |   |
| Total, worst case   |                |                | 933            | 1570                           |                                | 145            |   |
| Sun reduction       |                |                | 0,58           | 0,44                           |                                | 0,36           |   |
| Oper. time red.     |                |                | 0,70           | 0,70                           |                                | 0,70           |   |
| Wind dir. red.      |                |                | 0,57           | 0,57                           |                                | 0,57           |   |
| Total reduction     |                |                | 0,23           | 0,17                           |                                | 0,14           |   |
| Total, real         |                |                | 214            | 271                            |                                | 21             |   |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|



## SHADOW - Calendar

**Shadow receptor:** R12 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (7)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April                  | May            | June           |
|---------------------|----------------|----------------|----------------|------------------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 07:38 (LAR04)<br>17:25 | 06:45<br>19:58 | 05:29<br>20:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 07:43 (LAR04)<br>17:51 | 06:44<br>19:26 | 05:28<br>20:29 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 07:48 (LAR04)<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29         | 05:55<br>20:02 | 05:27<br>20:31 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30         | 05:53<br>20:03 | 05:27<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 07:51 (LAR04)<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 07:39 (LAR04)<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 07:58 (LAR04)<br>19:33 | 05:50<br>20:06 | 05:26<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 07:35 (LAR04)<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 07:58 (LAR04)<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 07:33 (LAR04)<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 07:33 (LAR04)<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 07:31 (LAR04)<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 07:31 (LAR04)<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 07:31 (LAR04)<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 07:30 (LAR04)<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 07:30 (LAR04)<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 07:29 (LAR04)<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 07:30 (LAR04)<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 07:29 (LAR04)<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 07:30 (LAR04)<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:02<br>18:14 | 07:29 (LAR04)<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 |
| 23                  | 07:22<br>17:04 | 06:47<br>17:43 | 06:01<br>18:15 | 07:30 (LAR04)<br>19:49 | 05:35<br>20:21 | 05:26<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 07:31 (LAR04)<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 07:32 (LAR04)<br>19:52 | 05:33<br>20:23 | 05:27<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 07:32 (LAR04)<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 |
| 27                  | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 07:34 (LAR04)<br>19:54 | 05:32<br>20:25 | 05:27<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 07:35 (LAR04)<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 |
| 29                  | 07:17<br>17:11 |                | 06:51<br>19:22 | 06:51<br>19:56         | 05:30<br>20:26 | 05:28<br>20:40 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57         | 05:30<br>20:27 | 05:29<br>20:40 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                        | 05:29<br>20:28 |                |
| Potential sun hours | 295            | 296            | 369            | 400                    | 450            | 455            |
| Total, worst case   |                | 653            | 20             |                        |                |                |
| Sun reduction       |                | 0,46           | 0,44           |                        |                |                |
| Oper. time red.     |                | 0,70           | 0,70           |                        |                |                |
| Wind dir. red.      |                | 0,66           | 0,66           |                        |                |                |
| Total reduction     |                | 0,21           | 0,20           |                        |                |                |
| Total, real         |                | 138            | 4              |                        |                |                |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R12 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (7)

### Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October        | November       | December                  |
|---------------------|----------------|----------------|----------------|----------------|----------------|---------------------------|
| 1                   | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:04 (LAR04)<br>16:31    |
| 2                   | 05:29<br>20:40 | 05:55<br>20:19 | 06:27<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 25 07:29 (LAR04)<br>07:09 |
| 3                   | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 23 07:05 (LAR04)<br>16:31 |
| 4                   | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 20 07:26 (LAR04)<br>07:11 |
| 5                   | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 14 07:13 (LAR04)<br>07:12 |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:28 | 07:02<br>18:36 | 06:38<br>16:50 | 7 07:20 (LAR04)<br>07:13  |
| 7                   | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30            |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30            |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30            |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30            |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30            |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30            |
| 13                  | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30            |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:30            |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30            |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31            |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:09 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31            |
| 18                  | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31            |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:17<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32            |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32            |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:02 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33            |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:36 | 07:25<br>16:33            |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:26<br>16:34            |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34            |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 06:24<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35            |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 06:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35            |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36            |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37            |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37            |
| 30                  | 05:52<br>20:22 | 06:23<br>19:39 | 06:56<br>18:46 | 06:30<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38            |
| 31                  | 05:53<br>20:21 | 06:24<br>19:38 | 06:57<br>18:44 | 06:31<br>16:58 | 07:08<br>16:30 | 07:28<br>16:39            |
| Potential sun hours | 462            | 429            | 375            | 344            | 296            | 285                       |
| Total, worst case   |                |                |                | 590            |                | 89                        |
| Sun reduction       |                |                |                | 0,44           |                | 0,41                      |
| Oper. time red.     |                |                |                | 0,70           |                | 0,70                      |
| Wind dir. red.      |                |                |                | 0,66           |                | 0,66                      |
| Total reduction     |                |                |                | 0,20           |                | 0,19                      |
| Total, real         |                |                |                | 119            |                | 17                        |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R13 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April                          | May            | June           |
|---------------------|----------------|----------------|----------------|--------------------------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 07:22 (LAR04)<br>08:07 (LAR04) | 06:45<br>19:25 | 05:58<br>20:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 07:21 (LAR04)<br>08:06 (LAR04) | 06:44<br>19:26 | 05:57<br>20:29 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 07:21 (LAR04)<br>08:06 (LAR04) | 06:42<br>19:27 | 05:56<br>20:30 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 07:21 (LAR04)<br>08:06 (LAR04) | 06:40<br>19:29 | 05:55<br>20:31 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 07:21 (LAR04)<br>08:04 (LAR04) | 06:39<br>19:30 | 05:53<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 07:21 (LAR04)<br>08:03 (LAR04) | 06:37<br>19:31 | 05:52<br>20:32 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 07:22 (LAR04)<br>08:03 (LAR04) | 06:35<br>19:32 | 05:51<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 07:22 (LAR04)<br>08:01 (LAR04) | 06:34<br>19:33 | 05:50<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 07:23 (LAR04)<br>08:00 (LAR04) | 06:32<br>19:34 | 05:48<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 07:24 (LAR04)<br>07:59 (LAR04) | 06:30<br>19:35 | 05:47<br>20:35 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 07:25 (LAR04)<br>07:57 (LAR04) | 06:29<br>19:36 | 05:46<br>20:35 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 07:26 (LAR04)<br>07:54 (LAR04) | 06:27<br>19:37 | 05:45<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 07:29 (LAR04)<br>07:53 (LAR04) | 06:25<br>19:38 | 05:44<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 07:31 (LAR04)<br>07:49 (LAR04) | 06:24<br>19:40 | 05:43<br>20:37 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 07:36 (LAR04)<br>07:43 (LAR04) | 06:22<br>19:41 | 05:42<br>20:37 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 07:32 (LAR04)<br>07:59 (LAR04) | 06:13<br>19:42 | 05:41<br>20:38 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 07:31 (LAR04)<br>08:01 (LAR04) | 06:11<br>19:43 | 05:40<br>20:38 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 07:28 (LAR04)<br>08:02 (LAR04) | 06:17<br>19:44 | 05:39<br>20:38 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 07:28 (LAR04)<br>08:03 (LAR04) | 06:16<br>19:45 | 05:38<br>20:39 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 07:26 (LAR04)<br>08:04 (LAR04) | 06:14<br>19:46 | 05:37<br>20:39 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 07:25 (LAR04)<br>08:05 (LAR04) | 06:13<br>19:47 | 05:36<br>20:39 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:02<br>18:14 | 07:24 (LAR04)<br>08:05 (LAR04) | 06:11<br>19:48 | 05:35<br>20:39 |
| 23                  | 07:22<br>17:04 | 06:47<br>17:43 | 06:01<br>18:15 | 07:24 (LAR04)<br>08:06 (LAR04) | 06:10<br>19:49 | 05:35<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 07:23 (LAR04)<br>08:06 (LAR04) | 06:08<br>19:51 | 05:34<br>20:40 |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 07:23 (LAR04)<br>08:07 (LAR04) | 06:07<br>19:52 | 05:33<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 07:22 (LAR04)<br>08:07 (LAR04) | 06:05<br>19:53 | 05:32<br>20:40 |
| 27                  | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 07:22 (LAR04)<br>08:07 (LAR04) | 06:04<br>19:54 | 05:32<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 07:21 (LAR04)<br>08:07 (LAR04) | 06:03<br>19:55 | 05:31<br>20:40 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 |                                | 06:01<br>19:56 | 05:30<br>20:40 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 |                                | 06:00<br>19:57 | 05:29<br>20:40 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                                | 05:29<br>20:28 |                |
| Potential sun hours | 295            | 296            | 369            | 400                            | 450            | 455            |
| Total, worst case   |                | 550            | 526            |                                |                |                |
| Sun reduction       |                | 0,46           | 0,44           |                                |                |                |
| Oper. time red.     |                | 0,70           | 0,70           |                                |                |                |
| Wind dir. red.      |                | 0,65           | 0,65           |                                |                |                |
| Total reduction     |                | 0,21           | 0,20           |                                |                |                |
| Total, real         |                | 115            | 106            |                                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R13 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  | August | September | October          | November         | December |
|---------------------|-------|--------|-----------|------------------|------------------|----------|
| 1                   | 05:29 | 05:54  | 06:25     | 06:57            | 08:07 (LAR04)    | 06:32    |
|                     | 20:40 | 20:20  | 19:36     | 18:44            | 26 08:33 (LAR04) | 16:31    |
| 2                   | 05:29 | 05:55  | 06:26     | 06:58            | 08:05 (LAR04)    | 06:33    |
|                     | 20:40 | 20:19  | 19:34     | 18:42            | 30 08:35 (LAR04) | 16:31    |
| 3                   | 05:30 | 05:56  | 06:28     | 06:59            | 08:03 (LAR04)    | 06:34    |
|                     | 20:39 | 20:18  | 19:33     | 18:41            | 33 08:36 (LAR04) | 16:31    |
| 4                   | 05:31 | 05:57  | 06:29     | 07:00            | 08:01 (LAR04)    | 06:36    |
|                     | 20:39 | 20:17  | 19:31     | 18:39            | 36 08:37 (LAR04) | 16:30    |
| 5                   | 05:31 | 05:58  | 06:30     | 07:01            | 08:00 (LAR04)    | 06:37    |
|                     | 20:39 | 20:15  | 19:29     | 18:37            | 38 08:38 (LAR04) | 16:30    |
| 6                   | 05:32 | 05:59  | 06:31     | 07:02            | 07:58 (LAR04)    | 06:38    |
|                     | 20:39 | 20:14  | 19:27     | 18:36            | 40 08:38 (LAR04) | 16:30    |
| 7                   | 05:32 | 06:00  | 06:32     | 07:03            | 07:57 (LAR04)    | 06:39    |
|                     | 20:38 | 20:13  | 19:26     | 18:34            | 42 08:39 (LAR04) | 16:30    |
| 8                   | 05:33 | 06:01  | 06:33     | 07:04            | 07:57 (LAR04)    | 06:41    |
|                     | 20:38 | 20:12  | 19:24     | 18:32            | 43 08:40 (LAR04) | 16:30    |
| 9                   | 05:34 | 06:02  | 06:34     | 07:05            | 07:56 (LAR04)    | 06:42    |
|                     | 20:38 | 20:10  | 19:22     | 18:31            | 44 08:40 (LAR04) | 16:30    |
| 10                  | 05:34 | 06:03  | 06:35     | 07:06            | 07:56 (LAR04)    | 06:43    |
|                     | 20:37 | 20:09  | 19:21     | 18:29            | 44 08:40 (LAR04) | 16:30    |
| 11                  | 05:35 | 06:04  | 06:36     | 07:07            | 07:55 (LAR04)    | 06:44    |
|                     | 20:37 | 20:08  | 19:19     | 18:27            | 45 08:40 (LAR04) | 16:30    |
| 12                  | 05:36 | 06:05  | 06:37     | 07:09            | 07:54 (LAR04)    | 06:45    |
|                     | 20:36 | 20:06  | 19:17     | 18:26            | 46 08:40 (LAR04) | 16:30    |
| 13                  | 05:37 | 06:06  | 06:38     | 07:10            | 07:54 (LAR04)    | 06:47    |
|                     | 20:36 | 20:05  | 19:15     | 18:24            | 46 08:40 (LAR04) | 16:30    |
| 14                  | 05:37 | 06:07  | 06:39     | 07:11            | 07:55 (LAR04)    | 06:48    |
|                     | 20:35 | 20:04  | 19:14     | 18:23            | 45 08:40 (LAR04) | 16:30    |
| 15                  | 05:38 | 06:08  | 06:40     | 07:12            | 07:54 (LAR04)    | 06:49    |
|                     | 20:35 | 20:02  | 19:12     | 18:21            | 46 08:40 (LAR04) | 16:30    |
| 16                  | 05:39 | 06:09  | 06:41     | 07:13            | 07:54 (LAR04)    | 06:50    |
|                     | 20:34 | 20:01  | 19:10     | 18:19            | 45 08:39 (LAR04) | 16:31    |
| 17                  | 05:40 | 06:10  | 06:42     | 07:14            | 07:54 (LAR04)    | 06:52    |
|                     | 20:33 | 19:59  | 19:09     | 18:18            | 44 08:38 (LAR04) | 16:31    |
| 18                  | 05:41 | 06:11  | 06:43     | 07:15            | 07:54 (LAR04)    | 06:53    |
|                     | 20:33 | 19:58  | 19:07     | 18:16            | 44 08:38 (LAR04) | 16:31    |
| 19                  | 05:41 | 06:12  | 06:44     | 07:17            | 07:54 (LAR04)    | 06:54    |
|                     | 20:32 | 19:56  | 19:05     | 18:15            | 43 08:37 (LAR04) | 16:32    |
| 20                  | 05:42 | 06:13  | 06:45     | 07:18            | 07:56 (LAR04)    | 06:55    |
|                     | 20:31 | 19:55  | 19:03     | 18:13            | 41 08:37 (LAR04) | 16:32    |
| 21                  | 05:43 | 06:14  | 06:46     | 07:19            | 07:56 (LAR04)    | 06:56    |
|                     | 20:31 | 19:53  | 19:02     | 18:12            | 39 08:35 (LAR04) | 16:33    |
| 22                  | 05:44 | 06:15  | 06:47     | 07:20            | 07:57 (LAR04)    | 06:58    |
|                     | 20:30 | 19:52  | 19:00     | 18:10            | 37 08:34 (LAR04) | 16:33    |
| 23                  | 05:45 | 06:16  | 06:48     | 07:21            | 07:58 (LAR04)    | 06:59    |
|                     | 20:29 | 19:50  | 18:58     | 18:09            | 35 08:33 (LAR04) | 16:33    |
| 24                  | 05:46 | 06:17  | 06:49     | 07:22            | 08:00 (LAR04)    | 07:00    |
|                     | 20:28 | 19:49  | 18:56     | 18:07            | 32 08:32 (LAR04) | 16:34    |
| 25                  | 05:47 | 06:18  | 06:50     | 06:24            | 07:01 (LAR04)    | 07:01    |
|                     | 20:27 | 19:47  | 18:55     | 17:06            | 29 07:30 (LAR04) | 16:35    |
| 26                  | 05:48 | 06:19  | 06:51     | 06:25            | 07:02 (LAR04)    | 07:02    |
|                     | 20:26 | 19:46  | 18:53     | 17:04            | 26 07:28 (LAR04) | 16:35    |
| 27                  | 05:49 | 06:20  | 06:52     | 06:26            | 07:04 (LAR04)    | 07:03    |
|                     | 20:25 | 19:44  | 18:51     | 17:03            | 21 07:25 (LAR04) | 16:36    |
| 28                  | 05:50 | 06:21  | 06:53     | 06:27            | 07:08 (LAR04)    | 07:04    |
|                     | 20:24 | 19:42  | 18:49     | 17:02            | 14 07:22 (LAR04) | 16:37    |
| 29                  | 05:51 | 06:22  | 06:54     | 08:13 (LAR04)    | 06:28            | 07:06    |
|                     | 20:23 | 19:41  | 18:48     | 15 08:28 (LAR04) | 17:00            | 16:32    |
| 30                  | 05:52 | 06:23  | 06:56     | 08:10 (LAR04)    | 06:30            | 07:07    |
|                     | 20:22 | 19:39  | 18:46     | 21 08:31 (LAR04) | 16:59            | 16:38    |
| 31                  | 05:53 | 06:24  |           | 06:31            |                  | 07:28    |
|                     | 20:21 | 19:38  |           | 16:58            |                  | 16:39    |
| Potential sun hours | 462   | 429    | 375       | 344              | 296              | 285      |
| Total, worst case   |       |        | 36        | 1054             |                  |          |
| Sun reduction       |       |        | 0,58      | 0,44             |                  |          |
| Oper. time red.     |       |        | 0,70      | 0,70             |                  |          |
| Wind dir. red.      |       |        | 0,65      | 0,65             |                  |          |
| Total reduction     |       |        | 0,26      | 0,20             |                  |          |
| Total, real         |       |        | 10        | 210              |                  |          |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|

## SHADOW - Calendar

**Shadow receptor:** R14 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May                            | June           |
|---------------------|----------------|----------------|----------------|----------------|--------------------------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 07:27 (LAR04)<br>08:13 (LAR04) | 05:58<br>19:58 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 07:27 (LAR04)<br>08:12 (LAR04) | 05:57<br>19:59 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 07:27 (LAR04)<br>08:12 (LAR04) | 05:56<br>20:00 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 07:27 (LAR04)<br>08:11 (LAR04) | 05:55<br>20:01 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 07:27 (LAR04)<br>08:10 (LAR04) | 05:53<br>20:03 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 07:28 (LAR04)<br>08:09 (LAR04) | 05:52<br>20:04 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 07:28 (LAR04)<br>08:08 (LAR04) | 05:51<br>20:05 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 07:28 (LAR04)<br>08:06 (LAR04) | 05:50<br>20:06 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 07:30 (LAR04)<br>08:05 (LAR04) | 05:48<br>20:07 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 07:31 (LAR04)<br>08:03 (LAR04) | 05:47<br>20:08 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 07:32 (LAR04)<br>08:00 (LAR04) | 05:46<br>20:09 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 07:34 (LAR04)<br>07:59 (LAR04) | 05:45<br>20:10 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 07:36 (LAR04)<br>07:55 (LAR04) | 05:44<br>20:11 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 | 07:40 (LAR04)<br>07:52 (LAR04) | 05:43<br>20:12 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 |                                | 05:42<br>20:13 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 06:49 (LAR04)<br>07:03 (LAR04) | 05:41<br>20:14 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 06:44 (LAR04)<br>07:06 (LAR04) | 05:40<br>20:15 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 06:41 (LAR04)<br>07:08 (LAR04) | 05:39<br>20:16 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 06:39 (LAR04)<br>07:10 (LAR04) | 05:38<br>20:17 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 06:37 (LAR04)<br>07:12 (LAR04) | 05:37<br>20:18 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 06:35 (LAR04)<br>07:12 (LAR04) | 05:36<br>20:19 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:02<br>18:14 | 06:11<br>19:48 | 06:34 (LAR04)<br>07:13 (LAR04) | 05:35<br>20:20 |
| 23                  | 07:22<br>17:04 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 06:33 (LAR04)<br>07:14 (LAR04) | 05:35<br>20:21 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 06:32 (LAR04)<br>07:14 (LAR04) | 05:34<br>20:22 |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52 | 06:30 (LAR04)<br>07:14 (LAR04) | 05:33<br>20:23 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 06:29 (LAR04)<br>07:14 (LAR04) | 05:32<br>20:24 |
| 27                  | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 06:29 (LAR04)<br>07:15 (LAR04) | 05:32<br>20:25 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 06:28 (LAR04)<br>07:15 (LAR04) | 05:31<br>20:25 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 07:28 (LAR04)<br>08:14 (LAR04) | 05:30<br>20:26 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 07:27 (LAR04)<br>08:14 (LAR04) | 05:29<br>20:27 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 | 05:29<br>20:28 | 07:27 (LAR04)<br>08:14 (LAR04) | 05:29<br>20:28 |
| Potential sun hours | 295            | 296            | 369            | 400            | 450                            | 455            |
| Total, worst case   |                |                | 610            | 493            |                                |                |
| Sun reduction       |                |                | 0,44           | 0,48           |                                |                |
| Oper. time red.     |                |                | 0,70           | 0,70           |                                |                |
| Wind dir. red.      |                |                | 0,63           | 0,63           |                                |                |
| Total reduction     |                |                | 0,19           | 0,21           |                                |                |
| Total, real         |                |                | 118            | 103            |                                |                |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

Shadow receptor: R14 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October                        | November       | December       |
|---------------------|----------------|----------------|----------------|--------------------------------|----------------|----------------|
| 1                   | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36 | 07:32 (LAR04)<br>08:00 (LAR04) | 06:57<br>18:44 | 06:32<br>16:31 |
| 2                   | 05:30<br>20:40 | 05:55<br>20:19 | 06:26<br>19:34 | 07:30 (LAR04)<br>08:02 (LAR04) | 06:58<br>18:42 | 06:33<br>16:31 |
| 3                   | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:33 | 07:28 (LAR04)<br>08:03 (LAR04) | 06:59<br>18:41 | 06:34<br>16:31 |
| 4                   | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31 | 07:27 (LAR04)<br>08:04 (LAR04) | 07:00<br>18:39 | 06:36<br>16:30 |
| 5                   | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:24 (LAR04)<br>08:04 (LAR04) | 07:01<br>18:37 | 06:37<br>16:30 |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:23 (LAR04)<br>08:04 (LAR04) | 07:02<br>18:36 | 06:38<br>16:30 |
| 7                   | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:22 (LAR04)<br>08:05 (LAR04) | 07:03<br>18:34 | 06:39<br>16:30 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:21 (LAR04)<br>08:05 (LAR04) | 07:04<br>18:32 | 06:41<br>16:30 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:20 (LAR04)<br>08:05 (LAR04) | 07:05<br>18:31 | 06:42<br>16:30 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:20 (LAR04)<br>08:05 (LAR04) | 07:06<br>18:29 | 06:43<br>16:30 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:19 (LAR04)<br>08:05 (LAR04) | 07:07<br>18:27 | 06:44<br>16:30 |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:19 (LAR04)<br>08:05 (LAR04) | 07:09<br>18:26 | 06:45<br>16:30 |
| 13                  | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:18 (LAR04)<br>08:05 (LAR04) | 07:10<br>18:24 | 06:47<br>16:30 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:18 (LAR04)<br>08:04 (LAR04) | 07:11<br>18:23 | 06:48<br>16:30 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:18 (LAR04)<br>08:04 (LAR04) | 07:12<br>18:21 | 06:49<br>16:30 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:18 (LAR04)<br>08:03 (LAR04) | 07:13<br>18:19 | 06:50<br>16:31 |
| 17                  | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:09 | 07:18 (LAR04)<br>08:03 (LAR04) | 07:14<br>18:18 | 06:52<br>16:31 |
| 18                  | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:18 (LAR04)<br>08:02 (LAR04) | 07:15<br>18:16 | 06:53<br>16:31 |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:18 (LAR04)<br>08:01 (LAR04) | 07:17<br>18:15 | 06:54<br>16:32 |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18 (LAR04)<br>08:00 (LAR04) | 07:18<br>18:13 | 06:55<br>16:32 |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:02 | 07:19 (LAR04)<br>07:58 (LAR04) | 07:19<br>18:12 | 06:56<br>16:33 |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:19 (LAR04)<br>07:57 (LAR04) | 07:20<br>18:10 | 06:58<br>16:33 |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21 (LAR04)<br>07:56 (LAR04) | 07:21<br>18:09 | 06:59<br>16:34 |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22 (LAR04)<br>07:54 (LAR04) | 07:22<br>18:07 | 07:00<br>16:34 |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:24 (LAR04)<br>07:52 (LAR04) | 06:24<br>17:06 | 07:01<br>16:35 |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:26 (LAR04)<br>07:50 (LAR04) | 06:25<br>17:04 | 07:02<br>16:35 |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:29 (LAR04)<br>07:46 (LAR04) | 06:26<br>17:03 | 07:03<br>16:36 |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:34 (LAR04)<br>07:39 (LAR04) | 06:27<br>17:02 | 07:04<br>16:37 |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:39 (LAR04)<br>07:53 (LAR04) | 06:28<br>17:00 | 07:06<br>16:37 |
| 30                  | 05:52<br>20:22 | 06:23<br>19:39 | 06:56<br>18:46 | 07:36 (LAR04)<br>07:57 (LAR04) | 06:30<br>16:59 | 07:07<br>16:38 |
| 31                  | 05:53<br>20:21 | 06:24<br>19:38 | 06:57<br>18:45 | 07:34 (LAR04)<br>07:59 (LAR04) | 06:31<br>16:58 | 07:08<br>16:39 |
| Potential sun hours | 462            | 429            | 375            | 344                            | 296            | 285            |
| Total, worst case   |                | 59             | 1058           |                                |                |                |
| Sun reduction       |                | 0,67           | 0,58           |                                |                |                |
| Oper. time red.     |                | 0,70           | 0,70           |                                |                |                |
| Wind dir. red.      |                | 0,63           | 0,63           |                                |                |                |
| Total reduction     |                | 0,29           | 0,25           |                                |                |                |
| Total, real         |                | 17             | 268            |                                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R15 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August                         | September      | October        | November       | December       |                |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------------------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 06:21 (LAR04)<br>06:44 (LAR04) | 05:54<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 06:23 (LAR04)<br>06:44 (LAR04) | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 06:23 (LAR04)<br>06:43 (LAR04) | 05:56<br>20:18 | 06:28<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:55<br>20:01 | 05:27<br>20:31 | 05:31<br>20:39 | 06:25 (LAR04)<br>06:42 (LAR04) | 05:57<br>20:17 | 06:29<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 06:27 (LAR04)<br>06:40 (LAR04) | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 | 05:32<br>20:39 | 06:31 (LAR04)<br>06:37 (LAR04) | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:23 (LAR04)<br>06:33 (LAR04) | 05:57<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:20 (LAR04)<br>06:35 (LAR04) | 05:55<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:19 (LAR04)<br>06:37 (LAR04) | 05:54<br>20:10 | 05:34<br>19:22 | 06:34<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 | 05:34<br>20:37 | 06:18 (LAR04)<br>06:39 (LAR04) | 05:54<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:17 (LAR04)<br>06:40 (LAR04) | 05:35<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:17 (LAR04)<br>06:41 (LAR04) | 05:36<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:16 (LAR04)<br>06:42 (LAR04) | 05:37<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:16 (LAR04)<br>06:43 (LAR04) | 05:37<br>20:04 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:15 (LAR04)<br>06:44 (LAR04) | 05:38<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:15 (LAR04)<br>06:44 (LAR04) | 05:39<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:15 (LAR04)<br>06:45 (LAR04) | 05:40<br>20:33 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:33 | 06:15 (LAR04)<br>06:45 (LAR04) | 05:41<br>20:07 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:15 (LAR04)<br>06:45 (LAR04) | 05:41<br>20:32 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:15 (LAR04)<br>06:45 (LAR04) | 05:42<br>20:31 | 06:45<br>19:55 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:31 | 06:15 (LAR04)<br>06:45 (LAR04) | 05:43<br>19:53 | 06:46<br>19:02 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:16 (LAR04)<br>06:46 (LAR04) | 05:44<br>20:30 | 06:47<br>19:52 | 07:20<br>18:10 | 06:58<br>16:36 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:04 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16 (LAR04)<br>06:46 (LAR04) | 05:45<br>20:29 | 06:48<br>19:50 | 07:21<br>18:09 | 06:59<br>16:35 | 07:25<br>16:34 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:16 (LAR04)<br>06:46 (LAR04) | 05:46<br>20:28 | 06:49<br>19:49 | 07:22<br>18:56 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52 | 05:33<br>20:23 | 05:27<br>20:40 | 05:47<br>20:27 | 06:17 (LAR04)<br>06:47 (LAR04) | 05:47<br>20:27 | 06:50<br>19:47 | 07:23<br>18:55 | 07:01<br>17:06 | 07:26<br>16:35 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:17 (LAR04)<br>06:46 (LAR04) | 05:48<br>20:26 | 06:51<br>19:46 | 07:24<br>18:53 | 07:02<br>17:04 | 07:27<br>16:33 |
| 27                  | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:17 (LAR04)<br>06:46 (LAR04) | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:19 (LAR04)<br>06:46 (LAR04) | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 |
| 29                  | 07:17<br>17:11 | 06:38<br>17:52 | 05:51<br>18:22 | 06:02<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:19 (LAR04)<br>06:45 (LAR04) | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:06<br>16:32 |
| 30                  | 07:16<br>17:12 | 06:37<br>17:53 | 05:50<br>18:23 | 06:01<br>19:57 | 05:30<br>20:27 | 05:29<br>20:40 | 05:52<br>20:22 | 06:20 (LAR04)<br>06:46 (LAR04) | 05:52<br>20:22 | 06:23<br>19:39 | 06:56<br>18:46 | 06:30<br>16:59 | 07:07<br>16:31 |
| 31                  | 07:15<br>17:14 | 06:36<br>17:54 | 05:49<br>18:24 | 06:00<br>19:58 | 05:29<br>20:28 | 05:29<br>20:40 | 05:53<br>20:21 | 06:21 (LAR04)<br>06:47 (LAR04) | 05:53<br>20:21 | 06:24<br>19:38 | 06:57<br>18:47 | 06:31<br>16:58 | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429                            | 375            | 344            | 296            | 285            |                |
| Total, worst case   |                |                |                |                |                | 629            |                |                                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                | 0,54           |                |                                |                |                |                | 0,61           |                |
| Oper. time red.     |                |                |                |                |                | 0,70           |                |                                |                |                |                | 0,70           |                |
| Wind dir. red.      |                |                |                |                |                | 0,56           |                |                                |                |                |                | 0,56           |                |
| Total reduction     |                |                |                |                |                | 0,21           |                |                                |                |                |                | 0,24           |                |
| Total, real         |                |                |                |                |                | 134            |                |                                |                |                |                | 24             |                |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R16 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (11)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June                           |                                   |                                   |
|---------------------|----------------|----------------|----------------|----------------|----------------|--------------------------------|-----------------------------------|-----------------------------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29                 | 06:27 (LAR04)<br>73 07:40 (LAR04) |                                   |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29                 | 06:27 (LAR04)<br>73 07:40 (LAR04) |                                   |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30                 | 06:27 (LAR04)<br>74 07:41 (LAR04) |                                   |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:55<br>20:01 | 05:27<br>20:31                 | 06:26 (LAR04)<br>75 07:41 (LAR04) |                                   |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32                 | 06:26 (LAR04)<br>76 07:42 (LAR04) |                                   |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32                 | 06:26 (LAR04)<br>76 07:42 (LAR04) |                                   |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33                 | 06:27 (LAR04)<br>76 07:43 (LAR04) |                                   |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33                 | 06:26 (LAR04)<br>77 07:43 (LAR04) |                                   |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34                 | 06:26 (LAR04)<br>77 07:43 (LAR04) |                                   |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 06:56 (LAR04)<br>05:26         | 06:26 (LAR04)<br>78 07:44 (LAR04) |                                   |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 06:51 (LAR04)<br>07:14 (LAR04) | 05:25<br>20:35                    | 06:26 (LAR04)<br>78 07:44 (LAR04) |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 06:47 (LAR04)<br>07:17 (LAR04) | 05:25<br>20:36                    | 06:26 (LAR04)<br>79 07:45 (LAR04) |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 06:45 (LAR04)<br>07:20 (LAR04) | 05:25<br>20:36                    | 06:26 (LAR04)<br>79 07:45 (LAR04) |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 06:42 (LAR04)<br>07:22 (LAR04) | 05:25<br>20:37                    | 06:27 (LAR04)<br>78 07:45 (LAR04) |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 06:40 (LAR04)<br>07:24 (LAR04) | 05:25<br>20:37                    | 06:27 (LAR04)<br>79 07:46 (LAR04) |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 06:39 (LAR04)<br>07:26 (LAR04) | 05:25<br>20:38                    | 06:27 (LAR04)<br>79 07:46 (LAR04) |
| 17                  | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 06:37 (LAR04)<br>07:27 (LAR04) | 05:25<br>20:38                    | 06:27 (LAR04)<br>79 07:46 (LAR04) |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 06:37 (LAR04)<br>07:29 (LAR04) | 05:25<br>20:38                    | 06:27 (LAR04)<br>79 07:46 (LAR04) |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 06:35 (LAR04)<br>07:30 (LAR04) | 05:25<br>20:39                    | 06:27 (LAR04)<br>79 07:46 (LAR04) |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 06:34 (LAR04)<br>07:31 (LAR04) | 05:25<br>20:39                    | 06:27 (LAR04)<br>79 07:46 (LAR04) |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 06:33 (LAR04)<br>07:32 (LAR04) | 05:26<br>20:39                    | 06:27 (LAR04)<br>79 07:46 (LAR04) |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 06:32 (LAR04)<br>07:33 (LAR04) | 05:26<br>20:39                    | 06:28 (LAR04)<br>79 07:47 (LAR04) |
| 23                  | 07:22<br>17:04 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 06:32 (LAR04)<br>07:34 (LAR04) | 05:26<br>20:39                    | 06:28 (LAR04)<br>79 07:47 (LAR04) |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 06:31 (LAR04)<br>07:35 (LAR04) | 05:26<br>20:40                    | 06:28 (LAR04)<br>79 07:47 (LAR04) |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52 | 05:33<br>20:23 | 06:30 (LAR04)<br>07:35 (LAR04) | 05:27<br>20:40                    | 06:29 (LAR04)<br>79 07:48 (LAR04) |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 06:30 (LAR04)<br>07:37 (LAR04) | 05:27<br>20:40                    | 06:29 (LAR04)<br>79 07:48 (LAR04) |
| 27                  | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 06:29 (LAR04)<br>07:37 (LAR04) | 05:27<br>20:40                    | 06:29 (LAR04)<br>79 07:48 (LAR04) |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 06:28 (LAR04)<br>07:37 (LAR04) | 05:28<br>20:40                    | 06:30 (LAR04)<br>78 07:48 (LAR04) |
| 29                  | 07:17<br>17:11 | 06:37<br>19:22 | 05:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 06:28 (LAR04)<br>07:38 (LAR04) | 05:28<br>20:40                    | 06:30 (LAR04)<br>78 07:48 (LAR04) |
| 30                  | 07:16<br>17:12 | 06:36<br>19:23 | 05:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 06:27 (LAR04)<br>07:39 (LAR04) | 05:29<br>20:40                    | 06:30 (LAR04)<br>79 07:49 (LAR04) |
| 31                  | 07:15<br>17:14 | 06:35<br>19:24 | 05:48<br>19:24 | 05:29<br>20:28 | 05:29<br>20:28 | 06:27 (LAR04)<br>07:40 (LAR04) |                                   |                                   |
| Potential sun hours | 295            | 296            | 369            | 400            | 450            | 455                            |                                   |                                   |
| Total, worst case   |                |                |                |                | 1175           | 2331                           |                                   |                                   |
| Sun reduction       |                |                |                |                | 0,47           | 0,54                           |                                   |                                   |
| Oper. time red.     |                |                |                |                | 0,70           | 0,70                           |                                   |                                   |
| Wind dir. red.      |                |                |                |                | 0,56           | 0,56                           |                                   |                                   |
| Total reduction     |                |                |                |                | 0,18           | 0,21                           |                                   |                                   |
| Total, real         |                |                |                |                | 216            | 496                            |                                   |                                   |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|

## SHADOW - Calendar

Shadow receptor: R16 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (11)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August        |               | September |               | October       |       | November |       | December |  |
|---------------------|-------|---------------|---------------|-----------|---------------|---------------|-------|----------|-------|----------|--|
| 1                   | 05:29 | 06:30 (LAR04) | 05:54         |           | 06:59 (LAR04) | 06:25         | 06:57 | 06:32    | 07:08 |          |  |
|                     | 20:40 | 78            | 07:48 (LAR04) | 20:20     | 28            | 07:27 (LAR04) | 19:36 | 18:44    | 16:56 | 16:31    |  |
| 2                   | 05:29 | 06:30 (LAR04) | 05:55         |           | 07:03 (LAR04) | 06:26         | 06:58 | 06:33    | 07:09 |          |  |
|                     | 20:40 | 78            | 07:48 (LAR04) | 20:19     | 20            | 07:23 (LAR04) | 19:34 | 18:42    | 16:55 | 16:31    |  |
| 3                   | 05:30 | 06:31 (LAR04) | 05:56         |           | 07:12 (LAR04) | 06:28         | 06:59 | 06:34    | 07:10 |          |  |
|                     | 20:39 | 77            | 07:48 (LAR04) | 20:18     | 2             | 07:14 (LAR04) | 19:33 | 18:41    | 16:54 | 16:31    |  |
| 4                   | 05:31 | 06:32 (LAR04) | 05:57         |           |               |               | 06:29 | 07:00    | 06:36 | 07:11    |  |
|                     | 20:39 | 77            | 07:49 (LAR04) | 20:17     |               |               | 19:31 | 18:39    | 16:53 | 16:30    |  |
| 5                   | 05:31 | 06:32 (LAR04) | 05:58         |           |               |               | 06:30 | 07:01    | 06:37 | 07:12    |  |
|                     | 20:39 | 76            | 07:48 (LAR04) | 20:15     |               |               | 19:29 | 18:37    | 16:51 | 16:30    |  |
| 6                   | 05:32 | 06:33 (LAR04) | 05:59         |           |               |               | 06:31 | 07:02    | 06:38 | 07:13    |  |
|                     | 20:39 | 76            | 07:49 (LAR04) | 20:14     |               |               | 19:27 | 18:36    | 16:50 | 16:30    |  |
| 7                   | 05:32 | 06:32 (LAR04) | 06:00         |           |               |               | 06:32 | 07:03    | 06:39 | 07:14    |  |
|                     | 20:38 | 76            | 07:48 (LAR04) | 20:13     |               |               | 19:26 | 18:34    | 16:49 | 16:30    |  |
| 8                   | 05:33 | 06:33 (LAR04) | 06:01         |           |               |               | 06:33 | 07:04    | 06:41 | 07:15    |  |
|                     | 20:38 | 75            | 07:48 (LAR04) | 20:12     |               |               | 19:24 | 18:32    | 16:48 | 16:30    |  |
| 9                   | 05:34 | 06:34 (LAR04) | 06:02         |           |               |               | 06:34 | 07:05    | 06:42 | 07:16    |  |
|                     | 20:38 | 75            | 07:49 (LAR04) | 20:10     |               |               | 19:22 | 18:31    | 16:47 | 16:30    |  |
| 10                  | 05:34 | 06:34 (LAR04) | 06:03         |           |               |               | 06:35 | 07:06    | 06:43 | 07:17    |  |
|                     | 20:37 | 74            | 07:48 (LAR04) | 20:09     |               |               | 19:21 | 18:29    | 16:46 | 16:30    |  |
| 11                  | 05:35 | 06:35 (LAR04) | 06:04         |           |               |               | 06:36 | 07:07    | 06:44 | 07:17    |  |
|                     | 20:37 | 73            | 07:48 (LAR04) | 20:08     |               |               | 19:19 | 18:27    | 16:45 | 16:30    |  |
| 12                  | 05:36 | 06:35 (LAR04) | 06:05         |           |               |               | 06:37 | 07:09    | 06:45 | 07:18    |  |
|                     | 20:36 | 73            | 07:48 (LAR04) | 20:06     |               |               | 19:17 | 18:26    | 16:44 | 16:30    |  |
| 13                  | 05:37 | 06:36 (LAR04) | 06:06         |           |               |               | 06:38 | 07:10    | 06:47 | 07:19    |  |
|                     | 20:36 | 72            | 07:48 (LAR04) | 20:05     |               |               | 19:15 | 18:24    | 16:43 | 16:30    |  |
| 14                  | 05:37 | 06:36 (LAR04) | 06:07         |           |               |               | 06:39 | 07:11    | 06:48 | 07:20    |  |
|                     | 20:35 | 71            | 07:47 (LAR04) | 20:04     |               |               | 19:14 | 18:23    | 16:42 | 16:30    |  |
| 15                  | 05:38 | 06:37 (LAR04) | 06:08         |           |               |               | 06:40 | 07:12    | 06:49 | 07:21    |  |
|                     | 20:35 | 70            | 07:47 (LAR04) | 20:02     |               |               | 19:12 | 18:21    | 16:41 | 16:30    |  |
| 16                  | 05:39 | 06:38 (LAR04) | 06:09         |           |               |               | 06:41 | 07:13    | 06:50 | 07:21    |  |
|                     | 20:34 | 69            | 07:47 (LAR04) | 20:01     |               |               | 19:10 | 18:19    | 16:40 | 16:31    |  |
| 17                  | 05:40 | 06:39 (LAR04) | 06:10         |           |               |               | 06:42 | 07:14    | 06:52 | 07:22    |  |
|                     | 20:33 | 67            | 07:46 (LAR04) | 19:59     |               |               | 19:08 | 18:18    | 16:39 | 16:31    |  |
| 18                  | 05:41 | 06:39 (LAR04) | 06:11         |           |               |               | 06:43 | 07:15    | 06:53 | 07:23    |  |
|                     | 20:33 | 66            | 07:45 (LAR04) | 19:58     |               |               | 19:07 | 18:16    | 16:38 | 16:31    |  |
| 19                  | 05:41 | 06:40 (LAR04) | 06:12         |           |               |               | 06:44 | 07:17    | 06:54 | 07:23    |  |
|                     | 20:32 | 65            | 07:45 (LAR04) | 19:56     |               |               | 19:05 | 18:15    | 16:38 | 16:32    |  |
| 20                  | 05:42 | 06:41 (LAR04) | 06:13         |           |               |               | 06:45 | 07:18    | 06:55 | 07:24    |  |
|                     | 20:31 | 63            | 07:44 (LAR04) | 19:55     |               |               | 19:03 | 18:13    | 16:37 | 16:32    |  |
| 21                  | 05:43 | 06:42 (LAR04) | 06:14         |           |               |               | 06:46 | 07:19    | 06:56 | 07:24    |  |
|                     | 20:31 | 62            | 07:44 (LAR04) | 19:53     |               |               | 19:02 | 18:12    | 16:36 | 16:32    |  |
| 22                  | 05:44 | 06:43 (LAR04) | 06:15         |           |               |               | 06:47 | 07:20    | 06:58 | 07:25    |  |
|                     | 20:30 | 60            | 07:43 (LAR04) | 19:52     |               |               | 19:00 | 18:10    | 16:36 | 16:33    |  |
| 23                  | 05:45 | 06:44 (LAR04) | 06:16         |           |               |               | 06:48 | 07:21    | 06:59 | 07:25    |  |
|                     | 20:29 | 58            | 07:42 (LAR04) | 19:50     |               |               | 18:58 | 18:09    | 16:35 | 16:33    |  |
| 24                  | 05:46 | 06:45 (LAR04) | 06:17         |           |               |               | 06:49 | 07:22    | 07:00 | 07:26    |  |
|                     | 20:28 | 56            | 07:41 (LAR04) | 19:49     |               |               | 18:56 | 18:07    | 16:34 | 16:34    |  |
| 25                  | 05:47 | 06:46 (LAR04) | 06:18         |           |               |               | 06:50 | 06:24    | 07:01 | 07:26    |  |
|                     | 20:27 | 54            | 07:40 (LAR04) | 19:47     |               |               | 18:55 | 17:06    | 16:34 | 16:35    |  |
| 26                  | 05:48 | 06:47 (LAR04) | 06:19         |           |               |               | 06:51 | 06:25    | 07:02 | 07:27    |  |
|                     | 20:26 | 51            | 07:38 (LAR04) | 19:46     |               |               | 18:53 | 17:04    | 16:33 | 16:35    |  |
| 27                  | 05:49 | 06:48 (LAR04) | 06:20         |           |               |               | 06:52 | 06:26    | 07:03 | 07:27    |  |
|                     | 20:25 | 49            | 07:37 (LAR04) | 19:44     |               |               | 18:51 | 17:03    | 16:33 | 16:36    |  |
| 28                  | 05:50 | 06:50 (LAR04) | 06:21         |           |               |               | 06:53 | 06:27    | 07:04 | 07:27    |  |
|                     | 20:24 | 46            | 07:36 (LAR04) | 19:42     |               |               | 18:49 | 17:02    | 16:32 | 16:37    |  |
| 29                  | 05:51 | 06:52 (LAR04) | 06:22         |           |               |               | 06:54 | 06:28    | 07:06 | 07:28    |  |
|                     | 20:23 | 42            | 07:34 (LAR04) | 19:41     |               |               | 18:48 | 17:00    | 16:32 | 16:37    |  |
| 30                  | 05:52 | 06:54 (LAR04) | 06:23         |           |               |               | 06:56 | 06:30    | 07:07 | 07:28    |  |
|                     | 20:22 | 38            | 07:32 (LAR04) | 19:39     |               |               | 18:46 | 16:59    | 16:31 | 16:38    |  |
| 31                  | 05:53 | 06:56 (LAR04) | 06:24         |           |               |               |       | 06:31    |       | 07:28    |  |
|                     | 20:21 | 34            | 07:30 (LAR04) | 19:38     |               |               |       | 16:58    |       | 16:39    |  |
| Potential sun hours | 461   |               | 429           |           |               |               | 375   | 344      | 296   | 285      |  |
| Total, worst case   | 2001  |               | 50            |           |               |               |       |          |       |          |  |
| Sun reduction       | 0,61  |               | 0,67          |           |               |               |       |          |       |          |  |
| Oper. time red.     | 0,70  |               | 0,70          |           |               |               |       |          |       |          |  |
| Wind dir. red.      | 0,56  |               | 0,56          |           |               |               |       |          |       |          |  |
| Total reduction     | 0,24  |               | 0,26          |           |               |               |       |          |       |          |  |
| Total, real         | 479   |               | 13            |           |               |               |       |          |       |          |  |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|

### SHADOW - Calendar

Shadow receptor: R17 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (12)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:55<br>20:01 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:36 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:25<br>16:33 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:27<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:24<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:40 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:53<br>20:21 | 06:24<br>19:38 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



### SHADOW - Calendar

Shadow receptor: R18 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (13)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:55<br>20:01 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:36 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:25<br>16:33 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:27<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:24<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:40 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R19 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (14)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:55<br>20:01 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:36 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:25<br>16:33 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:27<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:24<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:40 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R20 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:55<br>20:01 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
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| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:36 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:25<br>16:33 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:27<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:24<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:25<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:26<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:27<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:40 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:28<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R21 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (16)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:54<br>20:01 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 06:37<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:25<br>16:33 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:27<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 06:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:53<br>20:21 | 06:24<br>19:37 | 06:31<br>16:58 |                |                | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

**Shadow receptor:** R22 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (17)

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August |               | September |               | October |       | November |    | December      |                  |
|---------------------|-------|--------|---------------|-----------|---------------|---------|-------|----------|----|---------------|------------------|
| 1                   | 05:29 |        |               |           |               |         |       |          |    |               |                  |
|                     | 20:40 | 2      | 05:54 (LAR08) | 05:54     | 19:35 (LAR01) | 06:25   | 06:57 | 06:32    |    | 07:08         | 08:03 (LAR04)    |
| 2                   | 05:29 |        | 05:52 (LAR08) | 05:55     | 19:36 (LAR01) | 06:26   | 06:58 | 06:33    |    | 16:31         | 44 08:47 (LAR04) |
|                     | 20:40 | 1      | 05:53 (LAR08) | 05:56     | 19:37 (LAR01) | 06:29   | 07:00 | 06:36    |    | 07:09         | 08:03 (LAR04)    |
| 3                   | 05:30 |        |               | 05:56     | 19:36 (LAR01) | 06:28   | 06:59 | 06:34    |    | 16:31         | 45 08:48 (LAR04) |
|                     | 20:39 |        |               | 20:18     | 19:34 (LAR01) | 06:34   | 06:59 | 06:34    |    | 07:10         | 08:03 (LAR04)    |
| 4                   | 05:31 |        |               | 05:57     | 19:54 (LAR01) | 19:33   | 18:41 | 16:54    |    | 16:31         | 45 08:48 (LAR04) |
|                     | 20:39 |        |               | 20:17     | 19:37 (LAR01) | 06:29   | 07:00 | 06:36    |    | 07:11         | 08:04 (LAR04)    |
| 5                   | 05:31 |        |               | 05:58     | 19:53 (LAR01) | 19:31   | 18:39 | 16:53    |    | 16:30         | 45 08:49 (LAR04) |
|                     | 20:39 |        |               | 20:15     | 19:38 (LAR01) | 06:30   | 07:01 | 06:37    |    | 07:12         | 08:04 (LAR04)    |
| 6                   | 05:32 |        |               | 05:59     | 19:52 (LAR01) | 19:29   | 18:37 | 16:51    |    | 16:30         | 45 08:49 (LAR04) |
|                     | 20:39 |        |               | 20:14     | 19:38 (LAR01) | 06:31   | 07:02 | 06:38    |    | 07:13         | 08:04 (LAR04)    |
| 7                   | 05:32 |        |               | 06:00     | 19:51 (LAR01) | 19:27   | 18:36 | 16:50    |    | 16:30         | 45 08:49 (LAR04) |
|                     | 20:38 |        |               | 20:13     | 19:40 (LAR01) | 06:32   | 07:03 | 06:39    |    | 07:14         | 08:05 (LAR04)    |
| 8                   | 05:33 |        | 19:47 (LAR01) | 06:01     | 19:50 (LAR01) | 19:26   | 18:34 | 16:49    |    | 16:30         | 45 08:50 (LAR04) |
|                     | 20:38 | 2      | 19:49 (LAR01) | 20:12     | 19:41 (LAR01) | 06:33   | 07:04 | 06:41    |    | 07:15         | 08:05 (LAR04)    |
| 9                   | 05:34 |        | 19:44 (LAR01) | 06:02     | 19:48 (LAR01) | 19:24   | 18:32 | 16:48    |    | 16:30         | 45 08:50 (LAR04) |
|                     | 20:38 | 8      | 19:52 (LAR01) | 20:10     | 19:43 (LAR01) | 06:34   | 07:05 | 06:42    |    | 07:16         | 08:06 (LAR04)    |
| 10                  | 05:34 |        | 19:42 (LAR01) | 06:03     | 19:47 (LAR01) | 19:22   | 18:31 | 16:47    |    | 16:30         | 45 08:51 (LAR04) |
|                     | 20:37 | 11     | 19:53 (LAR01) | 20:09     |               | 06:35   | 07:06 | 06:43    |    | 07:17         | 08:06 (LAR04)    |
| 11                  | 05:35 |        | 19:42 (LAR01) | 06:04     |               | 19:21   | 18:29 | 16:46    | 9  | 08:15 (LAR04) | 07:17            |
|                     | 20:37 | 13     | 19:55 (LAR01) | 20:08     |               | 06:36   | 07:07 | 06:44    |    | 08:11 (LAR04) | 07:17            |
| 12                  | 05:36 |        | 19:41 (LAR01) | 06:05     |               | 19:19   | 18:27 | 16:45    | 17 | 08:28 (LAR04) | 16:30            |
|                     | 20:36 | 15     | 19:56 (LAR01) | 20:06     |               | 06:37   | 07:09 | 06:45    |    | 08:08 (LAR04) | 07:18            |
| 13                  | 05:37 |        | 19:39 (LAR01) | 06:06     |               | 19:17   | 18:26 | 16:44    | 22 | 08:30 (LAR04) | 16:30            |
|                     | 20:36 | 18     | 19:57 (LAR01) | 20:05     |               | 06:38   | 07:10 | 06:47    |    | 08:07 (LAR04) | 07:19            |
| 14                  | 05:37 |        | 19:39 (LAR01) | 06:07     |               | 19:15   | 18:24 | 16:43    | 26 | 08:33 (LAR04) | 16:30            |
|                     | 20:35 | 19     | 19:58 (LAR01) | 20:04     |               | 06:39   | 07:11 | 06:48    |    | 08:06 (LAR04) | 07:20            |
| 15                  | 05:38 |        | 19:39 (LAR01) | 06:08     |               | 19:14   | 18:23 | 16:42    | 28 | 08:34 (LAR04) | 16:30            |
|                     | 20:35 | 20     | 19:59 (LAR01) | 20:02     |               | 06:40   | 07:12 | 06:49    |    | 08:04 (LAR04) | 07:21            |
| 16                  | 05:39 |        | 19:38 (LAR01) | 06:09     |               | 19:12   | 18:21 | 16:41    | 31 | 08:35 (LAR04) | 16:30            |
|                     | 20:34 | 22     | 20:00 (LAR01) | 20:01     |               | 06:41   | 07:13 | 06:50    |    | 08:04 (LAR04) | 07:21            |
| 17                  | 05:40 |        | 19:38 (LAR01) | 06:10     |               | 19:10   | 18:19 | 16:40    | 33 | 08:37 (LAR04) | 16:31            |
|                     | 20:33 | 23     | 20:01 (LAR01) | 19:59     |               | 06:42   | 07:14 | 06:52    |    | 08:03 (LAR04) | 07:22            |
| 18                  | 05:41 |        | 19:37 (LAR01) | 06:11     |               | 19:09   | 18:18 | 16:39    | 35 | 08:38 (LAR04) | 16:31            |
|                     | 20:33 | 24     | 20:01 (LAR01) | 19:58     |               | 06:43   | 07:15 | 06:53    |    | 08:03 (LAR04) | 07:23            |
| 19                  | 05:41 |        | 19:36 (LAR01) | 06:12     |               | 19:07   | 18:16 | 16:38    | 36 | 08:39 (LAR04) | 16:31            |
|                     | 20:32 | 25     | 20:01 (LAR01) | 19:56     |               | 06:44   | 07:17 | 06:54    |    | 08:02 (LAR04) | 07:23            |
| 20                  | 05:42 |        | 19:36 (LAR01) | 06:13     |               | 19:05   | 18:15 | 16:38    | 37 | 08:39 (LAR04) | 16:32            |
|                     | 20:31 | 26     | 20:02 (LAR01) | 19:55     |               | 06:45   | 07:18 | 06:55    |    | 08:02 (LAR04) | 07:24            |
| 21                  | 05:43 |        | 19:36 (LAR01) | 06:14     |               | 19:03   | 18:13 | 16:37    | 39 | 08:41 (LAR04) | 16:32            |
|                     | 20:31 | 27     | 20:03 (LAR01) | 19:53     |               | 06:46   | 07:19 | 06:56    |    | 08:02 (LAR04) | 07:24            |
| 22                  | 05:44 |        | 19:36 (LAR01) | 06:15     |               | 19:02   | 18:12 | 16:36    | 40 | 08:42 (LAR04) | 16:32            |
|                     | 20:30 | 27     | 20:03 (LAR01) | 19:52     |               | 06:47   | 07:20 | 06:58    |    | 08:01 (LAR04) | 07:25            |
| 23                  | 05:45 |        | 19:36 (LAR01) | 06:16     |               | 19:00   | 18:10 | 16:36    | 41 | 08:42 (LAR04) | 16:33            |
|                     | 20:29 | 28     | 20:04 (LAR01) | 19:50     |               | 06:48   | 07:21 | 06:59    |    | 08:01 (LAR04) | 07:25            |
| 24                  | 05:46 |        | 19:36 (LAR01) | 06:17     |               | 18:58   | 18:09 | 16:35    | 42 | 08:43 (LAR04) | 16:33            |
|                     | 20:28 | 28     | 20:04 (LAR01) | 19:49     |               | 06:49   | 07:22 | 07:00    |    | 08:02 (LAR04) | 07:26            |
| 25                  | 05:47 |        | 19:35 (LAR01) | 06:18     |               | 18:56   | 18:07 | 16:34    | 42 | 08:44 (LAR04) | 16:34            |
|                     | 20:27 | 27     | 20:02 (LAR01) | 19:47     |               | 06:50   | 06:24 | 07:01    |    | 08:02 (LAR04) | 07:26            |
| 26                  | 05:48 |        | 19:35 (LAR01) | 06:19     |               | 18:55   | 17:06 | 16:34    | 42 | 08:44 (LAR04) | 16:35            |
|                     | 20:26 | 26     | 20:01 (LAR01) | 19:46     |               | 06:51   | 06:25 | 07:02    |    | 08:01 (LAR04) | 07:27            |
| 27                  | 05:49 |        | 19:35 (LAR01) | 06:20     |               | 18:53   | 17:04 | 16:33    | 44 | 08:45 (LAR04) | 16:35            |
|                     | 20:25 | 26     | 20:01 (LAR01) | 19:44     |               | 06:52   | 06:26 | 07:03    |    | 08:01 (LAR04) | 07:27            |
| 28                  | 05:50 |        | 19:35 (LAR01) | 06:21     |               | 18:51   | 17:03 | 16:33    | 44 | 08:45 (LAR04) | 16:36            |
|                     | 20:24 | 25     | 20:00 (LAR01) | 19:42     |               | 06:53   | 06:27 | 07:04    |    | 08:01 (LAR04) | 07:27            |
| 29                  | 05:51 |        | 19:35 (LAR01) | 06:22     |               | 18:49   | 17:02 | 16:32    | 44 | 08:45 (LAR04) | 16:37            |
|                     | 20:23 | 24     | 19:59 (LAR01) | 19:41     |               | 06:54   | 06:28 | 07:06    |    | 08:02 (LAR04) | 07:28            |
| 30                  | 05:52 |        | 19:35 (LAR01) | 06:23     |               | 18:48   | 17:00 | 16:32    | 45 | 08:47 (LAR04) | 16:37            |
|                     | 20:22 | 23     | 19:58 (LAR01) | 19:39     |               | 06:56   | 06:30 | 07:07    |    | 08:03 (LAR04) | 07:28            |
| 31                  | 05:53 |        | 19:35 (LAR01) | 06:24     |               | 18:46   | 16:59 | 16:31    | 44 | 08:47 (LAR04) | 16:38            |
|                     | 20:21 | 22     | 19:57 (LAR01) | 19:38     |               |         | 06:31 |          |    | 07:28         | 08:16 (LAR04)    |
|                     |       |        |               |           |               |         | 16:58 |          |    | 16:39         | 44 09:00 (LAR04) |
| Potential sun hours | 462   |        |               | 429       |               | 375     |       | 296      |    | 285           |                  |
| Total, worst case   |       | 512    |               | 122       |               |         |       | 741      |    |               | 1375             |
| Sun reduction       |       | 0,61   |               | 0,67      |               |         |       | 0,41     |    |               | 0,36             |
| Oper. time red.     |       | 0,70   |               | 0,70      |               |         |       | 0,70     |    |               | 0,70             |
| Wind dir. red.      |       | 0,65   |               | 0,65      |               |         |       | 0,66     |    |               | 0,66             |
| Total reduction     |       | 0,28   |               | 0,31      |               |         |       | 0,19     |    |               | 0,17             |
| Total, real         |       | 142    |               | 37        |               |         |       | 140      |    |               | 233              |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

Shadow receptor: R25 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January | February | March | April | May              | June  |                  |                  |
|---------------------|---------|----------|-------|-------|------------------|-------|------------------|------------------|
| 1                   | 07:28   | 07:14    | 06:37 | 06:45 | 05:58            | 05:29 | 05:50 (LAR08)    |                  |
|                     | 16:40   | 17:15    | 17:50 | 19:25 | 19:58            | 20:29 | 4 05:54 (LAR08)  |                  |
| 2                   | 07:29   | 07:13    | 06:36 | 06:44 | 05:57            | 05:28 | 05:50 (LAR08)    |                  |
|                     | 16:41   | 17:16    | 17:51 | 19:26 | 19:59            | 20:29 | 7 05:57 (LAR08)  |                  |
| 3                   | 07:29   | 07:12    | 06:34 | 06:42 | 05:56            | 05:28 | 05:50 (LAR08)    |                  |
|                     | 16:42   | 17:17    | 17:52 | 19:27 | 20:00            | 20:30 | 8 05:58 (LAR08)  |                  |
| 4                   | 07:29   | 07:11    | 06:33 | 06:40 | 05:54            | 05:27 | 05:49 (LAR08)    |                  |
|                     | 16:43   | 17:19    | 17:54 | 19:29 | 20:01            | 20:31 | 10 05:59 (LAR08) |                  |
| 5                   | 07:29   | 07:10    | 06:31 | 06:39 | 05:53            | 05:27 | 05:49 (LAR08)    |                  |
|                     | 16:43   | 17:20    | 17:55 | 19:30 | 20:03            | 20:32 | 11 06:00 (LAR08) |                  |
| 6                   | 07:29   | 07:09    | 06:29 | 06:37 | 05:52            | 05:27 | 05:49 (LAR08)    |                  |
|                     | 16:44   | 17:21    | 17:56 | 19:31 | 20:04            | 20:32 | 12 06:01 (LAR08) |                  |
| 7                   | 07:28   | 07:08    | 06:28 | 06:35 | 05:51            | 05:26 | 05:48 (LAR08)    |                  |
|                     | 16:45   | 17:23    | 17:57 | 19:32 | 20:05            | 20:33 | 13 06:01 (LAR08) |                  |
| 8                   | 07:28   | 07:07    | 06:26 | 06:34 | 05:50            | 05:26 | 05:48 (LAR08)    |                  |
|                     | 16:46   | 17:24    | 17:58 | 19:33 | 20:06            | 20:34 | 14 06:02 (LAR08) |                  |
| 9                   | 07:28   | 07:05    | 06:24 | 06:32 | 05:48            | 05:26 | 05:48 (LAR08)    |                  |
|                     | 16:47   | 17:25    | 17:59 | 19:34 | 20:07            | 20:34 | 15 06:03 (LAR08) |                  |
| 10                  | 07:28   | 07:04    | 06:23 | 06:30 | 05:47            | 05:26 | 05:48 (LAR08)    |                  |
|                     | 16:48   | 17:26    | 18:01 | 19:35 | 20:08            | 20:35 | 16 06:04 (LAR08) |                  |
| 11                  | 07:28   | 07:03    | 06:21 | 06:29 | 05:46            | 05:25 | 05:48 (LAR08)    |                  |
|                     | 16:50   | 17:28    | 18:02 | 19:36 | 20:09            | 20:35 | 16 06:04 (LAR08) |                  |
| 12                  | 07:27   | 07:02    | 06:19 | 06:27 | 05:45            | 05:25 | 05:48 (LAR08)    |                  |
|                     | 16:51   | 17:29    | 18:03 | 19:37 | 20:10            | 20:36 | 17 06:05 (LAR08) |                  |
| 13                  | 07:27   | 07:00    | 06:18 | 06:25 | 19:12 (LAR01)    | 05:44 | 05:25            | 05:48 (LAR08)    |
|                     | 16:52   | 17:30    | 18:04 | 19:38 | 4 19:16 (LAR01)  | 20:11 | 20:36            | 17 06:05 (LAR08) |
| 14                  | 07:27   | 06:59    | 06:16 | 06:24 | 19:10 (LAR01)    | 05:43 | 05:25            | 05:48 (LAR08)    |
|                     | 16:53   | 17:32    | 18:05 | 19:40 | 8 19:18 (LAR01)  | 20:12 | 20:37            | 18 06:06 (LAR08) |
| 15                  | 07:26   | 06:58    | 06:14 | 06:22 | 19:08 (LAR01)    | 05:42 | 05:25            | 05:48 (LAR08)    |
|                     | 16:54   | 17:33    | 18:06 | 19:41 | 10 19:18 (LAR01) | 20:13 | 20:37            | 18 06:06 (LAR08) |
| 16                  | 07:26   | 06:57    | 06:13 | 06:21 | 19:06 (LAR01)    | 05:41 | 05:25            | 05:48 (LAR08)    |
|                     | 16:55   | 17:34    | 18:07 | 19:42 | 13 19:19 (LAR01) | 20:14 | 20:38            | 19 06:07 (LAR08) |
| 17                  | 07:26   | 06:55    | 06:11 | 06:19 | 19:05 (LAR01)    | 05:40 | 05:25            | 05:48 (LAR08)    |
|                     | 16:56   | 17:35    | 18:09 | 19:43 | 16 19:21 (LAR01) | 20:15 | 20:38            | 19 06:07 (LAR08) |
| 18                  | 07:25   | 06:54    | 06:09 | 06:17 | 19:04 (LAR01)    | 05:39 | 05:25            | 05:48 (LAR08)    |
|                     | 16:57   | 17:37    | 18:10 | 19:44 | 17 19:21 (LAR01) | 20:16 | 20:38            | 19 06:07 (LAR08) |
| 19                  | 07:24   | 06:52    | 06:08 | 06:16 | 19:04 (LAR01)    | 05:38 | 05:25            | 05:48 (LAR08)    |
|                     | 16:59   | 17:38    | 18:11 | 19:45 | 19 19:23 (LAR01) | 20:17 | 20:39            | 19 06:07 (LAR08) |
| 20                  | 07:24   | 06:51    | 06:06 | 06:14 | 19:03 (LAR01)    | 05:37 | 05:25            | 05:48 (LAR08)    |
|                     | 17:00   | 17:39    | 18:12 | 19:46 | 20 19:23 (LAR01) | 20:18 | 20:39            | 19 06:07 (LAR08) |
| 21                  | 07:23   | 06:49    | 06:04 | 06:13 | 19:03 (LAR01)    | 05:36 | 05:26            | 05:48 (LAR08)    |
|                     | 17:01   | 17:40    | 18:13 | 19:47 | 22 19:25 (LAR01) | 20:19 | 20:39            | 19 06:07 (LAR08) |
| 22                  | 07:23   | 06:48    | 06:02 | 06:11 | 19:02 (LAR01)    | 05:35 | 05:26            | 05:49 (LAR08)    |
|                     | 17:02   | 17:41    | 18:14 | 19:48 | 23 19:25 (LAR01) | 20:20 | 20:39            | 19 06:08 (LAR08) |
| 23                  | 07:22   | 06:47    | 06:01 | 06:10 | 19:03 (LAR01)    | 05:34 | 05:26            | 05:49 (LAR08)    |
|                     | 17:03   | 17:43    | 18:15 | 19:49 | 24 19:27 (LAR01) | 20:21 | 20:40            | 19 06:08 (LAR08) |
| 24                  | 07:21   | 06:45    | 05:59 | 06:08 | 19:04 (LAR01)    | 05:34 | 05:26            | 05:49 (LAR08)    |
|                     | 17:05   | 17:44    | 18:16 | 19:51 | 23 19:27 (LAR01) | 20:22 | 20:40            | 19 06:08 (LAR08) |
| 25                  | 07:20   | 06:44    | 05:57 | 06:07 | 19:03 (LAR01)    | 05:33 | 05:27            | 05:49 (LAR08)    |
|                     | 17:06   | 17:45    | 18:18 | 19:52 | 23 19:26 (LAR01) | 20:23 | 20:40            | 19 06:08 (LAR08) |
| 26                  | 07:20   | 06:42    | 05:56 | 06:05 | 19:04 (LAR01)    | 05:32 | 05:27            | 05:50 (LAR08)    |
|                     | 17:07   | 17:46    | 18:19 | 19:53 | 21 19:25 (LAR01) | 20:24 | 20:40            | 19 06:09 (LAR08) |
| 27                  | 07:19   | 06:40    | 05:54 | 06:04 | 19:05 (LAR01)    | 05:32 | 05:27            | 05:50 (LAR08)    |
|                     | 17:08   | 17:48    | 18:20 | 19:54 | 18 19:23 (LAR01) | 20:25 | 20:40            | 18 06:08 (LAR08) |
| 28                  | 07:18   | 06:39    | 05:52 | 06:03 | 19:06 (LAR01)    | 05:31 | 05:28            | 05:51 (LAR08)    |
|                     | 17:10   | 17:49    | 18:21 | 19:55 | 16 19:22 (LAR01) | 20:25 | 20:40            | 18 06:09 (LAR08) |
| 29                  | 07:17   |          | 06:50 | 06:01 | 19:08 (LAR01)    | 05:30 | 05:28            | 05:51 (LAR08)    |
|                     | 17:11   |          | 19:22 | 19:56 | 13 19:21 (LAR01) | 20:26 | 20:40            | 18 06:09 (LAR08) |
| 30                  | 07:16   |          | 06:49 | 06:00 | 19:10 (LAR01)    | 05:30 | 05:28            | 05:51 (LAR08)    |
|                     | 17:12   |          | 19:23 | 19:57 | 7 19:17 (LAR01)  | 20:27 | 20:40            | 17 06:08 (LAR08) |
| 31                  | 07:15   |          | 06:47 |       |                  | 05:29 |                  |                  |
|                     | 17:14   |          | 19:24 |       |                  | 20:28 |                  |                  |
| Potential sun hours | 295     | 296      | 369   | 400   | 450              | 455   |                  |                  |
| Total, worst case   |         |          |       | 297   |                  |       |                  | 476              |
| Sun reduction       |         |          |       | 0,48  |                  |       |                  | 0,54             |
| Oper. time red.     |         |          |       | 0,70  |                  |       |                  | 0,70             |
| Wind dir. red.      |         |          |       | 0,63  |                  |       |                  | 0,56             |
| Total reduction     |         |          |       | 0,21  |                  |       |                  | 0,21             |
| Total, real         |         |          |       | 63    |                  |       |                  | 101              |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R25 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August           |                  | September     |       | October |       | November |     | December |     |
|---------------------|-------|------------------|------------------|---------------|-------|---------|-------|----------|-----|----------|-----|
| 1                   | 05:29 | 05:52 (LAR08)    | 05:54            |               | 06:25 | 06:57   | 06:32 | 07:08    |     |          |     |
|                     | 20:40 | 17 06:09 (LAR08) | 20:20            |               | 19:36 | 18:44   | 16:56 | 16:31    |     |          |     |
| 2                   | 05:29 | 05:52 (LAR08)    | 05:55            |               | 06:26 | 06:58   | 06:33 | 07:09    |     |          |     |
|                     | 20:40 | 16 06:08 (LAR08) | 20:19            |               | 19:34 | 18:42   | 16:55 | 16:31    |     |          |     |
| 3                   | 05:30 | 05:53 (LAR08)    | 05:56            |               | 06:27 | 06:59   | 06:34 | 07:10    |     |          |     |
|                     | 20:39 | 15 06:08 (LAR08) | 20:18            |               | 19:33 | 18:41   | 16:54 | 16:30    |     |          |     |
| 4                   | 05:31 | 05:54 (LAR08)    | 05:57            |               | 06:29 | 07:00   | 06:36 | 07:11    |     |          |     |
|                     | 20:39 | 15 06:09 (LAR08) | 20:17            |               | 19:31 | 18:39   | 16:53 | 16:30    |     |          |     |
| 5                   | 05:31 | 05:54 (LAR08)    | 05:58            |               | 06:30 | 07:01   | 06:37 | 07:12    |     |          |     |
|                     | 20:39 | 14 06:08 (LAR08) | 20:15            |               | 19:29 | 18:37   | 16:51 | 16:30    |     |          |     |
| 6                   | 05:32 | 05:55 (LAR08)    | 05:59            |               | 06:31 | 07:02   | 06:38 | 07:13    |     |          |     |
|                     | 20:39 | 13 06:08 (LAR08) | 20:14            |               | 19:27 | 18:36   | 16:50 | 16:30    |     |          |     |
| 7                   | 05:32 | 05:55 (LAR08)    | 06:00            |               | 06:32 | 07:03   | 06:39 | 07:14    |     |          |     |
|                     | 20:38 | 12 06:07 (LAR08) | 20:13            |               | 19:26 | 18:34   | 16:49 | 16:30    |     |          |     |
| 8                   | 05:33 | 05:56 (LAR08)    | 06:01            |               | 06:33 | 07:04   | 06:41 | 07:15    |     |          |     |
|                     | 20:38 | 11 06:07 (LAR08) | 20:12            |               | 19:24 | 18:32   | 16:48 | 16:30    |     |          |     |
| 9                   | 05:34 | 05:57 (LAR08)    | 06:02            |               | 06:34 | 07:05   | 06:42 | 07:16    |     |          |     |
|                     | 20:38 | 9 06:06 (LAR08)  | 20:10            |               | 19:22 | 18:31   | 16:47 | 16:30    |     |          |     |
| 10                  | 05:34 | 05:57 (LAR08)    | 06:03            |               | 06:35 | 07:06   | 06:43 | 07:17    |     |          |     |
|                     | 20:37 | 7 06:04 (LAR08)  | 20:09            |               | 19:21 | 18:29   | 16:46 | 16:30    |     |          |     |
| 11                  | 05:35 | 05:58 (LAR08)    | 06:04            |               | 06:36 | 07:07   | 06:44 | 07:17    |     |          |     |
|                     | 20:37 | 5 06:03 (LAR08)  | 20:08            |               | 19:19 | 18:27   | 16:45 | 16:30    |     |          |     |
| 12                  | 05:36 | 06:05            | 06:05            |               | 06:37 | 07:09   | 06:45 | 07:18    |     |          |     |
|                     | 20:36 | 06:06            | 20:06            |               | 19:17 | 18:26   | 16:44 | 16:30    |     |          |     |
| 13                  | 05:37 | 06:06            | 06:06            | 19:18 (LAR01) | 06:38 | 07:10   | 06:47 | 07:19    |     |          |     |
|                     | 20:36 | 20:05            | 9 19:27 (LAR01)  | 19:15         | 18:24 | 16:43   | 16:30 |          |     |          |     |
| 14                  | 05:37 | 06:07            | 06:07            | 19:15 (LAR01) | 06:39 | 07:11   | 06:48 | 07:20    |     |          |     |
|                     | 20:35 | 20:04            | 14 19:29 (LAR01) | 19:14         | 18:23 | 16:42   | 16:30 |          |     |          |     |
| 15                  | 05:38 | 06:08            | 06:08            | 19:14 (LAR01) | 06:40 | 07:12   | 06:49 | 07:21    |     |          |     |
|                     | 20:35 | 20:02            | 16 19:30 (LAR01) | 19:12         | 18:21 | 16:41   | 16:30 |          |     |          |     |
| 16                  | 05:39 | 06:09            | 06:09            | 19:12 (LAR01) | 06:41 | 07:13   | 06:50 | 07:21    |     |          |     |
|                     | 20:34 | 20:01            | 19 19:31 (LAR01) | 19:10         | 18:19 | 16:40   | 16:31 |          |     |          |     |
| 17                  | 05:40 | 06:10            | 06:10            | 19:11 (LAR01) | 06:42 | 07:14   | 06:52 | 07:22    |     |          |     |
|                     | 20:33 | 19:59            | 21 19:32 (LAR01) | 19:08         | 18:18 | 16:39   | 16:31 |          |     |          |     |
| 18                  | 05:41 | 06:11            | 06:11            | 19:10 (LAR01) | 06:43 | 07:15   | 06:53 | 07:23    |     |          |     |
|                     | 20:33 | 19:58            | 23 19:33 (LAR01) | 19:07         | 18:16 | 16:38   | 16:31 |          |     |          |     |
| 19                  | 05:41 | 06:12            | 06:12            | 19:09 (LAR01) | 06:44 | 07:17   | 06:54 | 07:23    |     |          |     |
|                     | 20:32 | 19:56            | 24 19:33 (LAR01) | 19:05         | 18:15 | 16:38   | 16:32 |          |     |          |     |
| 20                  | 05:42 | 06:13            | 06:13            | 19:09 (LAR01) | 06:45 | 07:18   | 06:55 | 07:24    |     |          |     |
|                     | 20:31 | 19:55            | 23 19:32 (LAR01) | 19:03         | 18:13 | 16:37   | 16:32 |          |     |          |     |
| 21                  | 05:43 | 06:14            | 06:14            | 19:08 (LAR01) | 06:46 | 07:19   | 06:56 | 07:24    |     |          |     |
|                     | 20:31 | 19:53            | 23 19:31 (LAR01) | 19:02         | 18:12 | 16:36   | 16:32 |          |     |          |     |
| 22                  | 05:44 | 06:15            | 06:15            | 19:08 (LAR01) | 06:47 | 07:20   | 06:58 | 07:25    |     |          |     |
|                     | 20:30 | 19:52            | 21 19:29 (LAR01) | 19:00         | 18:10 | 16:35   | 16:33 |          |     |          |     |
| 23                  | 05:45 | 06:16            | 06:16            | 19:08 (LAR01) | 06:48 | 07:21   | 06:59 | 07:25    |     |          |     |
|                     | 20:29 | 19:50            | 20 19:28 (LAR01) | 18:58         | 18:09 | 16:35   | 16:33 |          |     |          |     |
| 24                  | 05:46 | 06:17            | 06:17            | 19:08 (LAR01) | 06:49 | 07:22   | 07:00 | 07:26    |     |          |     |
|                     | 20:28 | 19:49            | 18 19:26 (LAR01) | 18:56         | 18:07 | 16:34   | 16:34 |          |     |          |     |
| 25                  | 05:47 | 06:18            | 06:18            | 19:08 (LAR01) | 06:50 | 06:24   | 07:01 | 07:26    |     |          |     |
|                     | 20:27 | 19:47            | 17 19:25 (LAR01) | 18:55         | 17:06 | 16:34   | 16:35 |          |     |          |     |
| 26                  | 05:48 | 06:19            | 06:19            | 19:08 (LAR01) | 06:51 | 06:25   | 07:02 | 07:27    |     |          |     |
|                     | 20:26 | 19:46            | 15 19:23 (LAR01) | 18:53         | 17:04 | 16:33   | 16:35 |          |     |          |     |
| 27                  | 05:49 | 06:20            | 06:20            | 19:09 (LAR01) | 06:52 | 06:26   | 07:03 | 07:27    |     |          |     |
|                     | 20:25 | 19:44            | 13 19:22 (LAR01) | 18:51         | 17:03 | 16:33   | 16:36 |          |     |          |     |
| 28                  | 05:50 | 06:21            | 06:21            | 19:10 (LAR01) | 06:53 | 06:27   | 07:04 | 07:27    |     |          |     |
|                     | 20:24 | 19:42            | 10 19:20 (LAR01) | 18:49         | 17:02 | 16:32   | 16:37 |          |     |          |     |
| 29                  | 05:51 | 06:22            | 06:22            | 19:11 (LAR01) | 06:54 | 06:28   | 07:06 | 07:28    |     |          |     |
|                     | 20:23 | 19:41            | 8 19:19 (LAR01)  | 18:48         | 17:00 | 16:32   | 16:37 |          |     |          |     |
| 30                  | 05:52 | 06:23            | 06:23            | 19:13 (LAR01) | 06:56 | 06:30   | 07:07 | 07:28    |     |          |     |
|                     | 20:22 | 19:39            | 4 19:17 (LAR01)  | 18:46         | 16:59 | 16:31   | 16:38 |          |     |          |     |
| 31                  | 05:53 | 06:24            | 06:24            |               | 06:31 |         | 07:28 |          |     |          |     |
|                     | 20:21 | 19:38            |                  |               | 16:58 |         | 16:39 |          |     |          |     |
| Potential sun hours | 462   |                  | 429              |               | 375   |         | 344   |          | 296 |          | 285 |
| Total, worst case   |       | 134              |                  | 298           |       |         |       |          |     |          |     |
| Sun reduction       |       | 0,61             |                  | 0,67          |       |         |       |          |     |          |     |
| Oper. time red.     |       | 0,70             |                  | 0,70          |       |         |       |          |     |          |     |
| Wind dir. red.      |       | 0,56             |                  | 0,63          |       |         |       |          |     |          |     |
| Total reduction     |       | 0,24             |                  | 0,29          |       |         |       |          |     |          |     |
| Total, real         |       | 32               |                  | 88            |       |         |       |          |     |          |     |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R26 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          |    | May                                     |  | June                              |
|---------------------|----------------|----------------|----------------|----------------|----|---|--|-----------------------------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 |    | 05:58<br>19:58                          |  | 19:03 (LAR01)<br>25 19:28 (LAR01) |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 |    | 05:57<br>19:59                          |  | 19:04 (LAR01)<br>23 19:27 (LAR01) |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 |    | 05:56<br>20:00                          |  | 19:04 (LAR01)<br>21 19:25 (LAR01) |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 |    | 05:55<br>20:01                          |  | 19:06 (LAR01)<br>18 19:24 (LAR01) |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 |    | 05:53<br>20:03                          |  | 19:07 (LAR01)<br>15 19:22 (LAR01) |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 |    | 05:52<br>20:04                          |  | 19:10 (LAR01)<br>10 19:20 (LAR01) |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 |    | 05:51<br>20:05                          |  | 05:26<br>20:33                    |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 |    | 05:50<br>20:06                          |  | 05:26<br>20:34                    |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 |    | 05:48<br>20:07                          |  | 05:26<br>20:34                    |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 |    | 05:47<br>20:08                          |  | 05:26<br>20:35                    |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 |    | 05:46<br>20:09                          |  | 05:25<br>20:35                    |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 |    | 05:45<br>20:10                          |  | 06:05 (LAR08)<br>1 06:06 (LAR08)  |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 |    | 05:44<br>20:11                          |  | 06:04 (LAR08)<br>4 06:08 (LAR08)  |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 |    | 05:43<br>20:12                          |  | 06:03 (LAR08)<br>7 06:10 (LAR08)  |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 6  | 05:42<br>19:12 (LAR01)<br>19:18 (LAR01) |  | 06:02 (LAR08)<br>9 06:11 (LAR08)  |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 10 | 05:41<br>19:19 (LAR01)<br>19:19 (LAR01) |  | 06:01 (LAR08)<br>11 06:12 (LAR08) |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 14 | 05:40<br>19:21 (LAR01)<br>19:21 (LAR01) |  | 06:00 (LAR08)<br>13 06:13 (LAR08) |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 16 | 05:39<br>19:21 (LAR01)<br>19:21 (LAR01) |  | 06:00 (LAR08)<br>14 06:14 (LAR08) |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 18 | 05:38<br>19:23 (LAR01)<br>19:23 (LAR01) |  | 05:59 (LAR08)<br>15 06:14 (LAR08) |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 20 | 05:37<br>19:03 (LAR01)<br>19:23 (LAR01) |  | 05:58 (LAR08)<br>17 06:15 (LAR08) |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 22 | 05:36<br>19:25 (LAR01)<br>19:25 (LAR01) |  | 05:57 (LAR08)<br>18 06:15 (LAR08) |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 23 | 05:35<br>19:02 (LAR01)<br>19:25 (LAR01) |  | 05:56 (LAR08)<br>19 06:15 (LAR08) |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 25 | 05:34<br>19:27 (LAR01)<br>19:27 (LAR01) |  | 05:56 (LAR08)<br>20 06:16 (LAR08) |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 26 | 05:34<br>19:02 (LAR01)<br>19:28 (LAR01) |  | 05:55 (LAR08)<br>21 06:16 (LAR08) |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52 | 28 | 05:33<br>19:01 (LAR01)<br>19:29 (LAR01) |  | 05:54 (LAR08)<br>21 06:15 (LAR08) |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 29 | 05:32<br>19:01 (LAR01)<br>19:30 (LAR01) |  | 05:54 (LAR08)<br>22 06:16 (LAR08) |
| 27                  | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 29 | 05:32<br>19:01 (LAR01)<br>19:30 (LAR01) |  | 05:53 (LAR08)<br>23 06:16 (LAR08) |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 29 | 05:31<br>19:01 (LAR01)<br>19:30 (LAR01) |  | 05:52 (LAR08)<br>23 06:15 (LAR08) |
| 29                  | 07:17<br>17:11 | 06:37<br>19:22 | 05:50<br>19:22 | 06:01<br>19:56 | 28 | 05:30<br>19:02 (LAR01)<br>19:30 (LAR01) |  | 05:52 (LAR08)<br>24 06:16 (LAR08) |
| 30                  | 07:16<br>17:12 | 06:35<br>19:23 | 05:49<br>19:23 | 06:00<br>19:57 | 27 | 05:30<br>19:02 (LAR01)<br>19:29 (LAR01) |  | 05:51 (LAR08)<br>24 06:15 (LAR08) |
| 31                  | 07:15<br>17:14 | 06:34<br>19:24 | 05:47<br>19:24 | 05:59<br>19:58 | 27 | 05:29<br>20:28<br>06:16 (LAR08)         |  | 05:50 (LAR08)<br>24 06:16 (LAR08) |
| Potential sun hours | 295            | 296            | 369            | 400            |    | 450                                     |  | 455                               |
| Total, worst case   |                |                |                | 350            |    | 442                                     |  | 512                               |
| Sun reduction       |                |                |                | 0,48           |    | 0,47                                    |  | 0,54                              |
| Oper. time red.     |                |                |                | 0,70           |    | 0,70                                    |  | 0,70                              |
| Wind dir. red.      |                |                |                | 0,63           |    | 0,58                                    |  | 0,57                              |
| Total reduction     |                |                |                | 0,21           |    | 0,19                                    |  | 0,21                              |
| Total, real         |                |                |                | 74             |    | 84                                      |  | 109                               |

Table layout: For each day in each month the following matrix apply

|              |                  |                 |                      |                                 |                                |                                  |                                 |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|

## SHADOW - Calendar

**Shadow receptor:** R26 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)

### Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August           |       | September |               | October |       | November |       | December         |      |
|---------------------|-------|------------------|-------|-----------|---------------|---------|-------|----------|-------|------------------|------|
| 1                   | 05:29 | 06:01 (LAR08)    | 05:54 |           | 06:25         | 06:57   | 06:32 | 07:08    |       |                  |      |
|                     | 20:40 | 18 06:19 (LAR08) | 20:20 |           | 19:36         | 18:44   | 16:56 | 16:31    |       |                  |      |
| 2                   | 05:29 | 06:00 (LAR08)    | 05:55 |           | 06:26         | 06:58   | 06:33 | 07:09    |       |                  |      |
|                     | 20:40 | 19 06:19 (LAR08) | 20:19 |           | 19:34         | 18:42   | 16:55 | 16:31    |       |                  |      |
| 3                   | 05:30 | 06:01 (LAR08)    | 05:56 |           | 06:28         | 06:59   | 06:34 | 07:10    |       |                  |      |
|                     | 20:39 | 19 06:20 (LAR08) | 20:18 |           | 19:33         | 18:41   | 16:54 | 16:30    |       |                  |      |
| 4                   | 05:31 | 06:01 (LAR08)    | 05:57 |           | 06:29         | 07:00   | 06:36 | 07:11    |       |                  |      |
|                     | 20:39 | 19 06:20 (LAR08) | 20:17 |           | 19:31         | 18:39   | 16:53 | 16:30    |       |                  |      |
| 5                   | 05:31 | 06:00 (LAR08)    | 05:58 |           | 06:30         | 07:01   | 06:37 | 07:12    |       |                  |      |
|                     | 20:39 | 20 06:20 (LAR08) | 20:15 |           | 19:29         | 18:37   | 16:51 | 16:30    |       |                  |      |
| 6                   | 05:32 | 06:01 (LAR08)    | 05:59 |           | 19:23 (LAR01) | 06:31   | 07:02 | 06:38    | 07:13 |                  |      |
|                     | 20:39 | 20 06:21 (LAR08) | 20:14 | 3         | 19:26 (LAR01) | 19:27   | 18:36 | 16:50    | 16:30 |                  |      |
| 7                   | 05:32 | 06:00 (LAR08)    | 06:00 |           | 19:19 (LAR01) | 06:32   | 07:03 | 06:39    | 07:14 |                  |      |
|                     | 20:38 | 21 06:21 (LAR08) | 20:13 | 12        | 19:31 (LAR01) | 19:26   | 18:34 | 16:49    | 16:30 |                  |      |
| 8                   | 05:33 | 06:00 (LAR08)    | 06:01 |           | 19:16 (LAR01) | 06:33   | 07:04 | 06:41    | 07:15 |                  |      |
|                     | 20:38 | 22 06:22 (LAR08) | 20:12 | 17        | 19:33 (LAR01) | 19:24   | 18:32 | 16:48    | 16:30 |                  |      |
| 9                   | 05:34 | 06:00 (LAR08)    | 06:02 |           | 19:15 (LAR01) | 06:34   | 07:05 | 06:42    | 07:16 |                  |      |
|                     | 20:38 | 23 06:23 (LAR08) | 20:10 | 19        | 19:34 (LAR01) | 19:22   | 18:31 | 16:47    | 16:30 |                  |      |
| 10                  | 05:34 | 06:00 (LAR08)    | 06:03 |           | 19:13 (LAR01) | 06:35   | 07:06 | 06:43    | 07:17 |                  |      |
|                     | 20:37 | 23 06:23 (LAR08) | 20:09 | 22        | 19:35 (LAR01) | 19:21   | 18:29 | 16:46    | 16:30 |                  |      |
| 11                  | 05:35 | 06:00 (LAR08)    | 06:04 |           | 19:12 (LAR01) | 06:36   | 07:07 | 06:44    | 07:17 |                  |      |
|                     | 20:37 | 23 06:23 (LAR08) | 20:08 | 24        | 19:36 (LAR01) | 19:19   | 18:27 | 16:45    | 16:30 |                  |      |
| 12                  | 05:36 | 06:00 (LAR08)    | 06:05 |           | 19:11 (LAR01) | 06:37   | 07:09 | 06:45    | 07:18 |                  |      |
|                     | 20:36 | 24 06:24 (LAR08) | 20:06 | 26        | 19:37 (LAR01) | 19:17   | 18:26 | 16:44    | 16:30 |                  |      |
| 13                  | 05:37 | 05:59 (LAR08)    | 06:06 |           | 19:10 (LAR01) | 06:38   | 07:10 | 06:47    | 07:19 |                  |      |
|                     | 20:36 | 25 06:24 (LAR08) | 20:05 | 27        | 19:37 (LAR01) | 19:15   | 18:24 | 16:43    | 16:30 |                  |      |
| 14                  | 05:37 | 06:00 (LAR08)    | 06:07 |           | 19:10 (LAR01) | 06:39   | 07:11 | 06:48    | 07:20 |                  |      |
|                     | 20:35 | 24 06:24 (LAR08) | 20:04 | 28        | 19:38 (LAR01) | 19:14   | 18:23 | 16:42    | 16:30 |                  |      |
| 15                  | 05:38 | 06:01 (LAR08)    | 06:08 |           | 19:09 (LAR01) | 06:40   | 07:12 | 06:49    | 07:21 |                  |      |
|                     | 20:35 | 24 06:25 (LAR08) | 20:02 | 29        | 19:38 (LAR01) | 19:12   | 18:21 | 16:41    | 16:30 |                  |      |
| 16                  | 05:39 | 06:02 (LAR08)    | 06:09 |           | 19:09 (LAR01) | 06:41   | 07:13 | 06:50    | 07:21 | 08:51 (LAR04)    |      |
|                     | 20:34 | 23 06:25 (LAR08) | 20:01 | 29        | 19:38 (LAR01) | 19:10   | 18:19 | 16:40    | 16:31 | 5 08:56 (LAR04)  |      |
| 17                  | 05:40 | 06:03 (LAR08)    | 06:10 |           | 19:08 (LAR01) | 06:42   | 07:14 | 06:52    | 07:22 | 08:51 (LAR04)    |      |
|                     | 20:34 | 22 06:25 (LAR08) | 19:59 | 29        | 19:37 (LAR01) | 19:09   | 18:18 | 16:39    | 16:31 | 7 08:58 (LAR04)  |      |
| 18                  | 05:41 | 06:03 (LAR08)    | 06:11 |           | 19:08 (LAR01) | 06:43   | 07:15 | 06:53    | 07:23 | 08:51 (LAR04)    |      |
|                     | 20:33 | 22 06:25 (LAR08) | 19:58 | 27        | 19:35 (LAR01) | 19:07   | 18:16 | 16:38    | 16:31 | 9 09:00 (LAR04)  |      |
| 19                  | 05:41 | 06:04 (LAR08)    | 06:12 |           | 19:08 (LAR01) | 06:44   | 07:17 | 06:54    | 07:23 | 08:51 (LAR04)    |      |
|                     | 20:32 | 21 06:25 (LAR08) | 19:56 | 26        | 19:34 (LAR01) | 19:05   | 18:15 | 16:38    | 16:32 | 9 09:00 (LAR04)  |      |
| 20                  | 05:42 | 06:05 (LAR08)    | 06:13 |           | 19:08 (LAR01) | 06:45   | 07:18 | 06:55    | 07:24 | 08:51 (LAR04)    |      |
|                     | 20:31 | 20 06:25 (LAR08) | 19:55 | 24        | 19:32 (LAR01) | 19:03   | 18:13 | 16:37    | 16:32 | 10 09:01 (LAR04) |      |
| 21                  | 05:43 | 06:06 (LAR08)    | 06:14 |           | 19:08 (LAR01) | 06:46   | 07:19 | 06:56    | 07:24 | 08:51 (LAR04)    |      |
|                     | 20:31 | 19 06:25 (LAR08) | 19:53 | 23        | 19:31 (LAR01) | 19:02   | 18:12 | 16:36    | 16:32 | 10 09:01 (LAR04) |      |
| 22                  | 05:44 | 06:07 (LAR08)    | 06:15 |           | 19:08 (LAR01) | 06:47   | 07:20 | 06:58    | 07:25 | 08:52 (LAR04)    |      |
|                     | 20:30 | 18 06:25 (LAR08) | 19:52 | 21        | 19:29 (LAR01) | 19:00   | 18:10 | 16:36    | 16:33 | 10 09:02 (LAR04) |      |
| 23                  | 05:45 | 06:08 (LAR08)    | 06:16 |           | 19:08 (LAR01) | 06:48   | 07:21 | 06:59    | 07:26 | 08:52 (LAR04)    |      |
|                     | 20:29 | 17 06:25 (LAR08) | 19:50 | 20        | 19:28 (LAR01) | 18:58   | 18:09 | 16:35    | 16:33 | 10 09:02 (LAR04) |      |
| 24                  | 05:46 | 06:09 (LAR08)    | 06:17 |           | 19:09 (LAR01) | 06:49   | 07:22 | 07:00    | 07:26 | 08:53 (LAR04)    |      |
|                     | 20:28 | 16 06:25 (LAR08) | 19:49 | 17        | 19:26 (LAR01) | 18:56   | 18:07 | 16:34    | 16:34 | 10 09:03 (LAR04) |      |
| 25                  | 05:47 | 06:09 (LAR08)    | 06:18 |           | 19:09 (LAR01) | 06:50   | 06:24 | 07:01    | 07:26 | 08:54 (LAR04)    |      |
|                     | 20:27 | 15 06:24 (LAR08) | 19:47 | 16        | 19:25 (LAR01) | 18:55   | 17:06 | 16:34    | 16:35 | 9 09:03 (LAR04)  |      |
| 26                  | 05:48 | 06:10 (LAR08)    | 06:19 |           | 19:10 (LAR01) | 06:51   | 06:25 | 07:02    | 07:27 | 08:55 (LAR04)    |      |
|                     | 20:26 | 13 06:23 (LAR08) | 19:46 | 13        | 19:23 (LAR01) | 18:53   | 17:04 | 16:33    | 16:35 | 7 09:02 (LAR04)  |      |
| 27                  | 05:49 | 06:11 (LAR08)    | 06:20 |           | 19:12 (LAR01) | 06:52   | 06:26 | 07:03    | 07:27 | 08:57 (LAR04)    |      |
|                     | 20:25 | 12 06:23 (LAR08) | 19:44 | 10        | 19:22 (LAR01) | 18:51   | 17:03 | 16:33    | 16:36 | 6 09:03 (LAR04)  |      |
| 28                  | 05:50 | 06:12 (LAR08)    | 06:21 |           | 19:14 (LAR01) | 06:53   | 06:27 | 07:04    | 07:27 | 08:59 (LAR04)    |      |
|                     | 20:24 | 10 06:22 (LAR08) | 19:42 | 6         | 19:20 (LAR01) | 18:49   | 17:02 | 16:32    | 16:37 | 2 09:01 (LAR04)  |      |
| 29                  | 05:51 | 06:13 (LAR08)    | 06:22 |           |               | 06:54   | 06:28 | 07:06    | 07:28 |                  |      |
|                     | 20:23 | 8 06:21 (LAR08)  | 19:41 |           |               | 18:48   | 17:00 | 16:32    | 16:37 |                  |      |
| 30                  | 05:52 | 06:14 (LAR08)    | 06:23 |           |               | 06:56   | 06:30 | 07:07    | 07:28 |                  |      |
|                     | 20:22 | 6 06:20 (LAR08)  | 19:39 |           |               | 18:46   | 16:59 | 16:31    | 16:38 |                  |      |
| 31                  | 05:53 | 06:15 (LAR08)    | 06:24 |           |               |         | 06:31 |          | 07:28 |                  |      |
|                     | 20:21 | 3 06:18 (LAR08)  | 19:38 |           |               |         | 16:58 |          | 16:39 |                  |      |
| Potential sun hours | 462   |                  | 429   |           | 375           |         | 344   |          | 296   |                  | 285  |
| Total, worst case   | 569   |                  | 468   |           |               |         |       |          |       |                  | 104  |
| Sun reduction       | 0,61  |                  | 0,67  |           |               |         |       |          |       |                  | 0,36 |
| Oper. time red.     | 0,70  |                  | 0,70  |           |               |         |       |          |       |                  | 0,70 |
| Wind dir. red.      | 0,57  |                  | 0,63  |           |               |         |       |          |       |                  | 0,68 |
| Total reduction     | 0,24  |                  | 0,30  |           |               |         |       |          |       |                  | 0,17 |
| Total, real         | 137   |                  | 138   |           |               |         |       |          |       |                  | 18   |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R26b - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (20)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

### Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February               | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 13:40 (LAR04)<br>17:15 | 07:14<br>17:50 | 06:37<br>19:25 | 06:45<br>19:58 | 05:58<br>20:29 | 05:29<br>20:40 | 05:29<br>20:20 | 05:54<br>19:36 | 06:25<br>18:44 | 06:57<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:28<br>16:41 | 13:41 (LAR04)<br>17:16 | 07:13<br>17:51 | 06:44<br>19:26 | 06:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 13:42 (LAR04)<br>17:17 | 07:12<br>17:52 | 06:42<br>19:27 | 06:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                   | 07:29<br>16:42 | 13:43 (LAR04)<br>17:19 | 07:11<br>17:54 | 06:33<br>19:29 | 06:40<br>20:01 | 05:54<br>20:31 | 05:27<br>20:39 | 05:31<br>20:17 | 05:57<br>19:31 | 06:28<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 13:44 (LAR04)<br>17:20 | 07:10<br>17:55 | 06:31<br>19:30 | 06:39<br>20:03 | 05:53<br>20:32 | 05:27<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 13:45 (LAR04)<br>17:21 | 07:09<br>17:56 | 06:29<br>19:31 | 06:37<br>20:04 | 05:52<br>20:32 | 05:27<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:28<br>16:45 | 13:47 (LAR04)<br>17:23 | 07:08<br>17:57 | 06:28<br>19:32 | 06:35<br>20:05 | 05:51<br>20:33 | 05:26<br>20:38 | 05:32<br>20:13 | 06:00<br>19:26 | 06:32<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 13:48 (LAR04)<br>17:24 | 07:07<br>17:58 | 06:26<br>19:33 | 06:34<br>20:06 | 05:49<br>20:33 | 05:26<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 13:49 (LAR04)<br>17:25 | 07:05<br>17:59 | 06:24<br>19:34 | 06:32<br>20:07 | 05:48<br>20:34 | 05:26<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 13:51 (LAR04)<br>17:26 | 07:04<br>18:01 | 06:23<br>19:35 | 06:30<br>20:08 | 05:47<br>20:35 | 05:26<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:49 | 13:53 (LAR04)<br>17:28 | 07:03<br>18:02 | 06:21<br>19:36 | 06:29<br>20:09 | 05:46<br>20:35 | 05:25<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:51 | 13:55 (LAR04)<br>17:29 | 07:02<br>18:03 | 06:19<br>19:37 | 06:27<br>20:10 | 05:45<br>20:36 | 05:25<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 14:19 (LAR04)<br>17:30 | 07:00<br>18:04 | 06:18<br>19:38 | 06:25<br>20:11 | 05:44<br>20:36 | 05:25<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 14:02 (LAR04)<br>17:31 | 06:59<br>18:05 | 06:16<br>19:40 | 06:24<br>20:12 | 05:43<br>20:37 | 05:25<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 14:16 (LAR04)<br>17:33 | 06:58<br>18:06 | 06:14<br>19:41 | 06:22<br>20:13 | 05:42<br>20:37 | 05:28<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 14:18 (LAR04)<br>17:34 | 06:56<br>18:07 | 06:13<br>19:42 | 06:21<br>20:14 | 05:41<br>20:38 | 05:25<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:22<br>16:31 |
| 17                  | 07:25<br>16:56 | 14:21 (LAR04)<br>17:35 | 06:55<br>18:09 | 06:11<br>19:43 | 06:19<br>20:15 | 05:40<br>20:38 | 05:25<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:23<br>16:31 |
| 18                  | 07:25<br>16:57 | 14:23 (LAR04)<br>17:36 | 06:54<br>18:10 | 06:09<br>19:44 | 06:17<br>20:16 | 05:39<br>20:38 | 05:25<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:24<br>16:31 |
| 19                  | 07:24<br>16:59 | 14:25 (LAR04)<br>17:38 | 06:52<br>18:11 | 06:08<br>19:45 | 06:16<br>20:17 | 05:38<br>20:39 | 05:25<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:25<br>16:32 |
| 20                  | 07:24<br>17:00 | 14:27 (LAR04)<br>17:39 | 06:51<br>18:12 | 06:06<br>19:46 | 06:14<br>20:18 | 05:37<br>20:39 | 05:25<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:26<br>16:32 |
| 21                  | 07:23<br>17:01 | 14:29 (LAR04)<br>17:40 | 06:49<br>18:13 | 06:04<br>19:47 | 06:13<br>20:19 | 05:36<br>20:39 | 05:26<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:27<br>16:32 |
| 22                  | 07:23<br>17:02 | 14:31 (LAR04)<br>17:41 | 06:48<br>18:14 | 06:02<br>19:48 | 06:11<br>20:20 | 05:35<br>20:39 | 05:26<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:28<br>16:33 |
| 23                  | 07:22<br>17:03 | 14:33 (LAR04)<br>17:43 | 06:46<br>18:15 | 06:01<br>19:49 | 06:10<br>20:21 | 05:34<br>20:39 | 05:26<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:29<br>16:33 |
| 24                  | 07:21<br>17:05 | 14:35 (LAR04)<br>17:44 | 06:45<br>18:16 | 05:59<br>19:51 | 06:08<br>20:22 | 05:34<br>20:40 | 05:26<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:30<br>16:34 |
| 25                  | 07:20<br>17:06 | 14:37 (LAR04)<br>17:45 | 06:43<br>18:17 | 05:57<br>19:52 | 06:07<br>20:23 | 05:33<br>20:40 | 05:27<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:23<br>17:06 | 07:01<br>16:34 | 07:31<br>16:35 |
| 26                  | 07:20<br>17:07 | 14:39 (LAR04)<br>17:46 | 06:42<br>18:19 | 05:56<br>19:53 | 06:05<br>20:24 | 05:32<br>20:40 | 05:27<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:24<br>17:04 | 07:02<br>16:33 | 07:32<br>16:35 |
| 27                  | 07:19<br>17:08 | 14:41 (LAR04)<br>17:48 | 06:40<br>18:20 | 05:54<br>19:54 | 06:04<br>20:24 | 05:32<br>20:40 | 05:27<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:25<br>17:03 | 07:03<br>16:33 | 07:33<br>16:36 |
| 28                  | 07:18<br>17:10 | 14:43 (LAR04)<br>17:49 | 06:39<br>18:21 | 05:52<br>19:55 | 06:03<br>20:25 | 05:31<br>20:40 | 05:28<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:26<br>17:02 | 07:04<br>16:32 | 07:34<br>16:37 |
| 29                  | 07:17<br>17:11 | 14:45 (LAR04)<br>17:50 | 06:38<br>18:22 | 05:51<br>19:56 | 06:02<br>20:26 | 05:30<br>20:40 | 05:28<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:27<br>17:00 | 07:06<br>16:32 | 07:35<br>16:37 |
| 30                  | 07:16<br>17:12 | 14:47 (LAR04)<br>17:51 | 06:37<br>18:23 | 05:50<br>19:57 | 06:01<br>20:27 | 05:29<br>20:40 | 05:28<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:28<br>16:59 | 07:07<br>16:31 | 07:36<br>16:38 |
| 31                  | 07:15<br>17:14 | 14:49 (LAR04)<br>17:52 | 06:36<br>18:24 | 05:49<br>19:58 | 06:00<br>20:28 | 05:28<br>20:40 | 05:28<br>20:21 | 06:24<br>19:37 | 06:56<br>18:46 | 07:29<br>16:58 | 07:08<br>16:31 | 07:37<br>16:39 |
| Potential sun hours | 295            | 296                    | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   | 469            |                        |                |                |                |                |                |                |                |                | 58             | 1352           |
| Sun reduction       | 0,44           |                        |                |                |                |                |                |                |                |                | 0,41           | 0,36           |
| Oper. time red.     | 0,70           |                        |                |                |                |                |                |                |                |                | 0,70           | 0,70           |
| Wind dir. red.      | 0,62           |                        |                |                |                |                |                |                |                |                | 0,62           | 0,62           |
| Total reduction     | 0,19           |                        |                |                |                |                |                |                |                |                | 0,18           | 0,16           |
| Total, real         | 90             |                        |                |                |                |                |                |                |                |                | 10             | 214            |

### Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

**Shadow receptor:** R27 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

#### Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |                  |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |                  |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |                  |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |                  |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:54<br>20:01 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:17 | 06:28<br>19:31 | 06:33<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |                  |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |                  |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |                  |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |                  |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:15<br>16:30 |                  |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |                  |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |                  |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |                  |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 06:37<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |                  |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 | 4 13:48 (LAR04)  |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 | 9 13:55 (LAR04)  |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 | 12 13:57 (LAR04) |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 | 14 13:58 (LAR04) |
| 17                  | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 | 16 14:00 (LAR04) |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 | 17 14:01 (LAR04) |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 | 18 14:01 (LAR04) |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 | 18 14:02 (LAR04) |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:32 | 18 14:02 (LAR04) |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:25<br>16:33 | 18 14:03 (LAR04) |
| 23                  | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:25<br>16:33 | 18 14:03 (LAR04) |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 | 18 14:04 (LAR04) |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:27<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 | 17 14:04 (LAR04) |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 06:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 | 17 14:04 (LAR04) |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 | 15 14:03 (LAR04) |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 | 14 14:04 (LAR04) |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 | 11 14:03 (LAR04) |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 | 7 14:01 (LAR04)  |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |                  |
| Potential sun hours | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |                  |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                | 261              |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                | 0,36             |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                | 0,70             |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                | 0,62             |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                | 0,16             |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                | 42               |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



### SHADOW - Calendar

Shadow receptor: R29 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (22)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53 | 06:40<br>19:29 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:57<br>20:17 | 06:28<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:25<br>16:33 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:27<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 07:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R31 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April                          | May                    | June                   |
|---------------------|----------------|----------------|----------------|--------------------------------|------------------------|------------------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25                 | 18:44 (LAR01)<br>19:58 | 06:18 (LAR08)<br>05:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26                 | 18:52 (LAR01)<br>19:58 | 06:40 (LAR08)<br>20:29 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27                 | 19:59<br>20:00         | 06:17 (LAR08)<br>05:28 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29                 | 25<br>27               | 06:42 (LAR08)<br>20:29 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30                 | 29<br>31               | 06:15 (LAR08)<br>05:28 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31                 | 27<br>33               | 06:42 (LAR08)<br>20:30 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32                 | 29<br>34               | 06:14 (LAR08)<br>05:27 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33                 | 33<br>35               | 06:13 (LAR08)<br>05:27 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34                 | 31<br>36               | 06:12 (LAR08)<br>05:27 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35                 | 33<br>36               | 06:11 (LAR08)<br>05:26 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36                 | 35<br>37               | 06:10 (LAR08)<br>05:26 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37                 | 36<br>37               | 06:09 (LAR08)<br>05:25 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38                 | 37<br>37               | 06:09 (LAR08)<br>05:25 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40                 | 37<br>37               | 06:09 (LAR08)<br>05:25 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41                 | 37<br>37               | 06:09 (LAR08)<br>05:25 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42                 | 37<br>36               | 06:09 (LAR08)<br>05:25 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43                 | 36<br>36               | 06:09 (LAR08)<br>05:25 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44                 | 36<br>36               | 06:09 (LAR08)<br>05:25 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 17:47 (LAR01)<br>17:49 (LAR01) | 36<br>35               | 06:10 (LAR08)<br>05:25 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 17:45 (LAR01)<br>17:51 (LAR01) | 35<br>35               | 06:10 (LAR08)<br>05:25 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 17:43 (LAR01)<br>17:52 (LAR01) | 35<br>34               | 06:10 (LAR08)<br>05:26 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 17:41 (LAR01)<br>17:53 (LAR01) | 34<br>34               | 06:10 (LAR08)<br>05:26 |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 17:40 (LAR01)<br>17:54 (LAR01) | 34<br>32               | 06:10 (LAR08)<br>05:26 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 17:40 (LAR01)<br>17:55 (LAR01) | 32<br>31               | 06:12 (LAR08)<br>05:26 |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:17 | 17:39 (LAR01)<br>17:56 (LAR01) | 31<br>31               | 06:43 (LAR08)<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 17:39 (LAR01)<br>17:57 (LAR01) | 31<br>30               | 06:13 (LAR08)<br>05:27 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 17:39 (LAR01)<br>17:59 (LAR01) | 30<br>28               | 06:43 (LAR08)<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 17:39 (LAR01)<br>18:00 (LAR01) | 28<br>27               | 06:42 (LAR08)<br>05:28 |
| 29                  | 07:17<br>17:11 | 06:39<br>19:22 | 06:50<br>19:22 | 18:40 (LAR01)<br>18:59 (LAR01) | 27<br>26               | 06:41 (LAR08)<br>20:40 |
| 30                  | 07:16<br>17:12 | 06:49<br>19:23 | 06:49<br>19:23 | 18:40 (LAR01)<br>18:57 (LAR01) | 26<br>24               | 06:16 (LAR08)<br>05:28 |
| 31                  | 07:15<br>17:14 | 06:47<br>19:24 | 06:47<br>19:24 | 18:42 (LAR01)<br>18:55 (LAR01) | 24<br>23               | 06:40 (LAR08)<br>20:40 |
| Potential sun hours | 295            | 296            | 369            | 400                            | 450                    | 455                    |
| Total, worst case   |                |                | 183            | 51                             | 991                    | 111                    |
| Sun reduction       |                |                | 0,44           | 0,48                           | 0,47                   | 0,54                   |
| Oper. time red.     |                |                | 0,70           | 0,70                           | 0,70                   | 0,70                   |
| Wind dir. red.      |                |                | 0,61           | 0,57                           | 0,56                   | 0,56                   |
| Total reduction     |                |                | 0,19           | 0,19                           | 0,18                   | 0,21                   |
| Total, real         |                |                | 35             | 10                             | 182                    | 24                     |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R31 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  | August        | September     | October       | November | December      |               |               |               |       |       |       |
|---------------------|-------|---------------|---------------|---------------|----------|---------------|---------------|---------------|---------------|-------|-------|-------|
| 1                   | 05:29 | 05:54         | 06:19 (LAR08) | 06:25         | 06:57    | 06:32         | 07:08         |               |               |       |       |       |
|                     | 20:40 | 20:20         | 06:56 (LAR08) | 19:36         | 18:44    | 16:56         | 16:31         |               |               |       |       |       |
| 2                   | 05:29 | 05:55         | 06:20 (LAR08) | 06:26         | 06:58    | 06:33         | 07:09         |               |               |       |       |       |
|                     | 20:40 | 20:19         | 06:56 (LAR08) | 19:34         | 18:42    | 16:55         | 16:31         |               |               |       |       |       |
| 3                   | 05:30 | 05:56         | 06:20 (LAR08) | 06:27         | 06:59    | 06:34         | 07:10         |               |               |       |       |       |
|                     | 20:39 | 20:18         | 06:56 (LAR08) | 19:33         | 18:41    | 16:54         | 16:30         |               |               |       |       |       |
| 4                   | 05:31 | 05:57         | 06:20 (LAR08) | 06:29         | 07:00    | 06:36         | 07:11         |               |               |       |       |       |
|                     | 20:39 | 20:17         | 06:56 (LAR08) | 19:31         | 18:39    | 16:53         | 16:30         |               |               |       |       |       |
| 5                   | 05:31 | 06:32 (LAR08) | 05:58         | 06:20 (LAR08) | 06:30    | 07:01         | 06:37         | 07:12         |               |       |       |       |
|                     | 20:39 | 6             | 06:38 (LAR08) | 20:15         | 35       | 06:55 (LAR08) | 19:29         | 18:37         | 16:51         | 16:30 |       |       |
| 6                   | 05:32 | 06:31 (LAR08) | 05:59         | 06:21 (LAR08) | 06:31    | 07:02         | 06:38         | 07:13         |               |       |       |       |
|                     | 20:39 | 10            | 06:41 (LAR08) | 20:14         | 34       | 06:55 (LAR08) | 19:27         | 18:36         | 16:50         | 16:30 |       |       |
| 7                   | 05:32 | 06:29 (LAR08) | 06:00         | 06:22 (LAR08) | 06:32    | 07:03         | 06:39         | 07:14         |               |       |       |       |
|                     | 20:38 | 13            | 06:42 (LAR08) | 20:13         | 32       | 06:54 (LAR08) | 19:26         | 18:34         | 16:49         | 16:30 |       |       |
| 8                   | 05:33 | 06:26 (LAR08) | 06:01         | 06:23 (LAR08) | 06:33    | 07:04         | 06:41         | 07:15         |               |       |       |       |
|                     | 20:38 | 15            | 06:43 (LAR08) | 20:12         | 30       | 06:53 (LAR08) | 19:24         | 18:32         | 16:48         | 16:30 |       |       |
| 9                   | 05:34 | 06:28 (LAR08) | 06:02         | 06:24 (LAR08) | 06:34    | 07:05         | 06:42         | 07:16         |               |       |       |       |
|                     | 20:38 | 17            | 06:45 (LAR08) | 20:10         | 28       | 06:52 (LAR08) | 19:22         | 18:31         | 16:47         | 16:30 |       |       |
| 10                  | 05:34 | 06:26 (LAR08) | 06:03         | 06:25 (LAR08) | 06:35    | 07:06         | 06:43         | 07:17         |               |       |       |       |
|                     | 20:37 | 19            | 06:45 (LAR08) | 20:09         | 26       | 06:51 (LAR08) | 19:21         | 18:29         | 16:46         | 16:30 |       |       |
| 11                  | 05:35 | 06:26 (LAR08) | 06:04         | 06:26 (LAR08) | 06:36    |               | 18:37 (LAR01) | 07:07         | 06:44         | 07:17 |       |       |
|                     | 20:37 | 21            | 06:47 (LAR08) | 20:08         | 24       | 06:50 (LAR08) | 19:19         | 7             | 18:44 (LAR01) | 18:27 | 16:45 | 16:30 |
| 12                  | 05:36 | 06:26 (LAR08) | 06:05         | 06:27 (LAR08) | 06:37    |               | 18:34 (LAR01) | 07:09         | 06:45         | 07:18 |       |       |
|                     | 20:36 | 22            | 06:48 (LAR08) | 20:06         | 21       | 06:48 (LAR08) | 19:17         | 12            | 18:46 (LAR01) | 18:26 | 16:44 | 16:30 |
| 13                  | 05:37 | 06:24 (LAR08) | 06:06         | 06:28 (LAR08) | 06:38    |               | 18:32 (LAR01) | 07:10         | 06:47         | 07:19 |       |       |
|                     | 20:36 | 24            | 06:48 (LAR08) | 20:05         | 18       | 06:46 (LAR08) | 19:15         | 16            | 18:48 (LAR01) | 18:24 | 16:43 | 16:30 |
| 14                  | 05:37 | 06:24 (LAR08) | 06:07         | 06:30 (LAR08) | 06:39    |               | 18:30 (LAR01) | 07:11         | 06:48         | 07:20 |       |       |
|                     | 20:35 | 25            | 06:49 (LAR08) | 20:04         | 14       | 06:44 (LAR08) | 19:14         | 19            | 18:49 (LAR01) | 18:23 | 16:42 | 16:30 |
| 15                  | 05:38 | 06:24 (LAR08) | 06:08         | 06:35 (LAR08) | 06:40    |               | 18:29 (LAR01) | 07:12         | 06:49         | 07:21 |       |       |
|                     | 20:35 | 26            | 06:50 (LAR08) | 20:02         | 3        | 06:38 (LAR08) | 19:12         | 20            | 18:49 (LAR01) | 18:21 | 16:41 | 16:30 |
| 16                  | 05:39 | 06:23 (LAR08) | 06:09         |               |          | 06:41         |               |               | 18:28 (LAR01) | 07:13 | 06:50 | 07:21 |
|                     | 20:34 | 28            | 06:51 (LAR08) | 20:01         |          | 19:10         | 19            | 18:47 (LAR01) | 18:19         | 16:40 | 16:31 |       |
| 17                  | 05:40 | 06:23 (LAR08) | 06:10         |               |          | 06:42         |               |               | 18:27 (LAR01) | 07:14 | 06:52 | 07:22 |
|                     | 20:33 | 29            | 06:52 (LAR08) | 19:59         |          | 19:08         | 19            | 18:46 (LAR01) | 18:18         | 16:39 | 16:31 |       |
| 18                  | 05:41 | 06:22 (LAR08) | 06:11         |               |          | 06:43         |               |               | 18:27 (LAR01) | 07:15 | 06:53 | 07:23 |
|                     | 20:33 | 30            | 06:52 (LAR08) | 19:58         |          | 19:07         | 17            | 18:44 (LAR01) | 18:16         | 16:38 | 16:31 |       |
| 19                  | 05:41 | 06:22 (LAR08) | 06:12         |               |          | 06:44         |               |               | 18:26 (LAR01) | 07:17 | 06:54 | 07:23 |
|                     | 20:32 | 31            | 06:53 (LAR08) | 19:56         |          | 19:05         | 16            | 18:42 (LAR01) | 18:15         | 16:38 | 16:32 |       |
| 20                  | 05:42 | 06:21 (LAR08) | 06:13         |               |          | 06:45         |               |               | 18:26 (LAR01) | 07:18 | 06:55 | 07:24 |
|                     | 20:31 | 32            | 06:53 (LAR08) | 19:55         |          | 19:03         | 14            | 18:40 (LAR01) | 18:13         | 16:37 | 16:32 |       |
| 21                  | 05:43 | 06:21 (LAR08) | 06:14         |               |          | 06:46         |               |               | 18:27 (LAR01) | 07:19 | 06:56 | 07:24 |
|                     | 20:31 | 33            | 06:54 (LAR08) | 19:53         |          | 19:01         | 11            | 18:38 (LAR01) | 18:12         | 16:36 | 16:32 |       |
| 22                  | 05:44 | 06:21 (LAR08) | 06:15         |               |          | 06:47         |               |               | 18:27 (LAR01) | 07:20 | 06:58 | 07:25 |
|                     | 20:30 | 34            | 06:55 (LAR08) | 19:52         |          | 19:00         | 10            | 18:37 (LAR01) | 18:10         | 16:35 | 16:33 |       |
| 23                  | 05:45 | 06:21 (LAR08) | 06:16         |               |          | 06:48         |               |               | 18:28 (LAR01) | 07:21 | 06:59 | 07:25 |
|                     | 20:29 | 34            | 06:55 (LAR08) | 19:50         |          | 18:58         | 7             | 18:35 (LAR01) | 18:09         | 16:35 | 16:33 |       |
| 24                  | 05:46 | 06:21 (LAR08) | 06:17         |               |          | 06:49         |               |               | 18:31 (LAR01) | 07:22 | 07:00 | 07:26 |
|                     | 20:28 | 35            | 06:56 (LAR08) | 19:49         |          | 18:56         | 3             | 18:34 (LAR01) | 18:07         | 16:34 | 16:34 |       |
| 25                  | 05:47 | 06:19 (LAR08) | 06:18         |               |          | 06:50         |               |               | 06:24         | 07:01 | 07:01 | 07:26 |
|                     | 20:27 | 36            | 06:55 (LAR08) | 19:47         |          | 18:55         |               |               | 17:06         | 16:34 | 16:35 |       |
| 26                  | 05:48 | 06:19 (LAR08) | 06:19         |               |          | 06:51         |               |               | 06:25         | 07:02 | 07:27 |       |
|                     | 20:26 | 36            | 06:55 (LAR08) | 19:46         |          | 18:53         |               |               | 17:04         | 16:33 | 16:35 |       |
| 27                  | 05:49 | 06:19 (LAR08) | 06:20         |               |          | 06:52         |               |               | 06:26         | 07:03 | 07:27 |       |
|                     | 20:25 | 37            | 06:56 (LAR08) | 19:44         |          | 18:51         |               |               | 17:03         | 16:33 | 16:36 |       |
| 28                  | 05:50 | 06:19 (LAR08) | 06:21         |               |          | 06:53         |               |               | 06:27         | 07:04 | 07:27 |       |
|                     | 20:24 | 37            | 06:56 (LAR08) | 19:42         |          | 18:49         |               |               | 17:02         | 16:32 | 16:37 |       |
| 29                  | 05:51 | 06:19 (LAR08) | 06:22         |               |          | 06:54         |               |               | 06:28         | 07:06 | 07:28 |       |
|                     | 20:23 | 37            | 06:56 (LAR08) | 19:41         |          | 18:48         |               |               | 17:00         | 16:32 | 16:37 |       |
| 30                  | 05:52 | 06:19 (LAR08) | 06:23         |               |          | 06:55         |               |               | 06:30         | 07:07 | 07:28 |       |
|                     | 20:22 | 37            | 06:56 (LAR08) | 19:39         |          | 18:46         |               |               | 16:59         | 16:31 | 16:38 |       |
| 31                  | 05:53 | 06:19 (LAR08) | 06:24         |               |          |               |               |               | 06:31         |       | 07:28 |       |
|                     | 20:21 | 37            | 06:56 (LAR08) | 19:38         |          |               |               |               | 16:58         |       | 16:39 |       |
| Potential sun hours | 462   |               | 429           |               | 375      |               | 344           |               | 296           |       | 285   |       |
| Total, worst case   | 741   |               | 410           |               | 190      |               |               |               |               |       |       |       |
| Sun reduction       | 0,61  |               | 0,67          |               | 0,58     |               |               |               |               |       |       |       |
| Oper. time red.     | 0,70  |               | 0,70          |               | 0,70     |               |               |               |               |       |       |       |
| Wind dir. red.      | 0,56  |               | 0,56          |               | 0,61     |               |               |               |               |       |       |       |
| Total reduction     | 0,24  |               | 0,26          |               | 0,25     |               |               |               |               |       |       |       |
| Total, real         | 177   |               | 108           |               | 47       |               |               |               |               |       |       |       |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R33 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March                  | April                          | May            | June           |
|---------------------|----------------|----------------|------------------------|--------------------------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50         | 07:28 (LAR08)<br>08:30 (LAR08) | 06:45<br>19:25 | 05:58<br>20:29 |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51         | 07:28 (LAR08)<br>08:29 (LAR08) | 06:44<br>19:26 | 05:57<br>20:29 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52         | 07:27 (LAR08)<br>08:29 (LAR08) | 06:42<br>19:27 | 05:56<br>20:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54         | 07:27 (LAR08)<br>08:29 (LAR08) | 06:40<br>19:29 | 05:54<br>20:31 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55         | 07:27 (LAR08)<br>08:29 (LAR08) | 06:39<br>19:30 | 05:53<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56         | 07:26 (LAR08)<br>08:28 (LAR08) | 06:37<br>19:31 | 05:52<br>20:32 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57         | 07:27 (LAR08)<br>08:28 (LAR08) | 06:35<br>19:32 | 05:51<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58         | 07:27 (LAR08)<br>08:27 (LAR08) | 06:34<br>19:33 | 05:49<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59         | 07:26 (LAR08)<br>08:26 (LAR08) | 06:32<br>19:34 | 05:48<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01         | 07:27 (LAR08)<br>08:26 (LAR08) | 06:30<br>19:35 | 05:47<br>20:35 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>08:05 (LAR08) | 07:27 (LAR08)<br>08:24 (LAR08) | 06:29<br>19:36 | 05:46<br>20:35 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>08:11 (LAR08) | 07:27 (LAR08)<br>08:23 (LAR08) | 06:27<br>19:37 | 05:45<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>08:14 (LAR08) | 07:28 (LAR08)<br>08:23 (LAR08) | 06:25<br>19:38 | 05:44<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>08:17 (LAR08) | 07:29 (LAR08)<br>08:21 (LAR08) | 06:24<br>19:40 | 05:43<br>20:37 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>08:19 (LAR08) | 07:29 (LAR08)<br>08:19 (LAR08) | 06:22<br>19:41 | 05:42<br>20:37 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>08:20 (LAR08) | 07:30 (LAR08)<br>08:18 (LAR08) | 06:21<br>19:42 | 05:41<br>20:38 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>08:22 (LAR08) | 07:31 (LAR08)<br>08:16 (LAR08) | 06:19<br>19:43 | 05:40<br>20:38 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>08:23 (LAR08) | 07:32 (LAR08)<br>08:14 (LAR08) | 06:17<br>19:44 | 05:39<br>20:38 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>08:25 (LAR08) | 07:33 (LAR08)<br>08:12 (LAR08) | 06:16<br>19:45 | 05:38<br>20:39 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>08:25 (LAR08) | 07:35 (LAR08)<br>08:10 (LAR08) | 06:14<br>19:46 | 05:37<br>20:39 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>08:27 (LAR08) | 07:37 (LAR08)<br>08:07 (LAR08) | 06:13<br>19:47 | 05:36<br>20:39 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>08:27 (LAR08) | 07:39 (LAR08)<br>08:03 (LAR08) | 06:11<br>19:48 | 05:35<br>20:39 |
| 23                  | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>08:28 (LAR08) | 07:43 (LAR08)<br>07:58 (LAR08) | 06:10<br>19:49 | 05:34<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>08:28 (LAR08) | 07:31 (LAR08)<br>08:28 (LAR08) | 06:08<br>19:51 | 05:34<br>20:40 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>08:29 (LAR08) | 07:30 (LAR08)<br>08:29 (LAR08) | 06:07<br>19:52 | 05:33<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>08:29 (LAR08) | 07:29 (LAR08)<br>08:29 (LAR08) | 06:05<br>19:53 | 05:32<br>20:40 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>08:30 (LAR08) | 07:29 (LAR08)<br>08:30 (LAR08) | 06:04<br>19:54 | 05:32<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>08:29 (LAR08) | 07:28 (LAR08)<br>08:29 (LAR08) | 06:03<br>19:55 | 05:31<br>20:40 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22         |                                | 06:01<br>19:56 | 05:30<br>20:40 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23         |                                | 06:00<br>19:57 | 05:28<br>20:40 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24         |                                | 05:29<br>20:28 |                |
| Potential sun hours | 295            | 296            | 369                    | 400                            | 451            | 455            |
| Total, worst case   |                | 816            |                        | 1159                           |                |                |
| Sun reduction       |                | 0,46           |                        | 0,44                           |                |                |
| Oper. time red.     |                | 0,70           |                        | 0,70                           |                |                |
| Wind dir. red.      |                | 0,66           |                        | 0,66                           |                |                |
| Total reduction     |                | 0,21           |                        | 0,20                           |                |                |
| Total, real         |                | 172            |                        | 235                            |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R33 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  | August | September | October       | November      | December      |       |       |
|---------------------|-------|--------|-----------|---------------|---------------|---------------|-------|-------|
| 1                   | 05:29 | 05:53  | 06:25     | 06:57         | 08:07 (LAR08) | 06:32         | 07:08 |       |
|                     | 20:40 | 20:20  | 19:36     | 18:44         | 55            | 09:02 (LAR08) | 16:31 |       |
| 2                   | 05:29 | 05:54  | 06:26     | 06:58         | 08:06 (LAR08) | 06:33         | 07:09 |       |
|                     | 20:40 | 20:19  | 19:34     | 18:42         | 57            | 09:03 (LAR08) | 16:31 |       |
| 3                   | 05:30 | 05:55  | 06:27     | 06:59         | 08:05 (LAR08) | 06:34         | 07:10 |       |
|                     | 20:39 | 20:18  | 19:33     | 18:41         | 58            | 09:03 (LAR08) | 16:30 |       |
| 4                   | 05:30 | 05:57  | 06:28     | 07:00         | 08:04 (LAR08) | 06:36         | 07:11 |       |
|                     | 20:39 | 20:17  | 19:31     | 18:39         | 59            | 09:03 (LAR08) | 16:30 |       |
| 5                   | 05:31 | 05:58  | 06:30     | 07:01         | 08:03 (LAR08) | 06:37         | 07:12 |       |
|                     | 20:39 | 20:15  | 19:29     | 18:37         | 60            | 09:03 (LAR08) | 16:30 |       |
| 6                   | 05:32 | 05:59  | 06:31     | 07:02         | 08:03 (LAR08) | 06:38         | 07:13 |       |
|                     | 20:39 | 20:14  | 19:27     | 18:36         | 60            | 09:03 (LAR08) | 16:30 |       |
| 7                   | 05:32 | 06:00  | 06:32     | 07:03         | 08:02 (LAR08) | 06:39         | 07:14 |       |
|                     | 20:38 | 20:13  | 19:26     | 18:34         | 61            | 09:03 (LAR08) | 16:30 |       |
| 8                   | 05:33 | 06:01  | 06:33     | 07:04         | 08:03 (LAR08) | 06:41         | 07:15 |       |
|                     | 20:38 | 20:12  | 19:24     | 18:32         | 61            | 09:04 (LAR08) | 16:30 |       |
| 9                   | 05:34 | 06:02  | 06:34     | 07:05         | 08:02 (LAR08) | 06:42         | 07:16 |       |
|                     | 20:38 | 20:10  | 19:22     | 18:31         | 62            | 09:04 (LAR08) | 16:30 |       |
| 10                  | 05:34 | 06:03  | 06:35     | 07:06         | 08:02 (LAR08) | 06:43         | 07:17 |       |
|                     | 20:37 | 20:09  | 19:21     | 18:29         | 62            | 09:04 (LAR08) | 16:30 |       |
| 11                  | 05:35 | 06:04  | 06:36     | 07:07         | 08:01 (LAR08) | 06:44         | 07:17 |       |
|                     | 20:37 | 20:08  | 19:19     | 18:27         | 62            | 09:03 (LAR08) | 16:30 |       |
| 12                  | 05:36 | 06:05  | 06:37     | 07:09         | 08:01 (LAR08) | 06:45         | 07:18 |       |
|                     | 20:36 | 20:06  | 19:17     | 18:26         | 62            | 09:03 (LAR08) | 16:30 |       |
| 13                  | 05:36 | 06:06  | 06:38     | 07:10         | 08:01 (LAR08) | 06:47         | 07:19 |       |
|                     | 20:36 | 20:05  | 19:15     | 18:24         | 61            | 09:02 (LAR08) | 16:30 |       |
| 14                  | 05:37 | 06:07  | 06:39     | 07:11         | 08:01 (LAR08) | 06:48         | 07:20 |       |
|                     | 20:35 | 20:04  | 19:14     | 18:22         | 61            | 09:02 (LAR08) | 16:30 |       |
| 15                  | 05:38 | 06:08  | 06:40     | 07:12         | 08:02 (LAR08) | 06:49         | 07:21 |       |
|                     | 20:35 | 20:02  | 19:12     | 18:21         | 60            | 09:02 (LAR08) | 16:30 |       |
| 16                  | 05:39 | 06:09  | 06:41     | 07:13         | 08:02 (LAR08) | 06:50         | 07:21 |       |
|                     | 20:34 | 20:01  | 19:10     | 18:19         | 59            | 09:01 (LAR08) | 16:31 |       |
| 17                  | 05:40 | 06:10  | 06:42     | 07:14         | 08:02 (LAR08) | 06:52         | 07:22 |       |
|                     | 20:33 | 19:59  | 19:08     | 18:18         | 58            | 09:00 (LAR08) | 16:31 |       |
| 18                  | 05:40 | 06:11  | 06:43     | 07:15         | 08:02 (LAR08) | 06:53         | 07:23 |       |
|                     | 20:33 | 19:58  | 19:07     | 18:16         | 57            | 08:59 (LAR08) | 16:31 |       |
| 19                  | 05:41 | 06:12  | 06:44     | 07:16         | 08:03 (LAR08) | 06:54         | 07:23 |       |
|                     | 20:32 | 19:56  | 19:05     | 18:15         | 55            | 08:58 (LAR08) | 16:32 |       |
| 20                  | 05:42 | 06:13  | 06:45     | 08:31 (LAR08) | 07:18         | 08:04 (LAR08) | 06:55 | 07:24 |
|                     | 20:31 | 19:55  | 19:03     | 18:13         | 54            | 08:58 (LAR08) | 16:32 |       |
| 21                  | 05:43 | 06:14  | 06:46     | 08:25 (LAR08) | 07:19         | 08:05 (LAR08) | 06:56 | 07:24 |
|                     | 20:31 | 19:53  | 19:01     | 18:12         | 52            | 08:57 (LAR08) | 16:32 |       |
| 22                  | 05:44 | 06:15  | 06:47     | 08:22 (LAR08) | 07:20         | 08:05 (LAR08) | 06:58 | 07:25 |
|                     | 20:30 | 19:52  | 19:00     | 18:10         | 50            | 08:55 (LAR08) | 16:33 |       |
| 23                  | 05:45 | 06:16  | 06:48     | 08:19 (LAR08) | 07:21         | 08:06 (LAR08) | 06:59 | 07:25 |
|                     | 20:29 | 19:50  | 18:58     | 18:09         | 48            | 08:54 (LAR08) | 16:33 |       |
| 24                  | 05:46 | 06:17  | 06:49     | 08:17 (LAR08) | 07:22         | 08:08 (LAR08) | 07:00 | 07:26 |
|                     | 20:28 | 19:49  | 18:56     | 18:07         | 45            | 08:53 (LAR08) | 16:34 |       |
| 25                  | 05:47 | 06:18  | 06:50     | 08:16 (LAR08) | 06:24         | 07:09 (LAR08) | 07:01 | 07:26 |
|                     | 20:27 | 19:47  | 18:55     | 17:06         | 42            | 07:51 (LAR08) | 16:34 |       |
| 26                  | 05:48 | 06:19  | 06:51     | 08:14 (LAR08) | 06:25         | 07:10 (LAR08) | 07:02 | 07:27 |
|                     | 20:26 | 19:46  | 18:53     | 17:04         | 39            | 07:49 (LAR08) | 16:33 |       |
| 27                  | 05:49 | 06:20  | 06:52     | 08:12 (LAR08) | 06:26         | 07:12 (LAR08) | 07:03 | 07:27 |
|                     | 20:25 | 19:44  | 18:51     | 17:03         | 35            | 07:47 (LAR08) | 16:33 |       |
| 28                  | 05:50 | 06:21  | 06:53     | 08:11 (LAR08) | 06:27         | 07:15 (LAR08) | 07:04 | 07:27 |
|                     | 20:24 | 19:42  | 18:49     | 17:02         | 31            | 07:46 (LAR08) | 16:32 |       |
| 29                  | 05:51 | 06:22  | 06:54     | 08:09 (LAR08) | 06:28         | 07:17 (LAR08) | 07:06 | 07:28 |
|                     | 20:23 | 19:41  | 18:48     | 17:00         | 26            | 07:43 (LAR08) | 16:32 |       |
| 30                  | 05:52 | 06:23  | 06:55     | 08:08 (LAR08) | 06:30         | 07:20 (LAR08) | 07:07 | 07:28 |
|                     | 20:22 | 19:39  | 18:46     | 16:59         | 19            | 07:39 (LAR08) | 16:31 |       |
| 31                  | 05:53 | 06:24  |           | 06:31         |               | 07:29 (LAR08) | 07:28 |       |
|                     | 20:21 | 19:38  |           | 16:58         | 2             | 07:31 (LAR08) | 16:39 |       |
| Potential sun hours | 462   | 429    | 375       | 344           |               | 296           | 285   |       |
| Total, worst case   |       |        | 423       |               | 1573          |               |       |       |
| Sun reduction       |       |        | 0,58      |               | 0,44          |               |       |       |
| Oper. time red.     |       |        | 0,70      |               | 0,70          |               |       |       |
| Wind dir. red.      |       |        | 0,66      |               | 0,66          |               |       |       |
| Total reduction     |       |        | 0,27      |               | 0,20          |               |       |       |
| Total, real         |       |        | 113       |               | 316           |               |       |       |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|

## SHADOW - Calendar

**Shadow receptor:** R34 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February                       | March                          | April                          | May            | June           |
|---------------------|----------------|--------------------------------|--------------------------------|--------------------------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15                 | 08:11 (LAR08)<br>09:13 (LAR08) | 06:37<br>17:50                 | 06:45<br>19:25 | 05:58<br>19:58 |
| 2                   | 07:28<br>16:41 | 08:27 (LAR08)<br>08:36 (LAR08) | 07:13<br>17:16                 | 08:11 (LAR08)<br>09:13 (LAR08) | 06:36<br>17:51 | 05:57<br>19:59 |
| 3                   | 07:29<br>16:42 | 08:25 (LAR08)<br>08:39 (LAR08) | 07:12<br>17:17                 | 08:10 (LAR08)<br>09:13 (LAR08) | 06:34<br>17:52 | 05:56<br>20:00 |
| 4                   | 07:29<br>16:42 | 08:24 (LAR08)<br>08:41 (LAR08) | 07:11<br>17:19                 | 08:10 (LAR08)<br>09:13 (LAR08) | 06:33<br>17:54 | 05:54<br>20:01 |
| 5                   | 07:29<br>16:43 | 08:23 (LAR08)<br>08:43 (LAR08) | 07:10<br>17:20                 | 08:10 (LAR08)<br>09:13 (LAR08) | 06:31<br>17:55 | 05:53<br>20:03 |
| 6                   | 07:29<br>16:44 | 08:22 (LAR08)<br>08:45 (LAR08) | 07:09<br>17:21                 | 08:10 (LAR08)<br>09:13 (LAR08) | 06:29<br>17:56 | 05:52<br>20:04 |
| 7                   | 07:28<br>16:45 | 08:21 (LAR08)<br>08:47 (LAR08) | 07:08<br>17:23                 | 08:11 (LAR08)<br>09:14 (LAR08) | 06:28<br>17:57 | 05:51<br>20:05 |
| 8                   | 07:28<br>16:46 | 08:21 (LAR08)<br>08:49 (LAR08) | 07:07<br>17:24                 | 08:11 (LAR08)<br>09:14 (LAR08) | 06:26<br>17:58 | 05:49<br>20:06 |
| 9                   | 07:28<br>16:47 | 08:19 (LAR08)<br>08:50 (LAR08) | 07:05<br>17:25                 | 08:10 (LAR08)<br>09:13 (LAR08) | 06:24<br>17:59 | 05:48<br>20:07 |
| 10                  | 07:28<br>16:48 | 08:19 (LAR08)<br>08:51 (LAR08) | 07:04<br>17:26                 | 08:11 (LAR08)<br>09:13 (LAR08) | 06:23<br>18:01 | 05:47<br>20:08 |
| 11                  | 07:28<br>16:49 | 08:19 (LAR08)<br>08:53 (LAR08) | 07:03<br>17:28                 | 08:11 (LAR08)<br>09:13 (LAR08) | 06:21<br>18:02 | 05:46<br>20:09 |
| 12                  | 07:27<br>16:51 | 08:17 (LAR08)<br>08:54 (LAR08) | 07:02<br>17:29                 | 08:12 (LAR08)<br>09:13 (LAR08) | 06:19<br>18:03 | 05:45<br>20:10 |
| 13                  | 07:27<br>16:52 | 08:17 (LAR08)<br>08:56 (LAR08) | 07:00<br>17:30                 | 08:12 (LAR08)<br>09:12 (LAR08) | 06:18<br>18:04 | 05:44<br>20:11 |
| 14                  | 07:27<br>16:53 | 08:17 (LAR08)<br>08:57 (LAR08) | 06:59<br>17:31                 | 08:13 (LAR08)<br>09:11 (LAR08) | 06:16<br>18:05 | 05:43<br>20:12 |
| 15                  | 07:26<br>16:54 | 08:16 (LAR08)<br>08:58 (LAR08) | 06:58<br>17:33                 | 08:13 (LAR08)<br>09:11 (LAR08) | 06:14<br>18:06 | 05:42<br>20:13 |
| 16                  | 07:26<br>16:55 | 08:16 (LAR08)<br>09:00 (LAR08) | 06:56<br>17:34                 | 08:13 (LAR08)<br>09:10 (LAR08) | 06:13<br>18:07 | 05:41<br>20:14 |
| 17                  | 07:26<br>16:56 | 08:15 (LAR08)<br>09:01 (LAR08) | 06:55<br>17:35                 | 08:14 (LAR08)<br>09:09 (LAR08) | 06:11<br>18:09 | 05:40<br>20:15 |
| 18                  | 07:25<br>16:57 | 08:14 (LAR08)<br>09:01 (LAR08) | 06:54<br>17:36                 | 08:15 (LAR08)<br>09:08 (LAR08) | 06:09<br>18:10 | 05:39<br>20:16 |
| 19                  | 07:24<br>16:59 | 08:14 (LAR08)<br>09:03 (LAR08) | 06:52<br>17:38                 | 08:16 (LAR08)<br>09:07 (LAR08) | 06:08<br>18:11 | 05:38<br>20:17 |
| 20                  | 07:24<br>17:00 | 08:14 (LAR08)<br>09:04 (LAR08) | 06:51<br>17:39                 | 08:16 (LAR08)<br>09:05 (LAR08) | 06:06<br>18:12 | 05:37<br>20:18 |
| 21                  | 07:23<br>17:01 | 08:13 (LAR08)<br>09:04 (LAR08) | 06:49<br>17:40                 | 08:18 (LAR08)<br>09:04 (LAR08) | 06:04<br>18:13 | 05:36<br>20:19 |
| 22                  | 07:23<br>17:02 | 08:13 (LAR08)<br>09:06 (LAR08) | 06:48<br>17:41                 | 08:18 (LAR08)<br>09:02 (LAR08) | 06:02<br>18:14 | 05:35<br>20:20 |
| 23                  | 07:22<br>17:03 | 08:13 (LAR08)<br>09:07 (LAR08) | 06:46<br>17:43                 | 08:20 (LAR08)<br>09:01 (LAR08) | 06:01<br>18:15 | 05:34<br>20:21 |
| 24                  | 07:21<br>17:05 | 08:12 (LAR08)<br>09:07 (LAR08) | 06:45<br>17:44                 | 08:21 (LAR08)<br>08:58 (LAR08) | 05:59<br>18:16 | 05:34<br>20:22 |
| 25                  | 07:20<br>17:06 | 08:12 (LAR08)<br>09:08 (LAR08) | 06:43<br>17:45                 | 08:24 (LAR08)<br>08:56 (LAR08) | 05:57<br>18:17 | 05:33<br>20:23 |
| 26                  | 07:20<br>17:07 | 08:11 (LAR08)<br>09:09 (LAR08) | 06:42<br>17:46                 | 08:26 (LAR08)<br>08:53 (LAR08) | 05:56<br>18:19 | 05:32<br>20:24 |
| 27                  | 07:19<br>17:08 | 08:12 (LAR08)<br>09:10 (LAR08) | 06:40<br>17:48                 | 08:30 (LAR08)<br>08:49 (LAR08) | 05:54<br>18:20 | 05:32<br>20:24 |
| 28                  | 07:18<br>17:10 | 08:11 (LAR08)<br>09:11 (LAR08) | 06:39<br>17:49                 | 08:36 (LAR08)<br>08:41 (LAR08) | 05:52<br>18:21 | 05:31<br>20:25 |
| 29                  | 07:17<br>17:11 | 08:11 (LAR08)<br>09:11 (LAR08) |                                |                                | 06:50<br>19:22 | 05:30<br>20:26 |
| 30                  | 07:16<br>17:12 | 08:11 (LAR08)<br>09:12 (LAR08) |                                |                                | 06:49<br>19:23 | 05:30<br>20:27 |
| 31                  | 07:15<br>17:14 | 08:11 (LAR08)<br>09:12 (LAR08) |                                |                                | 06:47<br>19:24 | 05:29<br>20:28 |
| Potential sun hours | 295            | 296                            | 369                            | 400                            | 451            | 455            |
| Total, worst case   | 1255           | 1442                           |                                |                                |                |                |
| Sun reduction       | 0,44           | 0,46                           |                                |                                |                |                |
| Oper. time red.     | 0,70           | 0,70                           |                                |                                |                |                |
| Wind dir. red.      | 0,67           | 0,67                           |                                |                                |                |                |
| Total reduction     | 0,21           | 0,21                           |                                |                                |                |                |
| Total, real         | 261            | 309                            |                                |                                |                |                |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

Shadow receptor: R34 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October        | November       | December               |
|---------------------|----------------|----------------|----------------|----------------|----------------|------------------------|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>08:01 (LAR08) |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>08:02 (LAR08) |
| 3                   | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>08:03 (LAR08) |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>08:05 (LAR08) |
| 5                   | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>08:06 (LAR08) |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>08:08 (LAR08) |
| 7                   | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>08:10 (LAR08) |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>08:12 (LAR08) |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>08:14 (LAR08) |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>08:17 (LAR08) |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>08:18 (LAR08) |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>08:19 (LAR08) |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>08:20 (LAR08) |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>08:21 (LAR08) |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>08:22 (LAR08) |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>08:23 (LAR08) |
| 17                  | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>08:24 (LAR08) |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>08:25 (LAR08) |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>08:26 (LAR08) |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>08:27 (LAR08) |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>08:28 (LAR08) |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:25<br>08:29 (LAR08) |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:25<br>08:30 (LAR08) |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>08:31 (LAR08) |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:24<br>17:06 | 07:01<br>16:34 | 07:26<br>08:32 (LAR08) |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:25<br>17:04 | 07:02<br>16:33 | 07:27<br>08:33 (LAR08) |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:26<br>17:03 | 07:03<br>16:33 | 07:27<br>08:34 (LAR08) |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:27<br>17:02 | 07:04<br>16:32 | 07:27<br>08:35 (LAR08) |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:28<br>17:00 | 07:06<br>16:32 | 07:28<br>08:36 (LAR08) |
| 30                  | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:30<br>16:59 | 07:07<br>16:31 | 07:28<br>08:37 (LAR08) |
| 31                  | 05:52<br>20:21 | 06:24<br>19:38 | 06:56<br>18:44 | 07:31<br>16:58 | 07:08<br>16:30 | 07:28<br>08:38 (LAR08) |
| Potential sun hours | 462            | 429            | 375            | 344            | 296            | 285                    |
| Total, worst case   |                |                |                | 836            | 1648           | 234                    |
| Sun reduction       |                |                |                | 0,44           | 0,41           | 0,36                   |
| Oper. time red.     |                |                |                | 0,70           | 0,70           | 0,70                   |
| Wind dir. red.      |                |                |                | 0,67           | 0,67           | 0,67                   |
| Total reduction     |                |                |                | 0,20           | 0,19           | 0,17                   |
| Total, real         |                |                |                | 171            | 314            | 40                     |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R35 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (26)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 06:28<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 | 05:32<br>20:39 | 05:58<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:06 | 05:26<br>20:34 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 06:37<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:25<br>16:33 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:26<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 06:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R36 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (27)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                     | January |               | February      |               | March |               | April |       | May   |       | June |  |
|---------------------|---------|---------------|---------------|---------------|-------|---------------|-------|-------|-------|-------|------|--|
| 1                   | 07:28   | 08:16 (LAR08) | 07:14         | 08:40 (LAR08) | 06:37 | 06:45         | 05:58 | 05:29 |       |       |      |  |
|                     | 16:40   | 45            | 09:01 (LAR08) | 17:15         | 18    | 08:58 (LAR08) | 17:50 | 19:25 | 19:58 | 20:29 |      |  |
| 2                   | 07:29   | 08:16 (LAR08) | 07:13         | 08:43 (LAR08) | 06:36 | 06:44         | 05:57 | 05:28 |       |       |      |  |
|                     | 16:41   | 46            | 09:02 (LAR08) | 17:16         | 12    | 08:55 (LAR08) | 17:51 | 19:26 | 19:59 | 20:29 |      |  |
| 3                   | 07:29   | 08:17 (LAR08) | 07:12         |               | 06:34 | 06:42         | 05:56 | 05:28 |       |       |      |  |
|                     | 16:42   | 45            | 09:02 (LAR08) | 17:17         |       | 17:52         | 19:27 | 20:00 | 20:30 |       |      |  |
| 4                   | 07:29   | 08:17 (LAR08) | 07:11         |               | 06:33 | 06:40         | 05:54 | 05:27 |       |       |      |  |
|                     | 16:42   | 46            | 09:03 (LAR08) | 17:19         |       | 17:54         | 19:29 | 20:01 | 20:31 |       |      |  |
| 5                   | 07:29   | 08:18 (LAR08) | 07:10         |               | 06:31 | 06:39         | 05:53 | 05:27 |       |       |      |  |
|                     | 16:43   | 45            | 09:03 (LAR08) | 17:20         |       | 17:55         | 19:30 | 20:03 | 20:32 |       |      |  |
| 6                   | 07:29   | 08:18 (LAR08) | 07:09         |               | 06:29 | 06:37         | 05:52 | 05:27 |       |       |      |  |
|                     | 16:44   | 46            | 09:04 (LAR08) | 17:21         |       | 17:56         | 19:31 | 20:04 | 20:32 |       |      |  |
| 7                   | 07:28   | 08:19 (LAR08) | 07:08         |               | 06:28 | 06:35         | 05:51 | 05:26 |       |       |      |  |
|                     | 16:45   | 46            | 09:05 (LAR08) | 17:23         |       | 17:57         | 19:32 | 20:05 | 20:33 |       |      |  |
| 8                   | 07:28   | 08:19 (LAR08) | 07:07         |               | 06:26 | 06:34         | 05:49 | 05:26 |       |       |      |  |
|                     | 16:46   | 46            | 09:05 (LAR08) | 17:24         |       | 17:58         | 19:33 | 20:06 | 20:34 |       |      |  |
| 9                   | 07:28   | 08:19 (LAR08) | 07:05         |               | 06:24 | 06:32         | 05:48 | 05:26 |       |       |      |  |
|                     | 16:47   | 46            | 09:05 (LAR08) | 17:25         |       | 17:59         | 19:34 | 20:07 | 20:34 |       |      |  |
| 10                  | 07:28   | 08:20 (LAR08) | 07:04         |               | 06:23 | 06:30         | 05:47 | 05:26 |       |       |      |  |
|                     | 16:48   | 46            | 09:06 (LAR08) | 17:26         |       | 18:01         | 19:35 | 20:08 | 20:35 |       |      |  |
| 11                  | 07:28   | 08:20 (LAR08) | 07:03         |               | 06:21 | 06:29         | 05:46 | 05:25 |       |       |      |  |
|                     | 16:49   | 46            | 09:06 (LAR08) | 17:28         |       | 18:02         | 19:36 | 20:09 | 20:35 |       |      |  |
| 12                  | 07:27   | 08:20 (LAR08) | 07:02         |               | 06:19 | 06:27         | 05:45 | 05:25 |       |       |      |  |
|                     | 16:51   | 46            | 09:06 (LAR08) | 17:29         |       | 18:03         | 19:37 | 20:10 | 20:36 |       |      |  |
| 13                  | 07:27   | 08:21 (LAR08) | 07:00         |               | 06:18 | 06:25         | 05:44 | 05:25 |       |       |      |  |
|                     | 16:52   | 46            | 09:07 (LAR08) | 17:30         |       | 18:04         | 19:38 | 20:11 | 20:36 |       |      |  |
| 14                  | 07:27   | 08:22 (LAR08) | 06:59         |               | 06:16 | 06:24         | 05:43 | 05:25 |       |       |      |  |
|                     | 16:53   | 45            | 09:07 (LAR08) | 17:31         |       | 18:05         | 19:40 | 20:12 | 20:37 |       |      |  |
| 15                  | 07:26   | 08:22 (LAR08) | 06:58         |               | 06:14 | 06:22         | 05:42 | 05:25 |       |       |      |  |
|                     | 16:54   | 45            | 09:07 (LAR08) | 17:33         |       | 18:06         | 19:41 | 20:13 | 20:37 |       |      |  |
| 16                  | 07:26   | 08:23 (LAR08) | 06:56         |               | 06:13 | 06:21         | 05:41 | 05:25 |       |       |      |  |
|                     | 16:55   | 45            | 09:08 (LAR08) | 17:34         |       | 18:07         | 19:42 | 20:14 | 20:38 |       |      |  |
| 17                  | 07:26   | 08:23 (LAR08) | 06:55         |               | 06:11 | 06:19         | 05:40 | 05:25 |       |       |      |  |
|                     | 16:56   | 45            | 09:08 (LAR08) | 17:35         |       | 18:09         | 19:43 | 20:15 | 20:38 |       |      |  |
| 18                  | 07:25   | 08:23 (LAR08) | 06:54         |               | 06:09 | 06:17         | 05:39 | 05:25 |       |       |      |  |
|                     | 16:57   | 44            | 09:07 (LAR08) | 17:36         |       | 18:10         | 19:44 | 20:16 | 20:38 |       |      |  |
| 19                  | 07:24   | 08:24 (LAR08) | 06:52         |               | 06:08 | 06:16         | 05:38 | 05:25 |       |       |      |  |
|                     | 16:59   | 44            | 09:08 (LAR08) | 17:38         |       | 18:11         | 19:45 | 20:17 | 20:39 |       |      |  |
| 20                  | 07:24   | 08:24 (LAR08) | 06:51         |               | 06:06 | 06:14         | 05:37 | 05:25 |       |       |      |  |
|                     | 17:00   | 43            | 09:07 (LAR08) | 17:39         |       | 18:12         | 19:46 | 20:18 | 20:39 |       |      |  |
| 21                  | 07:23   | 08:25 (LAR08) | 06:49         |               | 06:04 | 06:13         | 05:36 | 05:26 |       |       |      |  |
|                     | 17:01   | 42            | 09:07 (LAR08) | 17:40         |       | 18:13         | 19:47 | 20:19 | 20:39 |       |      |  |
| 22                  | 07:23   | 08:26 (LAR08) | 06:48         |               | 06:02 | 06:11         | 05:35 | 05:26 |       |       |      |  |
|                     | 17:02   | 42            | 09:08 (LAR08) | 17:41         |       | 18:14         | 19:48 | 20:20 | 20:39 |       |      |  |
| 23                  | 07:22   | 08:27 (LAR08) | 06:47         |               | 06:01 | 06:10         | 05:34 | 05:26 |       |       |      |  |
|                     | 17:03   | 40            | 09:07 (LAR08) | 17:43         |       | 18:15         | 19:49 | 20:21 | 20:40 |       |      |  |
| 24                  | 07:21   | 08:27 (LAR08) | 06:45         |               | 05:59 | 06:08         | 05:34 | 05:26 |       |       |      |  |
|                     | 17:05   | 39            | 09:06 (LAR08) | 17:44         |       | 18:16         | 19:51 | 20:22 | 20:40 |       |      |  |
| 25                  | 07:20   | 08:28 (LAR08) | 06:43         |               | 05:57 | 06:07         | 05:33 | 05:26 |       |       |      |  |
|                     | 17:06   | 38            | 09:06 (LAR08) | 17:45         |       | 18:17         | 19:52 | 20:23 | 20:40 |       |      |  |
| 26                  | 07:20   | 08:29 (LAR08) | 06:42         |               | 05:56 | 06:05         | 05:32 | 05:27 |       |       |      |  |
|                     | 17:07   | 36            | 09:05 (LAR08) | 17:46         |       | 18:19         | 19:53 | 20:24 | 20:40 |       |      |  |
| 27                  | 07:19   | 08:31 (LAR08) | 06:40         |               | 05:54 | 06:04         | 05:32 | 05:27 |       |       |      |  |
|                     | 17:08   | 34            | 09:05 (LAR08) | 17:48         |       | 18:20         | 19:54 | 20:25 | 20:40 |       |      |  |
| 28                  | 07:18   | 08:32 (LAR08) | 06:39         |               | 05:52 | 06:03         | 05:31 | 05:28 |       |       |      |  |
|                     | 17:10   | 32            | 09:04 (LAR08) | 17:49         |       | 18:21         | 19:55 | 20:25 | 20:40 |       |      |  |
| 29                  | 07:17   | 08:34 (LAR08) |               |               | 06:50 | 06:01         | 05:30 | 05:28 |       |       |      |  |
|                     | 17:11   | 29            | 09:03 (LAR08) |               |       | 19:22         | 19:56 | 20:26 | 20:40 |       |      |  |
| 30                  | 07:16   | 08:35 (LAR08) |               |               | 06:49 | 06:00         | 05:30 | 05:28 |       |       |      |  |
|                     | 17:12   | 27            | 09:02 (LAR08) |               |       | 19:23         | 19:57 | 20:27 | 20:40 |       |      |  |
| 31                  | 07:15   | 08:37 (LAR08) |               |               | 06:47 |               | 05:29 |       |       |       |      |  |
|                     | 17:14   | 23            | 09:00 (LAR08) |               |       | 19:24         | 19:58 | 20:28 |       |       |      |  |
| Potential sun hours | 295     |               | 296           |               | 369   | 400           | 451   | 455   |       |       |      |  |
| Total, worst case   | 1288    |               | 30            |               |       |               |       |       |       |       |      |  |
| Sun reduction       | 0,44    |               | 0,46          |               |       |               |       |       |       |       |      |  |
| Oper. time red.     | 0,70    |               | 0,70          |               |       |               |       |       |       |       |      |  |
| Wind dir. red.      | 0,66    |               | 0,66          |               |       |               |       |       |       |       |      |  |
| Total reduction     | 0,21    |               | 0,21          |               |       |               |       |       |       |       |      |  |
| Total, real         | 265     |               | 6             |               |       |               |       |       |       |       |      |  |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|

## SHADOW - Calendar

**Shadow receptor:** R36 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (27)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October        | November       | December   |
|---------------------|----------------|----------------|----------------|----------------|----------------|--|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 46 08:02 (LAR08)<br>08:48 (LAR08)               |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 46 08:03 (LAR08)<br>08:49 (LAR08)               |
| 3                   | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 46 08:03 (LAR08)<br>08:49 (LAR08)               |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 46 08:03 (LAR08)<br>08:49 (LAR08)               |
| 5                   | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 46 08:04 (LAR08)<br>08:50 (LAR08)               |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 46 08:04 (LAR08)<br>08:50 (LAR08)               |
| 7                   | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 46 08:05 (LAR08)<br>08:51 (LAR08)               |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 46 08:05 (LAR08)<br>08:51 (LAR08)               |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>08:13 (LAR08) 07:16 45 08:06 (LAR08)<br>08:51 (LAR08) |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>08:10 (LAR08) 07:17 46 08:06 (LAR08)<br>08:52 (LAR08) |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>08:08 (LAR08) 07:17 45 08:07 (LAR08)<br>08:52 (LAR08) |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>08:06 (LAR08) 07:18 45 08:07 (LAR08)<br>08:52 (LAR08) |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>08:05 (LAR08) 07:19 46 08:07 (LAR08)<br>08:53 (LAR08) |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>08:04 (LAR08) 07:20 45 08:08 (LAR08)<br>08:53 (LAR08) |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>08:03 (LAR08) 07:21 45 08:09 (LAR08)<br>08:54 (LAR08) |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>08:03 (LAR08) 07:21 45 08:09 (LAR08)<br>08:54 (LAR08) |
| 17                  | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>08:02 (LAR08) 07:22 44 08:10 (LAR08)<br>08:54 (LAR08) |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>08:01 (LAR08) 07:23 45 08:10 (LAR08)<br>08:55 (LAR08) |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>08:01 (LAR08) 07:23 45 08:10 (LAR08)<br>08:55 (LAR08) |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>08:01 (LAR08) 07:24 45 08:11 (LAR08)<br>08:56 (LAR08) |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>08:01 (LAR08) 07:24 45 08:11 (LAR08)<br>08:56 (LAR08) |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:25<br>08:01 (LAR08) 07:25 45 08:12 (LAR08)<br>08:57 (LAR08) |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:26<br>08:00 (LAR08) 07:26 45 08:12 (LAR08)<br>08:57 (LAR08) |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>08:01 (LAR08) 07:26 45 08:13 (LAR08)<br>08:58 (LAR08) |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 06:24<br>17:06 | 07:01<br>16:34 | 07:26<br>08:01 (LAR08) 07:26 45 08:13 (LAR08)<br>08:58 (LAR08) |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 06:25<br>17:04 | 07:02<br>16:33 | 07:27<br>08:01 (LAR08) 07:27 45 08:13 (LAR08)<br>08:58 (LAR08) |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>08:01 (LAR08) 07:27 44 08:15 (LAR08)<br>08:59 (LAR08) |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>08:01 (LAR08) 07:27 45 08:15 (LAR08)<br>09:00 (LAR08) |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:06<br>16:32 | 07:28<br>08:02 (LAR08) 07:28 45 08:15 (LAR08)<br>09:00 (LAR08) |
| 30                  | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:30<br>16:59 | 07:07<br>16:31 | 07:28<br>08:02 (LAR08) 07:28 45 08:15 (LAR08)<br>09:00 (LAR08) |
| 31                  | 05:53<br>20:21 | 06:24<br>19:38 | 06:56<br>18:45 | 06:31<br>16:58 |                | 07:28<br>16:39 46 08:15 (LAR08)<br>09:01 (LAR08)               |
| Potential sun hours | 462            | 429            | 375            | 344            | 296            | 285  |
| Total, worst case   |                |                |                |                | 817            | 1404   |
| Sun reduction       |                |                |                |                | 0,41           | 0,36   |
| Oper. time red.     |                |                |                |                | 0,70           | 0,70   |
| Wind dir. red.      |                |                |                |                | 0,66           | 0,66   |
| Total reduction     |                |                |                |                | 0,19           | 0,17   |
| Total, real         |                |                |                |                | 154            | 238  |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R37 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (28)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January | February      | March         | April | May   | June  |
|---------------------|---------|---------------|---------------|-------|-------|-------|
| 1                   | 07:28   | 07:14         | 07:45 (LAR08) | 06:37 | 06:45 | 05:58 |
|                     | 16:40   | 17:15         | 08:17 (LAR08) | 17:50 | 19:25 | 19:58 |
| 2                   | 07:29   | 07:13         | 07:44 (LAR08) | 06:36 | 06:44 | 05:57 |
|                     | 16:41   | 17:16         | 08:18 (LAR08) | 17:51 | 19:26 | 19:59 |
| 3                   | 07:29   | 07:12         | 07:44 (LAR08) | 06:34 | 06:42 | 05:56 |
|                     | 16:42   | 17:17         | 08:19 (LAR08) | 17:52 | 19:27 | 20:00 |
| 4                   | 07:29   | 07:11         | 07:42 (LAR08) | 06:33 | 06:40 | 05:54 |
|                     | 16:42   | 17:19         | 08:19 (LAR08) | 17:54 | 19:29 | 20:01 |
| 5                   | 07:29   | 07:10         | 07:42 (LAR08) | 06:31 | 06:39 | 05:53 |
|                     | 16:43   | 17:20         | 08:20 (LAR08) | 17:55 | 19:30 | 20:03 |
| 6                   | 07:29   | 07:09         | 07:42 (LAR08) | 06:29 | 06:37 | 05:52 |
|                     | 16:44   | 17:21         | 08:21 (LAR08) | 17:56 | 19:31 | 20:04 |
| 7                   | 07:28   | 07:08         | 07:41 (LAR08) | 06:28 | 06:35 | 05:51 |
|                     | 16:45   | 17:23         | 08:21 (LAR08) | 17:57 | 19:32 | 20:05 |
| 8                   | 07:28   | 07:07         | 07:41 (LAR08) | 06:26 | 06:34 | 05:49 |
|                     | 16:46   | 17:24         | 08:22 (LAR08) | 17:58 | 19:33 | 20:06 |
| 9                   | 07:28   | 07:05         | 07:40 (LAR08) | 06:24 | 06:32 | 05:48 |
|                     | 16:47   | 17:25         | 08:22 (LAR08) | 17:59 | 19:34 | 20:07 |
| 10                  | 07:28   | 07:04         | 07:41 (LAR08) | 06:23 | 06:30 | 05:47 |
|                     | 16:48   | 17:26         | 08:22 (LAR08) | 18:01 | 19:35 | 20:08 |
| 11                  | 07:28   | 07:03         | 07:41 (LAR08) | 06:21 | 06:29 | 05:46 |
|                     | 16:49   | 17:28         | 08:22 (LAR08) | 18:02 | 19:36 | 20:09 |
| 12                  | 07:27   | 07:02         | 07:41 (LAR08) | 06:19 | 06:27 | 05:45 |
|                     | 16:51   | 17:29         | 08:23 (LAR08) | 18:03 | 19:37 | 20:10 |
| 13                  | 07:27   | 07:00         | 07:41 (LAR08) | 06:18 | 06:25 | 05:44 |
|                     | 16:52   | 17:30         | 08:22 (LAR08) | 18:04 | 19:38 | 20:11 |
| 14                  | 07:27   | 06:59         | 07:41 (LAR08) | 06:16 | 06:24 | 05:43 |
|                     | 16:53   | 17:31         | 08:22 (LAR08) | 18:05 | 19:40 | 20:12 |
| 15                  | 07:26   | 06:58         | 07:42 (LAR08) | 06:14 | 06:22 | 05:42 |
|                     | 16:54   | 17:33         | 08:22 (LAR08) | 18:06 | 19:41 | 20:13 |
| 16                  | 07:26   | 06:56         | 07:42 (LAR08) | 06:13 | 06:21 | 05:41 |
|                     | 16:55   | 17:34         | 08:21 (LAR08) | 18:07 | 19:42 | 20:14 |
| 17                  | 07:26   | 06:55         | 07:43 (LAR08) | 06:11 | 06:19 | 05:40 |
|                     | 16:56   | 17:35         | 08:21 (LAR08) | 18:09 | 19:43 | 20:15 |
| 18                  | 07:25   | 06:54         | 07:43 (LAR08) | 06:09 | 06:17 | 05:39 |
|                     | 16:57   | 17:36         | 08:19 (LAR08) | 18:10 | 19:44 | 20:16 |
| 19                  | 07:24   | 06:52         | 07:44 (LAR08) | 06:08 | 06:16 | 05:38 |
|                     | 16:59   | 17:38         | 08:19 (LAR08) | 18:11 | 19:45 | 20:17 |
| 20                  | 07:24   | 06:51         | 07:44 (LAR08) | 06:06 | 06:14 | 05:37 |
|                     | 17:00   | 17:39         | 08:17 (LAR08) | 18:12 | 19:46 | 20:18 |
| 21                  | 07:23   | 06:49         | 07:46 (LAR08) | 06:04 | 06:13 | 05:36 |
|                     | 17:01   | 17:40         | 08:16 (LAR08) | 18:13 | 19:47 | 20:19 |
| 22                  | 07:23   | 06:48         | 07:47 (LAR08) | 06:02 | 06:11 | 05:35 |
|                     | 17:02   | 17:41         | 08:14 (LAR08) | 18:14 | 19:48 | 20:20 |
| 23                  | 07:22   | 06:47         | 07:49 (LAR08) | 06:01 | 06:10 | 05:34 |
|                     | 17:03   | 17:43         | 08:12 (LAR08) | 18:15 | 19:49 | 20:21 |
| 24                  | 07:21   | 06:45         | 07:51 (LAR08) | 05:59 | 06:08 | 05:34 |
|                     | 17:05   | 17:44         | 08:09 (LAR08) | 18:16 | 19:51 | 20:22 |
| 25                  | 07:20   | 06:44         | 07:55 (LAR08) | 05:57 | 06:07 | 05:33 |
|                     | 17:06   | 17:45         | 08:06 (LAR08) | 18:17 | 19:52 | 20:23 |
| 26                  | 07:20   | 07:53 (LAR08) | 06:42         | 05:56 | 06:05 | 05:32 |
|                     | 17:07   | 08:05 (LAR08) | 17:46         | 18:19 | 19:53 | 20:24 |
| 27                  | 07:19   | 07:51 (LAR08) | 06:40         | 05:54 | 06:04 | 05:32 |
|                     | 17:08   | 08:09 (LAR08) | 17:48         | 18:20 | 19:54 | 20:25 |
| 28                  | 07:18   | 07:49 (LAR08) | 06:39         | 05:52 | 06:03 | 05:31 |
|                     | 17:10   | 08:11 (LAR08) | 17:49         | 18:21 | 19:55 | 20:25 |
| 29                  | 07:17   | 07:48 (LAR08) |               | 06:50 | 06:01 | 05:30 |
|                     | 17:11   | 08:13 (LAR08) |               | 19:22 | 19:56 | 20:26 |
| 30                  | 07:16   | 07:47 (LAR08) |               | 06:49 | 06:00 | 05:30 |
|                     | 17:12   | 08:14 (LAR08) |               | 19:23 | 19:57 | 20:27 |
| 31                  | 07:15   | 07:46 (LAR08) |               | 06:47 |       | 05:29 |
|                     | 17:14   | 08:16 (LAR08) |               | 19:24 |       | 20:28 |
| Potential sun hours | 295     | 296           | 369           | 400   | 451   | 455   |
| Total, worst case   | 134     | 874           |               |       |       |       |
| Sun reduction       | 0,44    | 0,46          |               |       |       |       |
| Oper. time red.     | 0,70    | 0,70          |               |       |       |       |
| Wind dir. red.      | 0,67    | 0,67          |               |       |       |       |
| Total reduction     | 0,21    | 0,21          |               |       |       |       |
| Total, real         | 28      | 187           |               |       |       |       |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R37 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (28)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October        | November                       | December                  |
|---------------------|----------------|----------------|----------------|----------------|--------------------------------|---------------------------|
| 1                   | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56                 | 07:10 (LAR08)<br>16:31    |
| 2                   | 05:29<br>20:40 | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55                 | 41 07:10 (LAR08)<br>16:31 |
| 3                   | 05:30<br>20:39 | 05:56<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54                 | 41 07:10 (LAR08)<br>16:30 |
| 4                   | 05:30<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53                 | 40 07:11 (LAR08)<br>16:30 |
| 5                   | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51                 | 40 07:11 (LAR08)<br>16:30 |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50                 | 38 07:12 (LAR08)<br>16:30 |
| 7                   | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49                 | 37 07:13 (LAR08)<br>16:30 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48                 | 36 07:13 (LAR08)<br>16:30 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47                 | 34 07:14 (LAR08)<br>16:30 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46                 | 32 07:16 (LAR08)<br>16:30 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45                 | 30 07:17 (LAR08)<br>16:30 |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44                 | 27 07:18 (LAR08)<br>16:30 |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43                 | 25 07:20 (LAR08)<br>16:30 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42                 | 22 07:21 (LAR08)<br>16:30 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41                 | 18 07:23 (LAR08)<br>16:30 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40                 | 12 07:27 (LAR08)<br>16:31 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 08:25 (LAR08)<br>08:39 (LAR08) | 06:52<br>16:39            |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 08:21 (LAR08)<br>08:42 (LAR08) | 06:53<br>16:38            |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:17<br>18:15 | 08:19 (LAR08)<br>08:44 (LAR08) | 06:54<br>16:38            |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 08:18 (LAR08)<br>08:46 (LAR08) | 06:55<br>16:37            |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 08:16 (LAR08)<br>08:47 (LAR08) | 06:56<br>16:36            |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 08:15 (LAR08)<br>08:48 (LAR08) | 06:58<br>16:35            |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 08:13 (LAR08)<br>08:49 (LAR08) | 06:59<br>16:35            |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 08:13 (LAR08)<br>08:50 (LAR08) | 07:00<br>16:34            |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 06:24<br>17:06 | 07:12 (LAR08)<br>07:50 (LAR08) | 07:01<br>16:34            |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 06:25<br>17:04 | 07:11 (LAR08)<br>07:51 (LAR08) | 07:02<br>16:33            |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:11 (LAR08)<br>07:51 (LAR08) | 07:03<br>16:33            |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:11 (LAR08)<br>07:52 (LAR08) | 07:04<br>16:32            |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:10 (LAR08)<br>07:52 (LAR08) | 07:06<br>16:32            |
| 30                  | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:30<br>16:59 | 07:10 (LAR08)<br>07:51 (LAR08) | 07:07<br>16:31            |
| 31                  | 05:53<br>20:21 | 06:24<br>19:38 |                | 06:31<br>16:58 | 07:11 (LAR08)<br>07:52 (LAR08) |                           |
| Potential sun hours | 462            | 429            | 375            | 344            | 296                            | 285                       |
| Total, worst case   |                |                |                | 508            | 515                            |                           |
| Sun reduction       |                |                |                | 0,44           | 0,41                           |                           |
| Oper. time red.     |                |                |                | 0,70           | 0,70                           |                           |
| Wind dir. red.      |                |                |                | 0,67           | 0,67                           |                           |
| Total reduction     |                |                |                | 0,20           | 0,19                           |                           |
| Total, real         |                |                |                | 103            | 98                             |                           |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

Shadow receptor: R37b - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (29)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January | February         | March | April            | May   | June  |       |       |
|---------------------|---------|------------------|-------|------------------|-------|-------|-------|-------|
| 1                   | 07:28   | 07:53 (LAR08)    | 07:14 | 08:09 (LAR08)    | 06:37 | 06:45 | 05:58 | 05:29 |
|                     | 16:40   | 29 08:22 (LAR08) | 17:15 | 18 08:27 (LAR08) | 17:50 | 19:25 | 19:58 | 20:29 |
| 2                   | 07:29   | 07:53 (LAR08)    | 07:13 | 08:12 (LAR08)    | 06:36 | 06:44 | 05:57 | 05:28 |
|                     | 16:41   | 29 08:22 (LAR08) | 17:16 | 13 08:25 (LAR08) | 17:51 | 19:26 | 19:59 | 20:29 |
| 3                   | 07:29   | 07:53 (LAR08)    | 07:12 | 08:17 (LAR08)    | 06:34 | 06:42 | 05:56 | 05:28 |
|                     | 16:42   | 30 08:23 (LAR08) | 17:17 | 3 08:20 (LAR08)  | 17:52 | 19:27 | 20:00 | 20:30 |
| 4                   | 07:29   | 07:54 (LAR08)    | 07:11 |                  | 06:33 | 06:40 | 05:54 | 05:27 |
|                     | 16:42   | 30 08:24 (LAR08) | 17:19 |                  | 17:54 | 19:29 | 20:01 | 20:31 |
| 5                   | 07:29   | 07:54 (LAR08)    | 07:10 |                  | 06:31 | 06:39 | 05:53 | 05:27 |
|                     | 16:43   | 30 08:24 (LAR08) | 17:20 |                  | 17:55 | 19:30 | 20:03 | 20:32 |
| 6                   | 07:29   | 07:54 (LAR08)    | 07:09 |                  | 06:29 | 06:37 | 05:52 | 05:27 |
|                     | 16:44   | 31 08:25 (LAR08) | 17:21 |                  | 17:56 | 19:31 | 20:04 | 20:32 |
| 7                   | 07:29   | 07:54 (LAR08)    | 07:08 |                  | 06:28 | 06:35 | 05:51 | 05:26 |
|                     | 16:45   | 32 08:26 (LAR08) | 17:23 |                  | 17:57 | 19:32 | 20:05 | 20:33 |
| 8                   | 07:28   | 07:55 (LAR08)    | 07:07 |                  | 06:26 | 06:34 | 05:49 | 05:26 |
|                     | 16:46   | 32 08:27 (LAR08) | 17:24 |                  | 17:58 | 19:33 | 20:06 | 20:34 |
| 9                   | 07:28   | 07:54 (LAR08)    | 07:06 |                  | 06:24 | 06:32 | 05:48 | 05:26 |
|                     | 16:47   | 33 08:27 (LAR08) | 17:25 |                  | 17:59 | 19:34 | 20:07 | 20:34 |
| 10                  | 07:28   | 07:55 (LAR08)    | 07:04 |                  | 06:23 | 06:30 | 05:47 | 05:26 |
|                     | 16:48   | 33 08:28 (LAR08) | 17:26 |                  | 18:01 | 19:35 | 20:08 | 20:35 |
| 11                  | 07:28   | 07:55 (LAR08)    | 07:03 |                  | 06:21 | 06:29 | 05:46 | 05:25 |
|                     | 16:49   | 34 08:29 (LAR08) | 17:28 |                  | 18:02 | 19:36 | 20:09 | 20:35 |
| 12                  | 07:28   | 07:55 (LAR08)    | 07:02 |                  | 06:19 | 06:27 | 05:45 | 05:25 |
|                     | 16:51   | 34 08:29 (LAR08) | 17:29 |                  | 18:03 | 19:37 | 20:10 | 20:36 |
| 13                  | 07:27   | 07:55 (LAR08)    | 07:00 |                  | 06:18 | 06:25 | 05:44 | 05:25 |
|                     | 16:52   | 35 08:30 (LAR08) | 17:30 |                  | 18:04 | 19:38 | 20:11 | 20:36 |
| 14                  | 07:27   | 07:56 (LAR08)    | 06:59 |                  | 06:16 | 06:24 | 05:43 | 05:25 |
|                     | 16:53   | 35 08:31 (LAR08) | 17:31 |                  | 18:05 | 19:40 | 20:12 | 20:37 |
| 15                  | 07:26   | 07:56 (LAR08)    | 06:58 |                  | 06:14 | 06:22 | 05:42 | 05:25 |
|                     | 16:54   | 35 08:31 (LAR08) | 17:33 |                  | 18:06 | 19:41 | 20:13 | 20:37 |
| 16                  | 07:26   | 07:57 (LAR08)    | 06:57 |                  | 06:13 | 06:21 | 05:41 | 05:25 |
|                     | 16:55   | 35 08:32 (LAR08) | 17:34 |                  | 18:07 | 19:42 | 20:14 | 20:38 |
| 17                  | 07:26   | 07:56 (LAR08)    | 06:55 |                  | 06:11 | 06:19 | 05:40 | 05:25 |
|                     | 16:56   | 35 08:31 (LAR08) | 17:35 |                  | 18:09 | 19:43 | 20:15 | 20:38 |
| 18                  | 07:25   | 07:56 (LAR08)    | 06:54 |                  | 06:09 | 06:17 | 05:39 | 05:25 |
|                     | 16:57   | 35 08:31 (LAR08) | 17:36 |                  | 18:10 | 19:44 | 20:16 | 20:38 |
| 19                  | 07:24   | 07:57 (LAR08)    | 06:52 |                  | 06:08 | 06:16 | 05:38 | 05:25 |
|                     | 16:59   | 35 08:32 (LAR08) | 17:38 |                  | 18:11 | 19:45 | 20:17 | 20:39 |
| 20                  | 07:24   | 07:57 (LAR08)    | 06:51 |                  | 06:06 | 06:14 | 05:37 | 05:25 |
|                     | 17:00   | 35 08:32 (LAR08) | 17:39 |                  | 18:12 | 19:46 | 20:18 | 20:39 |
| 21                  | 07:23   | 07:58 (LAR08)    | 06:49 |                  | 06:04 | 06:13 | 05:36 | 05:26 |
|                     | 17:01   | 34 08:32 (LAR08) | 17:40 |                  | 18:13 | 19:47 | 20:19 | 20:39 |
| 22                  | 07:23   | 07:59 (LAR08)    | 06:48 |                  | 06:02 | 06:11 | 05:35 | 05:26 |
|                     | 17:02   | 34 08:33 (LAR08) | 17:41 |                  | 18:14 | 19:48 | 20:20 | 20:39 |
| 23                  | 07:22   | 07:59 (LAR08)    | 06:47 |                  | 06:01 | 06:10 | 05:34 | 05:26 |
|                     | 17:03   | 34 08:33 (LAR08) | 17:43 |                  | 18:15 | 19:49 | 20:21 | 20:40 |
| 24                  | 07:21   | 08:00 (LAR08)    | 06:45 |                  | 05:59 | 06:08 | 05:34 | 05:26 |
|                     | 17:05   | 32 08:32 (LAR08) | 17:44 |                  | 18:16 | 19:51 | 20:22 | 20:40 |
| 25                  | 07:20   | 08:00 (LAR08)    | 06:44 |                  | 05:57 | 06:07 | 05:33 | 05:27 |
|                     | 17:06   | 32 08:32 (LAR08) | 17:45 |                  | 18:17 | 19:52 | 20:23 | 20:40 |
| 26                  | 07:20   | 08:01 (LAR08)    | 06:42 |                  | 05:56 | 06:05 | 05:32 | 05:27 |
|                     | 17:07   | 30 08:31 (LAR08) | 17:46 |                  | 18:19 | 19:53 | 20:24 | 20:40 |
| 27                  | 07:19   | 08:02 (LAR08)    | 06:40 |                  | 05:54 | 06:04 | 05:32 | 05:27 |
|                     | 17:08   | 30 08:32 (LAR08) | 17:48 |                  | 18:20 | 19:54 | 20:25 | 20:40 |
| 28                  | 07:18   | 08:03 (LAR08)    | 06:39 |                  | 05:52 | 06:03 | 05:31 | 05:28 |
|                     | 17:10   | 28 08:31 (LAR08) | 17:49 |                  | 18:21 | 19:55 | 20:25 | 20:40 |
| 29                  | 07:17   | 08:04 (LAR08)    |       |                  | 06:50 | 06:01 | 05:30 | 05:28 |
|                     | 17:11   | 26 08:30 (LAR08) |       |                  | 19:22 | 19:56 | 20:26 | 20:40 |
| 30                  | 07:16   | 08:06 (LAR08)    |       |                  | 06:49 | 06:00 | 05:30 | 05:28 |
|                     | 17:12   | 24 08:30 (LAR08) |       |                  | 19:23 | 19:57 | 20:27 | 20:40 |
| 31                  | 07:15   | 08:07 (LAR08)    |       |                  | 06:47 |       | 05:29 |       |
|                     | 17:14   | 21 08:28 (LAR08) |       |                  | 19:24 |       | 20:28 |       |
| Potential sun hours | 295     | 296              |       | 369              | 400   | 451   | 455   |       |
| Total, worst case   | 982     |                  | 34    |                  |       |       |       |       |
| Sun reduction       | 0,44    |                  | 0,46  |                  |       |       |       |       |
| Oper. time red.     | 0,70    |                  | 0,70  |                  |       |       |       |       |
| Wind dir. red.      | 0,67    |                  | 0,67  |                  |       |       |       |       |
| Total reduction     | 0,21    |                  | 0,21  |                  |       |       |       |       |
| Total, real         | 204     |                  | 7     |                  |       |       |       |       |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R37b - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (29)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October        | November       | December          |
|---------------------|----------------|----------------|----------------|----------------|----------------|-------------------|
| 1                   | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 34 |
| 2                   | 05:29<br>20:40 | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 33 |
| 3                   | 05:30<br>20:39 | 05:56<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 33 |
| 4                   | 05:30<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 32 |
| 5                   | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 32 |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 31 |
| 7                   | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 31 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 30 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 30 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 29 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 29 |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 28 |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 27 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 27 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 26 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 26 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 26 |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 25 |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:17<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 26 |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 26 |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:32 26 |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:25<br>16:33 26 |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:26<br>16:33 26 |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 26 |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:24<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 26 |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 25 |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 26 |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 26 |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 27 |
| 30                  | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 27 |
| 31                  | 05:53<br>20:21 | 06:24<br>19:38 | 06:56<br>18:45 | 07:30<br>16:58 | 07:08<br>16:30 | 07:28<br>16:39 28 |
| Potential sun hours | 462            | 429            | 375            | 344            | 296            | 285               |
| Total, worst case   |                |                |                |                | 677            | 870               |
| Sun reduction       |                |                |                |                | 0,41           | 0,36              |
| Oper. time red.     |                |                |                |                | 0,70           | 0,70              |
| Wind dir. red.      |                |                |                |                | 0,67           | 0,67              |
| Total reduction     |                |                |                |                | 0,19           | 0,17              |
| Total, real         |                |                |                |                | 129            | 149               |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R38 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (30)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

Table with 13 columns (January to December) and multiple rows of data. Includes a summary section at the bottom with 'Potential sun hours', 'Total, worst case', and 'Sun reduction'.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker
First time (hh:mm) with flicker Last time (hh:mm) with flicker
(WTG causing flicker first time) (WTG causing flicker last time)



### SHADOW - Calendar

Shadow receptor: R4 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (1)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:29<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:54<br>20:20 | 06:26<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:30 | 05:30<br>20:40 | 05:55<br>20:19 | 06:27<br>19:34 | 06:58<br>18:43 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:18 | 06:34<br>17:52 | 06:42<br>19:28 | 05:56<br>20:01 | 05:28<br>20:30 | 05:30<br>20:40 | 05:56<br>20:18 | 06:28<br>19:33 | 06:59<br>18:41 | 06:35<br>16:54 | 07:10<br>16:31 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:55<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:58<br>20:16 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:28 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:39 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:29<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:34 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:25<br>18:00 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:11 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:49 | 07:04<br>17:27 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:08<br>18:27 | 06:44<br>16:45 | 07:18<br>16:30 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:20<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:37 | 06:05<br>20:07 | 06:37<br>19:17 | 07:09<br>18:26 | 06:46<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:26<br>19:39 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:16 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:27<br>16:54 | 06:58<br>17:33 | 06:15<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:08 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:34 | 06:10<br>20:00 | 06:42<br>19:09 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:58 | 06:54<br>17:37 | 06:09<br>18:10 | 06:18<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:39 | 07:23<br>16:31 |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:57 | 06:44<br>19:05 | 07:17<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:32 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:31 | 06:14<br>19:54 | 06:46<br>19:02 | 07:19<br>18:12 | 06:57<br>16:36 | 07:25<br>16:33 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:03<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:36 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:04 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:50 | 05:35<br>20:21 | 05:26<br>20:40 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:26<br>16:34 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:17 | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52 | 05:33<br>20:23 | 05:27<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:23<br>17:06 | 07:01<br>16:34 | 07:27<br>16:35 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:06<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:24<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:09 | 06:41<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:25 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:25<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:26 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:43 | 06:53<br>18:49 | 07:26<br>17:02 | 07:05<br>16:32 | 07:28<br>16:37 |
| 29                  | 07:17<br>17:11 |                | 06:51<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:55<br>18:48 | 07:27<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:40 | 05:52<br>20:22 | 06:23<br>19:39 | 06:56<br>18:46 | 07:28<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:53<br>20:21 | 06:25<br>19:38 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R40 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (31)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February                       | March          | April                          | May            | June           |                |
|---------------------|----------------|--------------------------------|----------------|--------------------------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:52 (LAR08)<br>16:13 (LAR01) | 07:14<br>17:15 | 07:55 (LAR08)<br>08:15 (LAR08) | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>20:29 |
| 2                   | 07:29<br>16:41 | 07:51 (LAR08)<br>16:14 (LAR01) | 07:13<br>17:16 | 07:57 (LAR08)<br>08:14 (LAR08) | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>20:29 |
| 3                   | 07:29<br>16:42 | 07:51 (LAR08)<br>16:15 (LAR01) | 07:12<br>17:17 | 07:59 (LAR08)<br>08:12 (LAR08) | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:30 |
| 4                   | 07:29<br>16:42 | 07:51 (LAR08)<br>16:16 (LAR01) | 07:11<br>17:19 | 08:02 (LAR08)<br>08:08 (LAR08) | 06:33<br>17:54 | 06:40<br>19:29 | 05:54<br>20:31 |
| 5                   | 07:29<br>16:43 | 07:51 (LAR08)<br>16:17 (LAR01) | 07:10<br>17:20 |                                | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:51 (LAR08)<br>16:18 (LAR01) | 07:09<br>17:21 |                                | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:32 |
| 7                   | 07:29<br>16:45 | 07:51 (LAR08)<br>16:19 (LAR01) | 07:08<br>17:23 |                                | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:51 (LAR08)<br>16:20 (LAR01) | 07:07<br>17:24 |                                | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:50 (LAR08)<br>16:21 (LAR01) | 07:06<br>17:25 |                                | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:50 (LAR08)<br>16:22 (LAR01) | 07:04<br>17:26 |                                | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:35 |
| 11                  | 07:28<br>16:49 | 07:50 (LAR08)<br>16:23 (LAR01) | 07:03<br>17:28 |                                | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:35 |
| 12                  | 07:28<br>16:51 | 07:49 (LAR08)<br>16:23 (LAR01) | 07:02<br>17:29 |                                | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:49 (LAR08)<br>16:23 (LAR01) | 07:01<br>17:30 |                                | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:36 |
| 14                  | 07:27<br>16:53 | 07:49 (LAR08)<br>16:24 (LAR01) | 06:59<br>17:31 |                                | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:37 |
| 15                  | 07:26<br>16:54 | 07:48 (LAR08)<br>16:23 (LAR01) | 06:58<br>17:33 |                                | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:37 |
| 16                  | 07:26<br>16:55 | 07:48 (LAR08)<br>16:23 (LAR01) | 06:57<br>17:34 |                                | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:38 |
| 17                  | 07:26<br>16:56 | 07:47 (LAR08)<br>16:23 (LAR01) | 06:55<br>17:35 |                                | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:38 |
| 18                  | 07:25<br>16:57 | 07:47 (LAR08)<br>16:21 (LAR01) | 06:54<br>17:37 |                                | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:38 |
| 19                  | 07:24<br>16:59 | 07:48 (LAR08)<br>16:21 (LAR01) | 06:52<br>17:38 |                                | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:39 |
| 20                  | 07:24<br>17:00 | 07:47 (LAR08)<br>16:18 (LAR01) | 06:51<br>17:39 |                                | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:39 |
| 21                  | 07:23<br>17:01 | 07:47 (LAR08)<br>08:17 (LAR08) | 06:49<br>17:40 |                                | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:39 |
| 22                  | 07:23<br>17:02 | 07:48 (LAR08)<br>08:18 (LAR08) | 06:48<br>17:41 |                                | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:39 |
| 23                  | 07:22<br>17:03 | 07:48 (LAR08)<br>08:18 (LAR08) | 06:47<br>17:43 |                                | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:40 |
| 24                  | 07:21<br>17:05 | 07:49 (LAR08)<br>08:18 (LAR08) | 06:45<br>17:44 |                                | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:40 |
| 25                  | 07:20<br>17:06 | 07:49 (LAR08)<br>08:18 (LAR08) | 06:44<br>17:45 |                                | 05:57<br>18:18 | 06:07<br>19:52 | 05:33<br>20:40 |
| 26                  | 07:20<br>17:07 | 07:49 (LAR08)<br>08:17 (LAR08) | 06:42<br>17:46 |                                | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:40 |
| 27                  | 07:19<br>17:08 | 07:51 (LAR08)<br>08:18 (LAR08) | 06:40<br>17:48 |                                | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:40 |
| 28                  | 07:18<br>17:10 | 07:51 (LAR08)<br>08:18 (LAR08) | 06:39<br>17:49 |                                | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:40 |
| 29                  | 07:17<br>17:11 | 07:52 (LAR08)<br>08:17 (LAR08) |                |                                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:40 |
| 30                  | 07:16<br>17:12 | 07:53 (LAR08)<br>08:17 (LAR08) |                |                                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:40 |
| 31                  | 07:15<br>17:14 | 07:54 (LAR08)<br>08:16 (LAR08) |                |                                | 06:47<br>19:24 |                | 05:29<br>20:28 |
| Potential sun hours | 295            | 296                            |                | 369                            | 400            | 451            | 455            |
| Total, worst case   | 1009           |                                | 56             |                                |                |                |                |
| Sun reduction       | 0,44           |                                | 0,46           |                                |                |                |                |
| Oper. time red.     | 0,70           |                                | 0,70           |                                |                |                |                |
| Wind dir. red.      | 0,63           |                                | 0,67           |                                |                |                |                |
| Total reduction     | 0,20           |                                | 0,21           |                                |                |                |                |
| Total, real         | 198            |                                | 12             |                                |                |                |                |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R40 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (31)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  | August | September | October | November | December         |
|---------------------|-------|--------|-----------|---------|----------|------------------|
| 1                   | 05:29 | 05:54  | 06:25     | 06:57   | 06:32    | 07:08            |
|                     | 20:40 | 20:20  | 19:36     | 18:44   | 16:56    | 16:31            |
| 2                   | 05:29 | 05:55  | 06:26     | 06:58   | 06:33    | 07:09            |
|                     | 20:40 | 20:19  | 19:34     | 18:42   | 16:55    | 16:31            |
| 3                   | 05:30 | 05:56  | 06:27     | 06:59   | 06:34    | 07:10            |
|                     | 20:39 | 20:18  | 19:33     | 18:41   | 16:54    | 16:30            |
| 4                   | 05:30 | 05:57  | 06:29     | 07:00   | 06:36    | 07:11            |
|                     | 20:39 | 20:17  | 19:31     | 18:39   | 16:53    | 16:30            |
| 5                   | 05:31 | 05:58  | 06:30     | 07:01   | 06:37    | 07:12            |
|                     | 20:39 | 20:15  | 19:29     | 18:37   | 16:51    | 16:30            |
| 6                   | 05:32 | 05:59  | 06:31     | 07:02   | 06:38    | 07:13            |
|                     | 20:39 | 20:14  | 19:27     | 18:36   | 16:50    | 16:30            |
| 7                   | 05:32 | 06:00  | 06:32     | 07:03   | 06:39    | 07:32 (LAR08)    |
|                     | 20:38 | 20:13  | 19:26     | 18:34   | 16:49    | 8 07:40 (LAR08)  |
| 8                   | 05:33 | 06:01  | 06:33     | 07:04   | 06:41    | 07:29 (LAR08)    |
|                     | 20:38 | 20:12  | 19:24     | 18:32   | 16:48    | 13 07:42 (LAR08) |
| 9                   | 05:34 | 06:02  | 06:34     | 07:05   | 06:42    | 07:27 (LAR08)    |
|                     | 20:38 | 20:10  | 19:22     | 18:31   | 16:47    | 17 07:44 (LAR08) |
| 10                  | 05:34 | 06:03  | 06:35     | 07:06   | 06:43    | 07:26 (LAR08)    |
|                     | 20:37 | 20:09  | 19:21     | 18:29   | 16:46    | 20 07:46 (LAR08) |
| 11                  | 05:35 | 06:04  | 06:36     | 07:07   | 06:44    | 07:25 (LAR08)    |
|                     | 20:37 | 20:08  | 19:19     | 18:27   | 16:45    | 22 07:47 (LAR08) |
| 12                  | 05:36 | 06:05  | 06:37     | 07:09   | 06:45    | 07:24 (LAR08)    |
|                     | 20:36 | 20:06  | 19:17     | 18:26   | 16:44    | 24 07:48 (LAR08) |
| 13                  | 05:36 | 06:06  | 06:38     | 07:10   | 06:47    | 07:24 (LAR08)    |
|                     | 20:36 | 20:05  | 19:15     | 18:24   | 16:43    | 25 07:49 (LAR08) |
| 14                  | 05:37 | 06:07  | 06:39     | 07:11   | 06:48    | 07:23 (LAR08)    |
|                     | 20:35 | 20:04  | 19:14     | 18:23   | 16:42    | 27 07:50 (LAR08) |
| 15                  | 05:38 | 06:08  | 06:40     | 07:12   | 06:49    | 07:23 (LAR08)    |
|                     | 20:35 | 20:02  | 19:12     | 18:21   | 16:41    | 27 07:50 (LAR08) |
| 16                  | 05:39 | 06:09  | 06:41     | 07:13   | 06:50    | 07:23 (LAR08)    |
|                     | 20:34 | 20:01  | 19:10     | 18:19   | 16:40    | 28 07:51 (LAR08) |
| 17                  | 05:40 | 06:10  | 06:42     | 07:14   | 06:52    | 07:23 (LAR08)    |
|                     | 20:34 | 19:59  | 19:08     | 18:18   | 16:39    | 29 07:52 (LAR08) |
| 18                  | 05:41 | 06:11  | 06:43     | 07:15   | 06:53    | 07:23 (LAR08)    |
|                     | 20:33 | 19:58  | 19:07     | 18:16   | 16:38    | 29 07:52 (LAR08) |
| 19                  | 05:41 | 06:12  | 06:44     | 07:17   | 06:54    | 07:22 (LAR08)    |
|                     | 20:32 | 19:56  | 19:05     | 18:15   | 16:38    | 30 07:52 (LAR08) |
| 20                  | 05:42 | 06:13  | 06:45     | 07:18   | 06:55    | 07:23 (LAR08)    |
|                     | 20:31 | 19:55  | 19:03     | 18:13   | 16:37    | 30 07:53 (LAR08) |
| 21                  | 05:43 | 06:14  | 06:46     | 07:19   | 06:56    | 07:23 (LAR08)    |
|                     | 20:31 | 19:53  | 19:02     | 18:12   | 16:36    | 30 07:53 (LAR08) |
| 22                  | 05:44 | 06:15  | 06:47     | 07:20   | 06:58    | 07:23 (LAR08)    |
|                     | 20:30 | 19:52  | 19:00     | 18:10   | 16:35    | 33 15:54 (LAR01) |
| 23                  | 05:45 | 06:16  | 06:48     | 07:21   | 06:59    | 07:24 (LAR08)    |
|                     | 20:29 | 19:50  | 18:58     | 18:09   | 16:35    | 37 15:57 (LAR01) |
| 24                  | 05:46 | 06:17  | 06:49     | 07:22   | 07:00    | 07:25 (LAR08)    |
|                     | 20:28 | 19:49  | 18:56     | 18:07   | 16:34    | 40 15:59 (LAR01) |
| 25                  | 05:47 | 06:18  | 06:50     | 06:24   | 07:01    | 07:25 (LAR08)    |
|                     | 20:27 | 19:47  | 18:55     | 17:06   | 16:34    | 43 16:01 (LAR01) |
| 26                  | 05:48 | 06:19  | 06:51     | 06:25   | 07:02    | 07:26 (LAR08)    |
|                     | 20:26 | 19:46  | 18:53     | 17:04   | 16:33    | 42 16:01 (LAR01) |
| 27                  | 05:49 | 06:20  | 06:52     | 06:26   | 07:03    | 07:27 (LAR08)    |
|                     | 20:25 | 19:44  | 18:51     | 17:03   | 16:33    | 43 16:02 (LAR01) |
| 28                  | 05:50 | 06:21  | 06:53     | 06:27   | 07:04    | 07:28 (LAR08)    |
|                     | 20:24 | 19:42  | 18:49     | 17:02   | 16:32    | 42 16:03 (LAR01) |
| 29                  | 05:51 | 06:22  | 06:54     | 06:28   | 07:06    | 07:30 (LAR08)    |
|                     | 20:23 | 19:41  | 18:48     | 17:00   | 16:32    | 41 16:04 (LAR01) |
| 30                  | 05:52 | 06:23  | 06:56     | 06:30   | 07:07    | 07:31 (LAR08)    |
|                     | 20:22 | 19:39  | 18:46     | 16:59   | 16:31    | 42 16:05 (LAR01) |
| 31                  | 05:53 | 06:24  |           | 06:31   |          | 07:28            |
|                     | 20:21 | 19:38  |           | 16:58   |          | 16:39            |
| Potential sun hours | 462   | 429    | 375       | 344     | 296      | 285              |
| Total, worst case   |       |        |           |         | 722      | 603              |
| Sun reduction       |       |        |           |         | 0,41     | 0,36             |
| Oper. time red.     |       |        |           |         | 0,70     | 0,70             |
| Wind dir. red.      |       |        |           |         | 0,65     | 0,58             |
| Total reduction     |       |        |           |         | 0,18     | 0,15             |
| Total, real         |       |        |           |         | 133      | 90               |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



### SHADOW - Calendar

Shadow receptor: R42 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (32)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 06:30<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:57<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:06 | 05:26<br>20:34 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 06:39<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:40 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:26<br>16:33 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:26<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 07:24<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>20:25 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                  | 07:17<br>17:11 | 06:37<br>17:49 | 05:50<br>18:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 | 06:35<br>17:47 | 05:49<br>18:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:14 | 06:33<br>17:45 | 05:47<br>18:24 | 06:00<br>19:58 | 05:29<br>20:28 | 05:29<br>20:40 | 05:52<br>20:21 | 06:24<br>19:38 | 06:57<br>16:58 | 07:30<br>16:58 | 07:08<br>16:30 | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R43 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (33)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 06:30<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:57<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:06 | 05:26<br>20:34 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 06:37<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
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| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:17<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
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| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>20:25 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                  | 07:17<br>17:11 | 06:37<br>17:49 | 05:50<br>18:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 | 06:35<br>17:47 | 05:49<br>18:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:14 | 06:33<br>17:45 | 05:47<br>18:24 | 06:00<br>19:58 | 05:29<br>20:28 | 05:29<br>20:40 | 05:52<br>20:21 | 06:24<br>19:38 | 06:57<br>18:44 | 07:30<br>16:58 | 07:08<br>16:30 | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



SHADOW - Calendar

Shadow receptor: R45 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (35)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Table with 12 columns (Jan-Dec) and 2 rows of sunshine probability values.

Operational time

Table with 13 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 2 rows of operational time values.

Main shadow calculation table with 12 columns (January-December) and rows for each day of the year, including sun rise/set times and reduction factors.

Table layout: For each day in each month the following matrix apply

Matrix defining parameters for each day: Day in month, Sun rise/set times, Minutes with flicker, First/Last time with flicker, and WTG causing flicker times.



SHADOW - Calendar

Shadow receptor: R46 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (36)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Table with 12 columns (Jan-Dec) and 2 rows of values: 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

Table with 13 columns (N to Sum) and 2 rows of values: 981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

Main shadow calculation table with columns for months (January-December) and rows for days (1-31) and summary rows (Potential sun hours, Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, Total, real).

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise/set (hh:mm), Minutes with flicker, First/Last time (hh:mm) with flicker (WTG causing flicker first/last time).

### SHADOW - Calendar

Shadow receptor: R47 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (37)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 06:30<br>18:39 | 06:36<br>16:52 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:26<br>20:32 | 05:32<br>20:39 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 05:59<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:24<br>16:58 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:31 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:25<br>16:33 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:26<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 07:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:34 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:24<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:47 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:25<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:26<br>17:02 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:27<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



### SHADOW - Calendar

Shadow receptor: R48 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (38)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 06:30<br>18:39 | 06:36<br>16:52 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:26<br>20:32 | 05:32<br>20:39 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:28<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 05:59<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:06 | 05:26<br>20:34 | 05:33<br>20:38 | 06:00<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                  | 07:27<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:20<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                  | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:24<br>16:58 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:25<br>16:33 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:26<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 07:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:34 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:47 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Total, worst case   |                |                |                |                |                |                |                |                |                |                |                |                |
| Sun reduction       |                |                |                |                |                |                |                |                |                |                |                |                |
| Oper. time red.     |                |                |                |                |                |                |                |                |                |                |                |                |
| Wind dir. red.      |                |                |                |                |                |                |                |                |                |                |                |                |
| Total reduction     |                |                |                |                |                |                |                |                |                |                |                |                |
| Total, real         |                |                |                |                |                |                |                |                |                |                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R50 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (39)

### Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May                               | June   |
|---------------------|----------------|----------------|----------------|----------------|-----------------------------------|--|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58                    | 19:08 (LAR03)<br>24 19:32 (LAR03)<br>05:29<br>10 19:25 (LAR03) |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59                    | 19:07 (LAR03)<br>26 19:33 (LAR03)<br>05:28<br>6 19:24 (LAR03)  |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00                    | 19:05 (LAR03)<br>28 19:33 (LAR03)<br>05:28<br>20:30            |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53 | 06:40<br>19:29 | 05:54<br>20:01                    | 19:05 (LAR03)<br>29 19:34 (LAR03)<br>05:27<br>20:31            |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03                    | 19:04 (LAR03)<br>31 19:35 (LAR03)<br>05:27<br>20:32            |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04                    | 19:04 (LAR03)<br>32 19:36 (LAR03)<br>05:27<br>20:32            |
| 7                   | 07:29<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05                    | 19:03 (LAR03)<br>33 19:36 (LAR03)<br>05:26<br>20:33            |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:06                    | 19:02 (LAR03)<br>34 19:36 (LAR03)<br>05:26<br>20:34            |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07                    | 19:02 (LAR03)<br>34 19:36 (LAR03)<br>05:26<br>20:34            |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08                    | 19:02 (LAR03)<br>34 19:36 (LAR03)<br>05:25<br>20:35            |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09                    | 19:02 (LAR03)<br>34 19:36 (LAR03)<br>05:25<br>20:35            |
| 12                  | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10                    | 19:02 (LAR03)<br>34 19:36 (LAR03)<br>05:25<br>20:36            |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11                    | 19:02 (LAR03)<br>34 19:36 (LAR03)<br>05:25<br>20:36            |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12                    | 19:02 (LAR03)<br>34 19:36 (LAR03)<br>05:25<br>20:37            |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13                    | 19:02 (LAR03)<br>34 19:36 (LAR03)<br>05:25<br>20:37            |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14                    | 19:02 (LAR03)<br>34 19:36 (LAR03)<br>05:25<br>20:38            |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15                    | 19:02 (LAR03)<br>34 19:36 (LAR03)<br>05:25<br>20:38            |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16                    | 19:02 (LAR03)<br>33 19:35 (LAR03)<br>05:25<br>20:38            |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17                    | 19:04 (LAR03)<br>32 19:36 (LAR03)<br>05:25<br>20:39            |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18                    | 19:04 (LAR03)<br>31 19:35 (LAR03)<br>05:25<br>20:39            |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19                    | 19:04 (LAR03)<br>30 19:34 (LAR03)<br>05:25<br>20:39            |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20                    | 19:05 (LAR03)<br>29 19:34 (LAR03)<br>05:26<br>20:39            |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21                    | 19:06 (LAR03)<br>28 19:34 (LAR03)<br>05:26<br>20:40            |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22                    | 19:07 (LAR03)<br>26 19:33 (LAR03)<br>05:26<br>20:40            |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23                    | 19:07 (LAR03)<br>25 19:32 (LAR03)<br>05:26<br>20:40            |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24                    | 19:09 (LAR03)<br>23 19:32 (LAR03)<br>05:27<br>20:40            |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>20:25                    | 19:09 (LAR03)<br>22 19:31 (LAR03)<br>05:27<br>20:40            |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 19:15 (LAR03)<br>11 19:26 (LAR03) | 05:31<br>20:25<br>19:10 (LAR03)<br>20 19:30 (LAR03)            |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 19:12 (LAR03)<br>17 19:29 (LAR03) | 05:30<br>19<br>19:11 (LAR03)<br>19 19:30 (LAR03)               |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 19:10 (LAR03)<br>20 19:30 (LAR03) | 05:30<br>16<br>19:12 (LAR03)<br>16 19:28 (LAR03)               |
| 31                  | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 20:27<br>05:29<br>20:28           | 19:14 (LAR03)<br>13 19:27 (LAR03)                              |
| Potential sun hours | 295            | 296            | 369            | 400            | 451                               | 455  |
| Total, worst case   |                |                |                | 48             | 890                               | 16   |
| Sun reduction       |                |                |                | 0,48           | 0,47                              | 0,54   |
| Oper. time red.     |                |                |                | 0,70           | 0,70                              | 0,70   |
| Wind dir. red.      |                |                |                | 0,64           | 0,64                              | 0,64   |
| Total reduction     |                |                |                | 0,21           | 0,21                              | 0,24   |
| Total, real         |                |                |                | 10             | 186                               | 4  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R50 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (39)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August        |               | September |               | October |       | November |       | December |       |     |
|---------------------|-------|---------------|---------------|-----------|---------------|---------|-------|----------|-------|----------|-------|-----|
| 1                   | 05:29 |               | 05:53         |           | 19:12 (LAR03) |         | 06:25 |          | 06:57 |          | 07:08 |     |
|                     | 20:40 |               | 20:20         | 35        | 19:47 (LAR03) |         | 19:36 |          | 18:44 |          | 16:31 |     |
| 2                   | 05:29 |               | 05:54         |           | 19:12 (LAR03) |         | 06:26 |          | 06:58 |          | 07:09 |     |
|                     | 20:40 |               | 20:19         | 35        | 19:47 (LAR03) |         | 19:34 |          | 18:42 |          | 16:31 |     |
| 3                   | 05:30 |               | 05:55         |           | 19:12 (LAR03) |         | 06:27 |          | 06:59 |          | 07:10 |     |
|                     | 20:39 |               | 20:18         | 35        | 19:47 (LAR03) |         | 19:33 |          | 18:41 |          | 16:30 |     |
| 4                   | 05:30 |               | 05:56         |           | 19:12 (LAR03) |         | 06:28 |          | 07:00 |          | 07:11 |     |
|                     | 20:39 |               | 20:17         | 35        | 19:47 (LAR03) |         | 19:31 |          | 18:39 |          | 16:30 |     |
| 5                   | 05:31 |               | 05:57         |           | 19:13 (LAR03) |         | 06:30 |          | 07:01 |          | 07:12 |     |
|                     | 20:39 |               | 20:15         | 33        | 19:46 (LAR03) |         | 19:29 |          | 18:37 |          | 16:30 |     |
| 6                   | 05:32 |               | 05:58         |           | 19:13 (LAR03) |         | 06:31 |          | 07:02 |          | 07:13 |     |
|                     | 20:39 |               | 20:14         | 33        | 19:46 (LAR03) |         | 19:27 |          | 18:36 |          | 16:30 |     |
| 7                   | 05:32 |               | 06:00         |           | 19:13 (LAR03) |         | 06:32 |          | 07:03 |          | 07:14 |     |
|                     | 20:38 |               | 20:13         | 32        | 19:45 (LAR03) |         | 19:26 |          | 18:34 |          | 16:30 |     |
| 8                   | 05:33 |               | 06:01         |           | 19:14 (LAR03) |         | 06:33 |          | 07:04 |          | 07:15 |     |
|                     | 20:38 |               | 20:12         | 31        | 19:45 (LAR03) |         | 19:24 |          | 18:32 |          | 16:30 |     |
| 9                   | 05:34 |               | 06:02         |           | 19:14 (LAR03) |         | 06:34 |          | 07:05 |          | 07:16 |     |
|                     | 20:38 |               | 20:10         | 30        | 19:44 (LAR03) |         | 19:22 |          | 18:31 |          | 16:30 |     |
| 10                  | 05:34 |               | 06:03         |           | 19:15 (LAR03) |         | 06:35 |          | 07:06 |          | 07:17 |     |
|                     | 20:37 |               | 20:09         | 28        | 19:43 (LAR03) |         | 19:21 |          | 18:29 |          | 16:30 |     |
| 11                  | 05:35 | 19:24 (LAR03) | 06:04         |           | 19:16 (LAR03) |         | 06:36 |          | 07:07 |          | 07:17 |     |
|                     | 20:37 | 9             | 19:33 (LAR03) | 20:08     | 19:42 (LAR03) |         | 19:19 |          | 18:27 |          | 16:30 |     |
| 12                  | 05:36 | 19:23 (LAR03) | 06:05         |           | 19:17 (LAR03) |         | 06:37 |          | 07:09 |          | 07:18 |     |
|                     | 20:36 | 12            | 19:35 (LAR03) | 20:06     | 19:40 (LAR03) |         | 19:17 |          | 18:26 |          | 16:30 |     |
| 13                  | 05:36 | 19:21 (LAR03) | 06:06         |           | 19:19 (LAR03) |         | 06:38 |          | 07:10 |          | 07:19 |     |
|                     | 20:36 | 15            | 19:36 (LAR03) | 20:05     | 19:38 (LAR03) |         | 19:15 |          | 18:24 |          | 16:30 |     |
| 14                  | 05:37 | 19:20 (LAR03) | 06:07         |           | 19:21 (LAR03) |         | 06:39 |          | 07:11 |          | 07:20 |     |
|                     | 20:35 | 17            | 19:37 (LAR03) | 20:04     | 19:36 (LAR03) |         | 19:14 |          | 18:22 |          | 16:30 |     |
| 15                  | 05:38 | 19:19 (LAR03) | 06:08         |           | 19:24 (LAR03) |         | 06:40 |          | 07:12 |          | 07:21 |     |
|                     | 20:35 | 20            | 19:39 (LAR03) | 20:02     | 19:32 (LAR03) |         | 19:12 |          | 18:21 |          | 16:30 |     |
| 16                  | 05:39 | 19:19 (LAR03) | 06:09         | 8         | 19:25 (LAR03) |         | 06:41 |          | 07:13 |          | 07:21 |     |
|                     | 20:34 | 21            | 19:40 (LAR03) | 20:01     | 19:26 (LAR03) |         | 19:10 |          | 18:19 |          | 16:31 |     |
| 17                  | 05:40 | 19:18 (LAR03) | 06:10         |           | 19:28 (LAR03) |         | 06:42 |          | 07:14 |          | 07:22 |     |
|                     | 20:34 | 23            | 19:41 (LAR03) | 19:59     | 19:29 (LAR03) |         | 19:08 |          | 18:18 |          | 16:31 |     |
| 18                  | 05:40 | 19:17 (LAR03) | 06:11         |           | 19:30 (LAR03) |         | 06:43 |          | 07:15 |          | 07:23 |     |
|                     | 20:33 | 24            | 19:41 (LAR03) | 19:58     | 19:31 (LAR03) |         | 19:07 |          | 18:16 |          | 16:31 |     |
| 19                  | 05:41 | 19:16 (LAR03) | 06:12         |           | 19:32 (LAR03) |         | 06:44 |          | 07:16 |          | 07:23 |     |
|                     | 20:32 | 26            | 19:42 (LAR03) | 19:56     | 19:33 (LAR03) |         | 19:05 |          | 18:15 |          | 16:32 |     |
| 20                  | 05:42 | 19:16 (LAR03) | 06:13         |           | 19:34 (LAR03) |         | 06:45 |          | 07:18 |          | 07:24 |     |
|                     | 20:31 | 27            | 19:43 (LAR03) | 19:55     | 19:35 (LAR03) |         | 19:03 |          | 18:13 |          | 16:32 |     |
| 21                  | 05:43 | 19:15 (LAR03) | 06:14         |           | 19:36 (LAR03) |         | 06:46 |          | 07:19 |          | 07:24 |     |
|                     | 20:31 | 29            | 19:44 (LAR03) | 19:53     | 19:37 (LAR03) |         | 19:01 |          | 18:12 |          | 16:32 |     |
| 22                  | 05:44 | 19:15 (LAR03) | 06:15         |           | 19:38 (LAR03) |         | 06:47 |          | 07:20 |          | 07:25 |     |
|                     | 20:30 | 30            | 19:45 (LAR03) | 19:52     | 19:39 (LAR03) |         | 19:00 |          | 18:10 |          | 16:33 |     |
| 23                  | 05:45 | 19:15 (LAR03) | 06:16         |           | 19:40 (LAR03) |         | 06:48 |          | 07:21 |          | 07:26 |     |
|                     | 20:29 | 30            | 19:45 (LAR03) | 19:50     | 19:41 (LAR03) |         | 18:58 |          | 18:09 |          | 16:33 |     |
| 24                  | 05:46 | 19:13 (LAR03) | 06:17         |           | 19:42 (LAR03) |         | 06:49 |          | 07:22 |          | 07:26 |     |
|                     | 20:28 | 32            | 19:45 (LAR03) | 19:49     | 19:43 (LAR03) |         | 18:56 |          | 18:07 |          | 16:34 |     |
| 25                  | 05:47 | 19:13 (LAR03) | 06:18         |           | 19:44 (LAR03) |         | 06:50 |          | 07:23 |          | 07:26 |     |
|                     | 20:27 | 32            | 19:45 (LAR03) | 19:47     | 19:45 (LAR03) |         | 18:54 |          | 17:06 |          | 16:34 |     |
| 26                  | 05:48 | 19:13 (LAR03) | 06:19         |           | 19:46 (LAR03) |         | 06:51 |          | 07:24 |          | 07:27 |     |
|                     | 20:26 | 33            | 19:46 (LAR03) | 19:46     | 19:47 (LAR03) |         | 18:53 |          | 17:04 |          | 16:35 |     |
| 27                  | 05:49 | 19:13 (LAR03) | 06:20         |           | 19:48 (LAR03) |         | 06:52 |          | 07:25 |          | 07:27 |     |
|                     | 20:25 | 33            | 19:46 (LAR03) | 19:44     | 19:49 (LAR03) |         | 18:51 |          | 17:03 |          | 16:36 |     |
| 28                  | 05:50 | 19:13 (LAR03) | 06:21         |           | 19:50 (LAR03) |         | 06:53 |          | 07:26 |          | 07:27 |     |
|                     | 20:24 | 34            | 19:47 (LAR03) | 19:42     | 19:51 (LAR03) |         | 18:49 |          | 17:02 |          | 16:36 |     |
| 29                  | 05:51 | 19:12 (LAR03) | 06:22         |           | 19:52 (LAR03) |         | 06:54 |          | 07:27 |          | 07:28 |     |
|                     | 20:23 | 35            | 19:47 (LAR03) | 19:41     | 19:53 (LAR03) |         | 18:48 |          | 17:00 |          | 16:37 |     |
| 30                  | 05:51 | 19:12 (LAR03) | 06:23         |           | 19:54 (LAR03) |         | 06:55 |          | 07:28 |          | 07:28 |     |
|                     | 20:22 | 35            | 19:47 (LAR03) | 19:39     | 19:55 (LAR03) |         | 18:46 |          | 16:59 |          | 16:38 |     |
| 31                  | 05:52 | 19:12 (LAR03) | 06:24         |           | 19:56 (LAR03) |         | 06:56 |          | 07:29 |          | 07:28 |     |
|                     | 20:21 | 35            | 19:47 (LAR03) | 19:38     | 19:57 (LAR03) |         | 18:44 |          | 16:58 |          | 16:39 |     |
| Potential sun hours | 462   |               | 429           |           |               |         | 375   |          | 344   |          | 296   | 285 |
| Total, worst case   | 552   |               | 418           |           |               |         |       |          |       |          |       |     |
| Sun reduction       | 0,61  |               | 0,67          |           |               |         |       |          |       |          |       |     |
| Oper. time red.     | 0,70  |               | 0,70          |           |               |         |       |          |       |          |       |     |
| Wind dir. red.      | 0,64  |               | 0,64          |           |               |         |       |          |       |          |       |     |
| Total reduction     | 0,27  |               | 0,30          |           |               |         |       |          |       |          |       |     |
| Total, real         | 150   |               | 125           |           |               |         |       |          |       |          |       |     |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R51 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (40)

### Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May                                     | June                    |
|---------------------|----------------|----------------|----------------|----------------|---|-------------------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58                          | 18:57 (LAR03)<br>20:29  |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59                          | 18:57 (LAR03)<br>20:29  |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00                          | 18:56 (LAR03)<br>20:30  |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53 | 06:40<br>19:29 | 05:54<br>20:01                          | 18:56 (LAR03)<br>20:31  |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03                          | 18:56 (LAR03)<br>20:32  |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04                          | 18:56 (LAR03)<br>20:32  |
| 7                   | 07:29<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05                          | 18:56 (LAR03)<br>20:33  |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:06                          | 18:56 (LAR03)<br>20:34  |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07                          | 18:56 (LAR03)<br>20:34  |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08                          | 18:56 (LAR03)<br>20:35  |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09                          | 18:57 (LAR03)<br>20:35  |
| 12                  | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10                          | 18:57 (LAR03)<br>20:36  |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11                          | 18:58 (LAR03)<br>20:36  |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12                          | 18:59 (LAR03)<br>20:37  |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13                          | 18:59 (LAR03)<br>20:37  |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14                          | 19:00 (LAR03)<br>20:38  |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15                          | 19:01 (LAR03)<br>20:38  |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16                          | 19:02 (LAR03)<br>20:38  |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17                          | 19:04 (LAR03)<br>20:39  |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18                          | 19:06 (LAR03)<br>20:39  |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19                          | 19:08 (LAR03)<br>20:39  |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20                          | 19:17 (LAR03)<br>20:39  |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>19:09 (LAR03)<br>19:20 (LAR03) | 20:21<br>20:26<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>19:05 (LAR03)<br>19:22 (LAR03) | 20:22<br>20:27<br>20:40 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>19:03 (LAR03)<br>19:24 (LAR03) | 20:23<br>20:28<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>19:02 (LAR03)<br>19:26 (LAR03) | 20:24<br>20:29<br>20:40 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>19:00 (LAR03)<br>19:27 (LAR03) | 20:25<br>20:30<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>19:00 (LAR03)<br>19:28 (LAR03) | 20:26<br>20:31<br>20:40 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>18:59 (LAR03)<br>19:29 (LAR03) | 20:27<br>20:32<br>20:40 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>18:58 (LAR03)<br>19:28 (LAR03) | 20:28<br>20:33<br>20:40 |
| 31                  | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:28                          |                         |
| Potential sun hours | 295            | 296            | 369            | 400            | 451                                     | 455                     |
| Total, worst case   |                |                |                | 188            | 577                                     |                         |
| Sun reduction       |                |                |                | 0,48           | 0,47                                    |                         |
| Oper. time red.     |                |                |                | 0,70           | 0,70                                    |                         |
| Wind dir. red.      |                |                |                | 0,63           | 0,63                                    |                         |
| Total reduction     |                |                |                | 0,21           | 0,21                                    |                         |
| Total, real         |                |                |                | 40             | 119                                     |                         |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R51 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (40)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August           |                  | September |       | October |       | November |  | December |     |
|---------------------|-------|------------------|------------------|-----------|-------|---------|-------|----------|--|----------|-----|
| 1                   | 05:29 | 05:53            | 19:08 (LAR03)    | 06:25     | 06:57 | 06:32   | 07:08 |          |  |          |     |
|                     | 20:40 | 20:20            | 30 19:38 (LAR03) | 19:36     | 18:44 | 16:56   | 16:31 |          |  |          |     |
| 2                   | 05:29 | 05:54            | 19:07 (LAR03)    | 06:26     | 06:58 | 06:33   | 07:09 |          |  |          |     |
|                     | 20:40 | 20:19            | 31 19:38 (LAR03) | 19:34     | 18:42 | 16:55   | 16:31 |          |  |          |     |
| 3                   | 05:30 | 05:55            | 19:07 (LAR03)    | 06:27     | 06:59 | 06:34   | 07:10 |          |  |          |     |
|                     | 20:39 | 20:18            | 32 19:39 (LAR03) | 19:33     | 18:41 | 16:54   | 16:30 |          |  |          |     |
| 4                   | 05:30 | 05:56            | 19:06 (LAR03)    | 06:28     | 07:00 | 06:36   | 07:11 |          |  |          |     |
|                     | 20:39 | 20:17            | 33 19:39 (LAR03) | 19:31     | 18:39 | 16:53   | 16:30 |          |  |          |     |
| 5                   | 05:31 | 05:57            | 19:06 (LAR03)    | 06:30     | 07:01 | 06:37   | 07:12 |          |  |          |     |
|                     | 20:39 | 20:15            | 33 19:39 (LAR03) | 19:29     | 18:37 | 16:51   | 16:30 |          |  |          |     |
| 6                   | 05:32 | 05:58            | 19:06 (LAR03)    | 06:31     | 07:02 | 06:38   | 07:13 |          |  |          |     |
|                     | 20:39 | 20:14            | 33 19:39 (LAR03) | 19:27     | 18:36 | 16:50   | 16:30 |          |  |          |     |
| 7                   | 05:32 | 06:00            | 19:06 (LAR03)    | 06:32     | 07:03 | 06:39   | 07:14 |          |  |          |     |
|                     | 20:38 | 20:13            | 33 19:39 (LAR03) | 19:26     | 18:34 | 16:49   | 16:30 |          |  |          |     |
| 8                   | 05:33 | 06:01            | 19:06 (LAR03)    | 06:33     | 07:04 | 06:41   | 07:15 |          |  |          |     |
|                     | 20:38 | 20:12            | 33 19:39 (LAR03) | 19:24     | 18:32 | 16:48   | 16:30 |          |  |          |     |
| 9                   | 05:34 | 06:02            | 19:06 (LAR03)    | 06:34     | 07:05 | 06:42   | 07:16 |          |  |          |     |
|                     | 20:38 | 20:10            | 33 19:39 (LAR03) | 19:22     | 18:31 | 16:47   | 16:30 |          |  |          |     |
| 10                  | 05:34 | 06:03            | 19:06 (LAR03)    | 06:35     | 07:06 | 06:43   | 07:17 |          |  |          |     |
|                     | 20:37 | 20:09            | 33 19:39 (LAR03) | 19:21     | 18:29 | 16:46   | 16:30 |          |  |          |     |
| 11                  | 05:35 | 06:04            | 19:06 (LAR03)    | 06:36     | 07:07 | 06:44   | 07:17 |          |  |          |     |
|                     | 20:37 | 20:08            | 32 19:38 (LAR03) | 19:19     | 18:27 | 16:45   | 16:30 |          |  |          |     |
| 12                  | 05:36 | 06:05            | 19:06 (LAR03)    | 06:37     | 07:09 | 06:45   | 07:18 |          |  |          |     |
|                     | 20:36 | 20:06            | 32 19:38 (LAR03) | 19:17     | 18:26 | 16:44   | 16:30 |          |  |          |     |
| 13                  | 05:36 | 06:06            | 19:06 (LAR03)    | 06:38     | 07:10 | 06:47   | 07:19 |          |  |          |     |
|                     | 20:36 | 20:05            | 31 19:37 (LAR03) | 19:15     | 18:24 | 16:43   | 16:30 |          |  |          |     |
| 14                  | 05:37 | 06:07            | 19:07 (LAR03)    | 06:39     | 07:11 | 06:48   | 07:20 |          |  |          |     |
|                     | 20:35 | 20:04            | 29 19:36 (LAR03) | 19:14     | 18:22 | 16:42   | 16:30 |          |  |          |     |
| 15                  | 05:38 | 06:08            | 19:07 (LAR03)    | 06:40     | 07:12 | 06:49   | 07:21 |          |  |          |     |
|                     | 20:35 | 20:02            | 28 19:35 (LAR03) | 19:12     | 18:21 | 16:41   | 16:30 |          |  |          |     |
| 16                  | 05:39 | 06:09            | 19:08 (LAR03)    | 06:41     | 07:13 | 06:50   | 07:21 |          |  |          |     |
|                     | 20:34 | 20:01            | 26 19:34 (LAR03) | 19:10     | 18:19 | 16:40   | 16:31 |          |  |          |     |
| 17                  | 05:40 | 06:10            | 19:09 (LAR03)    | 06:42     | 07:14 | 06:52   | 07:22 |          |  |          |     |
|                     | 20:34 | 19:59            | 24 19:33 (LAR03) | 19:08     | 18:18 | 16:39   | 16:31 |          |  |          |     |
| 18                  | 05:40 | 06:11            | 19:11 (LAR03)    | 06:43     | 07:15 | 06:53   | 07:23 |          |  |          |     |
|                     | 20:33 | 19:58            | 20 19:31 (LAR03) | 19:07     | 18:16 | 16:38   | 16:31 |          |  |          |     |
| 19                  | 05:41 | 06:12            | 19:12 (LAR03)    | 06:44     | 07:16 | 06:54   | 07:23 |          |  |          |     |
|                     | 20:32 | 19:56            | 17 19:29 (LAR03) | 19:05     | 18:15 | 16:38   | 16:32 |          |  |          |     |
| 20                  | 05:42 | 06:13            | 19:15 (LAR03)    | 06:45     | 07:18 | 06:55   | 07:24 |          |  |          |     |
|                     | 20:31 | 19:55            | 10 19:25 (LAR03) | 19:03     | 18:13 | 16:37   | 16:32 |          |  |          |     |
| 21                  | 05:43 | 06:14            | 19:16 (LAR03)    | 06:46     | 07:19 | 06:56   | 07:24 |          |  |          |     |
|                     | 20:31 | 19:53            |                  | 19:01     | 18:12 | 16:36   | 16:32 |          |  |          |     |
| 22                  | 05:44 | 19:21 (LAR03)    | 06:15            | 06:47     | 07:20 | 06:58   | 07:25 |          |  |          |     |
|                     | 20:30 | 4 19:25 (LAR03)  | 19:52            | 19:00     | 18:10 | 16:35   | 16:33 |          |  |          |     |
| 23                  | 05:45 | 19:18 (LAR03)    | 06:16            | 06:48     | 07:21 | 06:59   | 07:26 |          |  |          |     |
|                     | 20:29 | 11 19:29 (LAR03) | 19:50            | 18:58     | 18:09 | 16:35   | 16:33 |          |  |          |     |
| 24                  | 05:46 | 19:15 (LAR03)    | 06:17            | 06:49     | 07:22 | 07:00   | 07:26 |          |  |          |     |
|                     | 20:28 | 15 19:30 (LAR03) | 19:49            | 18:56     | 18:07 | 16:34   | 16:34 |          |  |          |     |
| 25                  | 05:47 | 19:13 (LAR03)    | 06:18            | 06:50     | 06:24 | 07:01   | 07:26 |          |  |          |     |
|                     | 20:27 | 19 19:32 (LAR03) | 19:47            | 18:54     | 17:06 | 16:34   | 16:34 |          |  |          |     |
| 26                  | 05:48 | 19:12 (LAR03)    | 06:19            | 06:51     | 06:25 | 07:02   | 07:27 |          |  |          |     |
|                     | 20:26 | 21 19:33 (LAR03) | 19:46            | 18:53     | 17:04 | 16:33   | 16:35 |          |  |          |     |
| 27                  | 05:49 | 19:11 (LAR03)    | 06:20            | 06:52     | 06:26 | 07:03   | 07:27 |          |  |          |     |
|                     | 20:25 | 23 19:34 (LAR03) | 19:44            | 18:51     | 17:03 | 16:33   | 16:36 |          |  |          |     |
| 28                  | 05:50 | 19:10 (LAR03)    | 06:21            | 06:53     | 06:27 | 07:04   | 07:27 |          |  |          |     |
|                     | 20:24 | 25 19:35 (LAR03) | 19:42            | 18:49     | 17:02 | 16:32   | 16:36 |          |  |          |     |
| 29                  | 05:51 | 19:10 (LAR03)    | 06:22            | 06:54     | 06:28 | 07:06   | 07:28 |          |  |          |     |
|                     | 20:23 | 26 19:36 (LAR03) | 19:41            | 18:48     | 17:00 | 16:32   | 16:37 |          |  |          |     |
| 30                  | 05:51 | 19:09 (LAR03)    | 06:23            | 06:55     | 06:30 | 07:07   | 07:28 |          |  |          |     |
|                     | 20:22 | 28 19:37 (LAR03) | 19:39            | 18:46     | 16:59 | 16:31   | 16:38 |          |  |          |     |
| 31                  | 05:52 | 19:08 (LAR03)    | 06:24            |           | 06:31 |         | 07:28 |          |  |          |     |
|                     | 20:21 | 29 19:37 (LAR03) | 19:38            |           | 16:58 |         | 16:39 |          |  |          |     |
| Potential sun hours | 462   |                  | 429              |           | 375   |         | 296   |          |  |          | 285 |
| Total, worst case   | 201   |                  | 573              |           |       |         |       |          |  |          |     |
| Sun reduction       | 0,61  |                  | 0,67             |           |       |         |       |          |  |          |     |
| Oper. time red.     | 0,70  |                  | 0,70             |           |       |         |       |          |  |          |     |
| Wind dir. red.      | 0,63  |                  | 0,63             |           |       |         |       |          |  |          |     |
| Total reduction     | 0,27  |                  | 0,29             |           |       |         |       |          |  |          |     |
| Total, real         | 54    |                  | 169              |           |       |         |       |          |  |          |     |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R53 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (41)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June                           |
|---------------------|----------------|----------------|----------------|----------------|----------------|--------------------------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 18:50 (LAR03)<br>19:27 (LAR03) |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 18:50 (LAR03)<br>19:27 (LAR03) |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 18:49 (LAR03)<br>19:26 (LAR03) |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:54<br>20:01 | 18:49 (LAR03)<br>19:26 (LAR03) |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 18:49 (LAR03)<br>19:26 (LAR03) |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 18:50 (LAR03)<br>19:26 (LAR03) |
| 7                   | 07:29<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 18:50 (LAR03)<br>19:26 (LAR03) |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:06 | 18:49 (LAR03)<br>19:25 (LAR03) |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 18:50 (LAR03)<br>19:25 (LAR03) |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 18:50 (LAR03)<br>19:24 (LAR03) |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 18:51 (LAR03)<br>19:24 (LAR03) |
| 12                  | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 18:52 (LAR03)<br>19:23 (LAR03) |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 18:52 (LAR03)<br>19:23 (LAR03) |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 18:53 (LAR03)<br>19:22 (LAR03) |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 18:54 (LAR03)<br>19:21 (LAR03) |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 18:55 (LAR03)<br>19:20 (LAR03) |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 06:23 (LAR14)<br>19:19 (LAR03) |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 06:19 (LAR14)<br>19:17 (LAR03) |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 06:17 (LAR14)<br>19:17 (LAR03) |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 06:15 (LAR14)<br>19:15 (LAR03) |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 06:13 (LAR14)<br>19:12 (LAR03) |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 06:11 (LAR14)<br>06:45 (LAR14) |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 06:11 (LAR14)<br>06:47 (LAR14) |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 06:10 (LAR14)<br>06:48 (LAR14) |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 06:08 (LAR14)<br>06:49 (LAR14) |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 06:08 (LAR14)<br>06:51 (LAR14) |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>20:25 | 06:07 (LAR14)<br>06:51 (LAR14) |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 06:06 (LAR14)<br>06:52 (LAR14) |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 06:06 (LAR14)<br>06:53 (LAR14) |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 06:05 (LAR14)<br>06:53 (LAR14) |
| 31                  | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:28 | 06:05 (LAR14)<br>06:54 (LAR14) |
| Potential sun hours | 295            | 296            | 369            | 400            | 451            | 455                            |
| Total, worst case   |                |                |                | 305            | 1158           | 1676                           |
| Sun reduction       |                |                |                | 0,48           | 0,47           | 0,54                           |
| Oper. time red.     |                |                |                | 0,70           | 0,70           | 0,70                           |
| Wind dir. red.      |                |                |                | 0,63           | 0,60           | 0,57                           |
| Total reduction     |                |                |                | 0,21           | 0,20           | 0,21                           |
| Total, real         |                |                |                | 65             | 227            | 357                            |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

**Shadow receptor:** R53 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (41)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August        |       | September     |               | October |       | November |       | December |  |
|---------------------|-------|---------------|-------|---------------|---------------|---------|-------|----------|-------|----------|--|
| 1                   | 05:29 | 06:08 (LAR14) | 05:53 | 19:02 (LAR03) | 06:25         | 06:57   | 06:32 | 07:08    |       |          |  |
|                     | 20:40 | 07:04 (LAR14) | 20:20 | 32            | 19:34 (LAR03) | 19:36   | 18:44 | 16:56    | 16:31 |          |  |
| 2                   | 05:29 | 06:08 (LAR14) | 05:54 | 19:01 (LAR03) | 06:26         | 06:58   | 06:33 | 07:09    |       |          |  |
|                     | 20:40 | 07:03 (LAR14) | 20:19 | 34            | 19:35 (LAR03) | 19:34   | 18:42 | 16:55    | 16:31 |          |  |
| 3                   | 05:30 | 06:09 (LAR14) | 05:55 | 19:01 (LAR03) | 06:27         | 06:59   | 06:34 | 07:10    |       |          |  |
|                     | 20:39 | 07:04 (LAR14) | 20:18 | 34            | 19:35 (LAR03) | 19:33   | 18:41 | 16:54    | 16:30 |          |  |
| 4                   | 05:30 | 06:08 (LAR14) | 05:56 | 19:00 (LAR03) | 06:28         | 07:00   | 06:36 | 07:11    |       |          |  |
|                     | 20:39 | 07:03 (LAR14) | 20:17 | 35            | 19:35 (LAR03) | 19:31   | 18:39 | 16:53    | 16:30 |          |  |
| 5                   | 05:31 | 06:09 (LAR14) | 05:57 | 19:00 (LAR03) | 06:30         | 07:01   | 06:37 | 07:12    |       |          |  |
|                     | 20:39 | 07:04 (LAR14) | 20:15 | 36            | 19:36 (LAR03) | 19:29   | 18:37 | 16:51    | 16:30 |          |  |
| 6                   | 05:32 | 06:10 (LAR14) | 05:58 | 18:59 (LAR03) | 06:31         | 07:02   | 06:38 | 07:13    |       |          |  |
|                     | 20:39 | 07:04 (LAR14) | 20:14 | 37            | 19:36 (LAR03) | 19:27   | 18:36 | 16:50    | 16:30 |          |  |
| 7                   | 05:32 | 06:10 (LAR14) | 06:00 | 18:59 (LAR03) | 06:32         | 07:03   | 06:39 | 07:14    |       |          |  |
|                     | 20:38 | 07:03 (LAR14) | 20:13 | 37            | 19:36 (LAR03) | 19:26   | 18:34 | 16:49    | 16:30 |          |  |
| 8                   | 05:33 | 06:11 (LAR14) | 06:01 | 18:59 (LAR03) | 06:33         | 07:04   | 06:41 | 07:15    |       |          |  |
|                     | 20:38 | 07:04 (LAR14) | 20:12 | 37            | 19:36 (LAR03) | 19:24   | 18:32 | 16:48    | 16:30 |          |  |
| 9                   | 05:34 | 06:12 (LAR14) | 06:02 | 18:59 (LAR03) | 06:34         | 07:05   | 06:42 | 07:16    |       |          |  |
|                     | 20:38 | 07:04 (LAR14) | 20:10 | 37            | 19:36 (LAR03) | 19:22   | 18:31 | 16:47    | 16:30 |          |  |
| 10                  | 05:34 | 06:11 (LAR14) | 06:03 | 18:59 (LAR03) | 06:35         | 07:06   | 06:43 | 07:17    |       |          |  |
|                     | 20:37 | 07:03 (LAR14) | 20:09 | 37            | 19:36 (LAR03) | 19:21   | 18:29 | 16:46    | 16:30 |          |  |
| 11                  | 05:35 | 06:12 (LAR14) | 06:04 | 18:59 (LAR03) | 06:36         | 07:07   | 06:44 | 07:17    |       |          |  |
|                     | 20:37 | 07:03 (LAR14) | 20:08 | 36            | 19:35 (LAR03) | 19:19   | 18:27 | 16:45    | 16:30 |          |  |
| 12                  | 05:36 | 06:13 (LAR14) | 06:05 | 18:59 (LAR03) | 06:37         | 07:09   | 06:45 | 07:18    |       |          |  |
|                     | 20:36 | 07:03 (LAR14) | 20:06 | 36            | 19:35 (LAR03) | 19:17   | 18:26 | 16:44    | 16:30 |          |  |
| 13                  | 05:36 | 06:13 (LAR14) | 06:06 | 18:59 (LAR03) | 06:38         | 07:10   | 06:47 | 07:19    |       |          |  |
|                     | 20:36 | 07:02 (LAR14) | 20:05 | 36            | 19:35 (LAR03) | 19:15   | 18:24 | 16:43    | 16:30 |          |  |
| 14                  | 05:37 | 06:14 (LAR14) | 06:07 | 18:59 (LAR03) | 06:39         | 07:11   | 06:48 | 07:20    |       |          |  |
|                     | 20:35 | 07:02 (LAR14) | 20:04 | 35            | 19:34 (LAR03) | 19:14   | 18:22 | 16:42    | 16:30 |          |  |
| 15                  | 05:38 | 06:15 (LAR14) | 06:08 | 18:59 (LAR03) | 06:40         | 07:12   | 06:49 | 07:21    |       |          |  |
|                     | 20:35 | 07:01 (LAR14) | 20:02 | 34            | 19:33 (LAR03) | 19:12   | 18:21 | 16:41    | 16:30 |          |  |
| 16                  | 05:39 | 06:16 (LAR14) | 06:09 | 19:00 (LAR03) | 06:41         | 07:13   | 06:50 | 07:21    |       |          |  |
|                     | 20:34 | 07:01 (LAR14) | 20:01 | 33            | 19:33 (LAR03) | 19:10   | 18:19 | 16:40    | 16:31 |          |  |
| 17                  | 05:40 | 06:17 (LAR14) | 06:10 | 19:00 (LAR03) | 06:42         | 07:14   | 06:52 | 07:22    |       |          |  |
|                     | 20:34 | 07:00 (LAR14) | 19:59 | 32            | 19:32 (LAR03) | 19:08   | 18:18 | 16:39    | 16:31 |          |  |
| 18                  | 05:40 | 06:17 (LAR14) | 06:11 | 19:01 (LAR03) | 06:43         | 07:15   | 06:53 | 07:23    |       |          |  |
|                     | 20:33 | 06:59 (LAR14) | 19:58 | 30            | 19:31 (LAR03) | 19:07   | 18:16 | 16:38    | 16:31 |          |  |
| 19                  | 05:41 | 06:18 (LAR14) | 06:12 | 19:02 (LAR03) | 06:44         | 07:17   | 06:54 | 07:23    |       |          |  |
|                     | 20:32 | 06:58 (LAR14) | 19:56 | 27            | 19:29 (LAR03) | 19:05   | 18:15 | 16:38    | 16:32 |          |  |
| 20                  | 05:42 | 06:20 (LAR14) | 06:13 | 19:03 (LAR03) | 06:45         | 07:18   | 06:55 | 07:24    |       |          |  |
|                     | 20:31 | 06:57 (LAR14) | 19:55 | 25            | 19:28 (LAR03) | 19:03   | 18:13 | 16:37    | 16:32 |          |  |
| 21                  | 05:43 | 06:21 (LAR14) | 06:14 | 19:05 (LAR03) | 06:46         | 07:19   | 06:56 | 07:24    |       |          |  |
|                     | 20:31 | 06:57 (LAR14) | 19:53 | 21            | 19:26 (LAR03) | 19:01   | 18:12 | 16:36    | 16:32 |          |  |
| 22                  | 05:44 | 06:23 (LAR14) | 06:15 | 19:07 (LAR03) | 06:47         | 07:20   | 06:58 | 07:25    |       |          |  |
|                     | 20:30 | 06:55 (LAR14) | 19:52 | 16            | 19:23 (LAR03) | 19:00   | 18:10 | 16:35    | 16:33 |          |  |
| 23                  | 05:45 | 06:24 (LAR14) | 06:16 | 19:10 (LAR03) | 06:48         | 07:21   | 06:59 | 07:26    |       |          |  |
|                     | 20:29 | 19:24 (LAR03) | 19:50 | 9             | 19:19 (LAR03) | 18:58   | 18:09 | 16:35    | 16:33 |          |  |
| 24                  | 05:46 | 06:25 (LAR14) | 06:17 |               |               | 06:49   | 07:22 | 07:00    | 07:26 |          |  |
|                     | 20:28 | 19:25 (LAR03) | 19:49 |               |               | 18:56   | 18:07 | 16:34    | 16:34 |          |  |
| 25                  | 05:47 | 06:28 (LAR14) | 06:18 |               |               | 06:50   | 06:24 | 07:01    | 07:26 |          |  |
|                     | 20:27 | 19:27 (LAR03) | 19:47 |               |               | 18:55   | 17:06 | 16:34    | 16:35 |          |  |
| 26                  | 05:48 | 06:31 (LAR14) | 06:19 |               |               | 06:51   | 06:25 | 07:02    | 07:27 |          |  |
|                     | 20:26 | 19:28 (LAR03) | 19:46 |               |               | 18:53   | 17:04 | 16:33    | 16:35 |          |  |
| 27                  | 05:49 | 19:06 (LAR03) | 06:20 |               |               | 06:52   | 06:26 | 07:03    | 07:27 |          |  |
|                     | 20:25 | 19:30 (LAR03) | 19:44 |               |               | 18:51   | 17:03 | 16:33    | 16:36 |          |  |
| 28                  | 05:50 | 19:05 (LAR03) | 06:21 |               |               | 06:53   | 06:27 | 07:04    | 07:27 |          |  |
|                     | 20:24 | 19:31 (LAR03) | 19:42 |               |               | 18:49   | 17:02 | 16:32    | 16:36 |          |  |
| 29                  | 05:51 | 19:04 (LAR03) | 06:22 |               |               | 06:54   | 06:28 | 07:06    | 07:28 |          |  |
|                     | 20:23 | 19:32 (LAR03) | 19:41 |               |               | 18:48   | 17:00 | 16:32    | 16:37 |          |  |
| 30                  | 05:51 | 19:03 (LAR03) | 06:23 |               |               | 06:55   | 06:30 | 07:07    | 07:28 |          |  |
|                     | 20:22 | 19:33 (LAR03) | 19:39 |               |               | 18:46   | 16:59 | 16:31    | 16:38 |          |  |
| 31                  | 05:52 | 19:03 (LAR03) | 06:24 |               |               |         | 06:31 |          | 07:28 |          |  |
|                     | 20:21 | 19:33 (LAR03) | 19:38 |               |               |         | 16:58 |          | 16:39 |          |  |
| Potential sun hours | 462   |               | 429   |               | 375           | 344     | 296   | 285      |       |          |  |
| Total, worst case   | 1355  |               | 726   |               |               |         |       |          |       |          |  |
| Sun reduction       | 0,61  |               | 0,67  |               |               |         |       |          |       |          |  |
| Oper. time red.     | 0,70  |               | 0,70  |               |               |         |       |          |       |          |  |
| Wind dir. red.      | 0,58  |               | 0,63  |               |               |         |       |          |       |          |  |
| Total reduction     | 0,24  |               | 0,29  |               |               |         |       |          |       |          |  |
| Total, real         | 330   |               | 214   |               |               |         |       |          |       |          |  |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R54 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (42)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June                |                        |
|---------------------|----------------|----------------|----------------|----------------|----------------|---------------------|------------------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 |                     | 05:29<br>19:07 (LAR03) |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 19:16 (LAR03)       | 20:29<br>19:38 (LAR03) |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 13<br>19:12 (LAR03) | 20:29<br>19:08 (LAR03) |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:54<br>20:01 | 19<br>19:31 (LAR03) | 20:30<br>19:38 (LAR03) |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 22<br>19:33 (LAR03) | 20:31<br>19:38 (LAR03) |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 25<br>19:09 (LAR03) | 20:32<br>19:10 (LAR03) |
| 7                   | 07:29<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 28<br>19:34 (LAR03) | 20:32<br>19:38 (LAR03) |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:06 | 30<br>19:37 (LAR03) | 20:33<br>19:37 (LAR03) |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 27<br>19:05 (LAR03) | 20:34<br>19:12 (LAR03) |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 32<br>19:37 (LAR03) | 20:34<br>19:37 (LAR03) |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 34<br>19:38 (LAR03) | 20:35<br>19:13 (LAR03) |
| 12                  | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 35<br>19:39 (LAR03) | 20:35<br>19:36 (LAR03) |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 36<br>19:03 (LAR03) | 20:36<br>19:15 (LAR03) |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 37<br>19:03 (LAR03) | 20:36<br>19:36 (LAR03) |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 37<br>19:40 (LAR03) | 20:37<br>19:16 (LAR03) |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 38<br>19:02 (LAR03) | 20:37<br>19:36 (LAR03) |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 38<br>19:40 (LAR03) | 20:38<br>19:17 (LAR03) |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 38<br>19:02 (LAR03) | 20:38<br>19:36 (LAR03) |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 38<br>19:41 (LAR03) | 20:39<br>19:36 (LAR03) |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 38<br>19:03 (LAR03) | 20:39<br>06:10 (LAR14) |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 38<br>19:41 (LAR03) | 20:39<br>19:36 (LAR03) |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 37<br>19:03 (LAR03) | 20:39<br>06:11 (LAR14) |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 37<br>19:41 (LAR03) | 20:40<br>19:37 (LAR03) |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 37<br>19:04 (LAR03) | 20:40<br>06:12 (LAR14) |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 36<br>19:40 (LAR03) | 20:40<br>19:37 (LAR03) |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 36<br>19:05 (LAR03) | 20:40<br>19:18 (LAR03) |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>20:25 | 35<br>19:40 (LAR03) | 20:40<br>19:38 (LAR03) |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 35<br>19:05 (LAR03) | 20:40<br>19:19 (LAR03) |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 34<br>19:39 (LAR03) | 20:40<br>19:39 (LAR03) |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 34<br>19:06 (LAR03) | 20:40<br>19:17 (LAR03) |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28 | 33<br>19:39 (LAR03) | 20:40<br>19:39 (LAR03) |
| Potential sun hours | 295            | 296            | 369            | 400            | 451            | 455                 |                        |
| Total, worst case   |                |                |                |                | 992            |                     | 703                    |
| Sun reduction       |                |                |                |                | 0,47           |                     | 0,54                   |
| Oper. time red.     |                |                |                |                | 0,70           |                     | 0,70                   |
| Wind dir. red.      |                |                |                |                | 0,65           |                     | 0,64                   |
| Total reduction     |                |                |                |                | 0,21           |                     | 0,24                   |
| Total, real         |                |                |                |                | 209            |                     | 170                    |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|

## SHADOW - Calendar

**Shadow receptor:** R54 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (42)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August        |               | September |               | October       |       | November |       | December |  |
|---------------------|-------|---------------|---------------|-----------|---------------|---------------|-------|----------|-------|----------|--|
| 1                   | 05:29 | 19:18 (LAR03) | 05:53         |           | 19:14 (LAR03) | 06:25         | 06:57 | 06:32    | 07:08 |          |  |
|                     | 20:40 | 22            | 19:40 (LAR03) | 20:20     | 36            | 19:50 (LAR03) | 19:36 | 18:44    | 16:56 | 16:31    |  |
| 2                   | 05:29 | 19:17 (LAR03) | 05:54         |           | 19:14 (LAR03) | 06:26         | 06:58 | 06:33    | 07:09 |          |  |
|                     | 20:40 | 24            | 19:41 (LAR03) | 20:19     | 35            | 19:49 (LAR03) | 19:34 | 18:42    | 16:55 | 16:31    |  |
| 3                   | 05:30 | 19:17 (LAR03) | 05:55         |           | 19:15 (LAR03) | 06:27         | 06:59 | 06:34    | 07:10 |          |  |
|                     | 20:39 | 25            | 19:42 (LAR03) | 20:18     | 34            | 19:49 (LAR03) | 19:33 | 18:41    | 16:54 | 16:30    |  |
| 4                   | 05:30 | 19:17 (LAR03) | 05:56         |           | 19:16 (LAR03) | 06:28         | 06:28 | 07:00    | 06:36 | 07:11    |  |
|                     | 20:39 | 25            | 19:42 (LAR03) | 20:17     | 32            | 19:48 (LAR03) | 19:31 | 18:39    | 16:53 | 16:30    |  |
| 5                   | 05:31 | 19:17 (LAR03) | 05:57         |           | 19:16 (LAR03) | 06:30         | 07:01 | 06:37    | 07:12 |          |  |
|                     | 20:39 | 26            | 19:43 (LAR03) | 20:15     | 31            | 19:47 (LAR03) | 19:29 | 18:37    | 16:51 | 16:30    |  |
| 6                   | 05:32 | 19:17 (LAR03) | 05:59         |           | 19:17 (LAR03) | 06:31         | 07:02 | 06:38    | 07:13 |          |  |
|                     | 20:39 | 27            | 19:44 (LAR03) | 20:14     | 29            | 19:46 (LAR03) | 19:27 | 18:36    | 16:50 | 16:30    |  |
| 7                   | 05:32 | 19:16 (LAR03) | 06:00         |           | 19:18 (LAR03) | 06:32         | 07:03 | 06:39    | 07:14 |          |  |
|                     | 20:38 | 28            | 19:44 (LAR03) | 20:13     | 27            | 19:45 (LAR03) | 19:26 | 18:34    | 16:49 | 16:30    |  |
| 8                   | 05:33 | 19:16 (LAR03) | 06:01         |           | 19:19 (LAR03) | 06:33         | 07:04 | 06:41    | 07:15 |          |  |
|                     | 20:38 | 29            | 19:45 (LAR03) | 20:12     | 25            | 19:44 (LAR03) | 19:24 | 18:32    | 16:48 | 16:30    |  |
| 9                   | 05:34 | 19:16 (LAR03) | 06:02         |           | 19:21 (LAR03) | 06:34         | 07:05 | 06:42    | 07:16 |          |  |
|                     | 20:38 | 30            | 19:46 (LAR03) | 20:10     | 21            | 19:42 (LAR03) | 19:22 | 18:31    | 16:47 | 16:30    |  |
| 10                  | 05:34 | 19:15 (LAR03) | 06:03         |           | 19:23 (LAR03) | 06:35         | 07:06 | 06:43    | 07:17 |          |  |
|                     | 20:37 | 30            | 19:45 (LAR03) | 20:09     | 17            | 19:40 (LAR03) | 19:21 | 18:29    | 16:46 | 16:30    |  |
| 11                  | 05:35 | 19:15 (LAR03) | 06:04         |           | 19:26 (LAR03) | 06:36         | 07:07 | 06:44    | 07:17 |          |  |
|                     | 20:37 | 31            | 19:46 (LAR03) | 20:08     | 11            | 19:37 (LAR03) | 19:19 | 18:27    | 16:45 | 16:30    |  |
| 12                  | 05:36 | 19:15 (LAR03) | 06:05         |           |               | 06:37         | 07:09 | 06:45    | 07:18 |          |  |
|                     | 20:36 | 32            | 19:47 (LAR03) | 20:06     |               | 19:17         | 18:26 | 16:44    | 16:30 |          |  |
| 13                  | 05:36 | 19:14 (LAR03) | 06:06         |           |               | 06:38         | 07:10 | 06:47    | 07:19 |          |  |
|                     | 20:36 | 33            | 19:47 (LAR03) | 20:05     |               | 19:15         | 18:24 | 16:43    | 16:30 |          |  |
| 14                  | 05:37 | 19:14 (LAR03) | 06:07         |           |               | 06:39         | 07:11 | 06:48    | 07:20 |          |  |
|                     | 20:35 | 34            | 19:48 (LAR03) | 20:04     |               | 19:14         | 18:22 | 16:42    | 16:30 |          |  |
| 15                  | 05:38 | 19:14 (LAR03) | 06:08         |           |               | 06:40         | 07:12 | 06:49    | 07:21 |          |  |
|                     | 20:35 | 34            | 19:48 (LAR03) | 20:02     |               | 19:12         | 18:21 | 16:41    | 16:30 |          |  |
| 16                  | 05:39 | 19:14 (LAR03) | 06:09         |           |               | 06:41         | 07:13 | 06:50    | 07:21 |          |  |
|                     | 20:34 | 35            | 19:49 (LAR03) | 20:01     |               | 19:10         | 18:19 | 16:40    | 16:31 |          |  |
| 17                  | 05:40 | 19:14 (LAR03) | 06:10         |           |               | 06:42         | 07:14 | 06:52    | 07:22 |          |  |
|                     | 20:34 | 35            | 19:49 (LAR03) | 19:59     |               | 19:08         | 18:18 | 16:39    | 16:31 |          |  |
| 18                  | 05:40 | 19:13 (LAR03) | 06:11         |           |               | 06:43         | 07:15 | 06:53    | 07:23 |          |  |
|                     | 20:33 | 36            | 19:49 (LAR03) | 19:58     |               | 19:07         | 18:16 | 16:38    | 16:31 |          |  |
| 19                  | 05:41 | 19:13 (LAR03) | 06:12         |           |               | 06:44         | 07:17 | 06:54    | 07:23 |          |  |
|                     | 20:32 | 36            | 19:49 (LAR03) | 19:56     |               | 19:05         | 18:15 | 16:38    | 16:32 |          |  |
| 20                  | 05:42 | 19:13 (LAR03) | 06:13         |           |               | 06:45         | 07:18 | 06:55    | 07:24 |          |  |
|                     | 20:31 | 37            | 19:50 (LAR03) | 19:55     |               | 19:03         | 18:13 | 16:37    | 16:32 |          |  |
| 21                  | 05:43 | 19:13 (LAR03) | 06:14         |           |               | 06:46         | 07:19 | 06:56    | 07:24 |          |  |
|                     | 20:31 | 37            | 19:50 (LAR03) | 19:53     |               | 19:01         | 18:12 | 16:36    | 16:32 |          |  |
| 22                  | 05:44 | 19:13 (LAR03) | 06:15         |           |               | 06:47         | 07:20 | 06:58    | 07:25 |          |  |
|                     | 20:30 | 38            | 19:51 (LAR03) | 19:52     |               | 19:00         | 18:10 | 16:35    | 16:33 |          |  |
| 23                  | 05:45 | 19:13 (LAR03) | 06:16         |           |               | 06:48         | 07:21 | 06:59    | 07:26 |          |  |
|                     | 20:29 | 38            | 19:51 (LAR03) | 19:50     |               | 18:58         | 18:09 | 16:35    | 16:33 |          |  |
| 24                  | 05:46 | 19:12 (LAR03) | 06:17         |           |               | 06:49         | 07:22 | 07:00    | 07:26 |          |  |
|                     | 20:28 | 38            | 19:50 (LAR03) | 19:49     |               | 18:56         | 18:07 | 16:34    | 16:34 |          |  |
| 25                  | 05:47 | 19:13 (LAR03) | 06:18         |           |               | 06:50         | 06:24 | 07:01    | 07:26 |          |  |
|                     | 20:27 | 37            | 19:50 (LAR03) | 19:47     |               | 18:55         | 17:06 | 16:34    | 16:35 |          |  |
| 26                  | 05:48 | 19:13 (LAR03) | 06:19         |           |               | 06:51         | 06:25 | 07:02    | 07:27 |          |  |
|                     | 20:26 | 37            | 19:50 (LAR03) | 19:46     |               | 18:53         | 17:04 | 16:33    | 16:35 |          |  |
| 27                  | 05:49 | 19:13 (LAR03) | 06:20         |           |               | 06:52         | 06:26 | 07:03    | 07:27 |          |  |
|                     | 20:25 | 37            | 19:50 (LAR03) | 19:44     |               | 18:51         | 17:03 | 16:33    | 16:36 |          |  |
| 28                  | 05:50 | 19:13 (LAR03) | 06:21         |           |               | 06:53         | 06:27 | 07:04    | 07:27 |          |  |
|                     | 20:24 | 37            | 19:50 (LAR03) | 19:42     |               | 18:49         | 17:02 | 16:32    | 16:36 |          |  |
| 29                  | 05:51 | 19:13 (LAR03) | 06:22         |           |               | 06:54         | 06:28 | 07:06    | 07:28 |          |  |
|                     | 20:23 | 37            | 19:50 (LAR03) | 19:41     |               | 18:48         | 17:00 | 16:32    | 16:37 |          |  |
| 30                  | 05:51 | 19:13 (LAR03) | 06:23         |           |               | 06:55         | 06:30 | 07:07    | 07:28 |          |  |
|                     | 20:22 | 37            | 19:50 (LAR03) | 19:39     |               | 18:46         | 16:59 | 16:31    | 16:38 |          |  |
| 31                  | 05:52 | 19:14 (LAR03) | 06:24         |           |               |               | 06:31 |          | 07:28 |          |  |
|                     | 20:21 | 36            | 19:50 (LAR03) | 19:38     |               |               | 16:58 |          | 16:39 |          |  |
| Potential sun hours | 462   |               | 429           |           |               | 375           | 344   | 296      | 285   |          |  |
| Total, worst case   | 1018  |               | 298           |           |               |               |       |          |       |          |  |
| Sun reduction       | 0,61  |               | 0,67          |           |               |               |       |          |       |          |  |
| Oper. time red.     | 0,70  |               | 0,70          |           |               |               |       |          |       |          |  |
| Wind dir. red.      | 0,65  |               | 0,65          |           |               |               |       |          |       |          |  |
| Total reduction     | 0,27  |               | 0,30          |           |               |               |       |          |       |          |  |
| Total, real         | 279   |               | 90            |           |               |               |       |          |       |          |  |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

SHADOW - Calendar

Shadow receptor: R55 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (43)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Table with 12 columns (Jan to Dec) and 1 row of values: 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

Table with 14 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 1 row of values: 981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

Main calendar table with 12 columns (January to December) and 31 rows (days). Includes times of sunrise and sunset, and a summary table at the bottom for potential sun hours and reductions.

Table layout: For each day in each month the following matrix apply

4x2 matrix table for table layout with columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: R59 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (44)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

Table with columns for months (January to December) and rows for individual days (1 to 31). Includes summary rows for 'Potential sun hours', 'Total, worst case', 'Sun reduction', 'Oper. time red.', 'Wind dir. red.', 'Total reduction', and 'Total, real'.

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) Sun set (hh:mm) Minutes with flicker First time (hh:mm) with flicker Last time (hh:mm) with flicker (WTG causing flicker first time) (WTG causing flicker last time)

## SHADOW - Calendar

Shadow receptor: R6 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| January             |                | February                       |      | March                          |                | April |                                | May            |                | June           |  |
|---------------------|----------------|--------------------------------|------|--------------------------------|----------------|-------|--------------------------------|----------------|----------------|----------------|--|
| 1                   | 07:29<br>16:40 | 07:14<br>17:15                 |      | 07:52 (LAR01)<br>08:53 (LAR01) | 06:37<br>17:50 |       | 07:58 (LAR01)<br>08:43 (LAR01) | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:29 |  |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16                 | 61   | 07:51 (LAR01)<br>08:54 (LAR01) | 06:36<br>17:51 | 45    | 07:59 (LAR01)<br>08:41 (LAR01) | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:30 |  |
| 3                   | 07:29<br>16:42 | 07:12<br>17:18                 | 63   | 07:51 (LAR01)<br>08:55 (LAR01) | 06:34<br>17:52 | 42    | 08:00 (LAR01)<br>08:38 (LAR01) | 06:42<br>19:28 | 05:56<br>20:01 | 05:28<br>20:30 |  |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19                 | 64   | 07:50 (LAR01)<br>08:55 (LAR01) | 06:33<br>17:54 | 38    | 08:03 (LAR01)<br>08:36 (LAR01) | 06:40<br>19:29 | 05:55<br>20:02 | 05:27<br>20:31 |  |
| 5                   | 07:29<br>16:44 | 07:10<br>17:20                 | 65   | 07:50 (LAR01)<br>08:55 (LAR01) | 06:31<br>17:55 | 33    | 08:05 (LAR01)<br>08:33 (LAR01) | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 |  |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21                 | 65   | 07:50 (LAR01)<br>08:56 (LAR01) | 06:29<br>17:56 | 28    | 08:09 (LAR01)<br>08:29 (LAR01) | 06:37<br>19:31 | 05:52<br>20:04 | 05:27<br>20:32 |  |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23                 | 66   | 07:50 (LAR01)<br>08:56 (LAR01) | 06:28<br>17:57 | 20    | 08:17 (LAR01)<br>08:19 (LAR01) | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 |  |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24                 | 66   | 07:50 (LAR01)<br>08:57 (LAR01) | 06:26<br>17:58 | 2     |                                | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:34 |  |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25                 | 67   | 07:50 (LAR01)<br>08:57 (LAR01) | 06:25<br>18:00 |       |                                | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 |  |
| 10                  | 07:28<br>16:49 | 07:04<br>17:27                 | 67   | 07:49 (LAR01)<br>08:57 (LAR01) | 06:23<br>18:01 |       |                                | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:35 |  |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28                 | 68   | 07:49 (LAR01)<br>08:57 (LAR01) | 06:21<br>18:02 |       |                                | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 |  |
| 12                  | 07:28<br>16:51 | 08:12 (LAR01)<br>08:22 (LAR01) | 68   | 07:49 (LAR01)<br>08:57 (LAR01) | 06:20<br>18:03 |       |                                | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 |  |
| 13                  | 07:27<br>16:52 | 08:08 (LAR01)<br>08:25 (LAR01) | 68   | 07:49 (LAR01)<br>08:57 (LAR01) | 06:18<br>18:04 |       |                                | 06:25<br>19:39 | 05:44<br>20:11 | 05:25<br>20:36 |  |
| 14                  | 07:27<br>16:53 | 08:07 (LAR01)<br>08:29 (LAR01) | 68   | 07:49 (LAR01)<br>08:57 (LAR01) | 06:16<br>18:05 |       |                                | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 |  |
| 15                  | 07:27<br>16:54 | 08:05 (LAR01)<br>08:31 (LAR01) | 67   | 07:50 (LAR01)<br>08:57 (LAR01) | 06:14<br>18:06 |       |                                | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 |  |
| 16                  | 07:26<br>16:55 | 08:31 (LAR01)<br>08:04 (LAR01) | 67   | 07:49 (LAR01)<br>08:56 (LAR01) | 06:13<br>18:08 |       |                                | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 |  |
| 17                  | 07:26<br>16:56 | 08:33 (LAR01)<br>08:02 (LAR01) | 67   | 07:50 (LAR01)<br>08:56 (LAR01) | 06:11<br>18:09 |       |                                | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 |  |
| 18                  | 07:25<br>16:58 | 08:35 (LAR01)<br>08:01 (LAR01) | 66   | 07:49 (LAR01)<br>08:55 (LAR01) | 06:09<br>18:10 |       |                                | 06:18<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 |  |
| 19                  | 07:25<br>16:59 | 08:37 (LAR01)<br>08:00 (LAR01) | 66   | 07:49 (LAR01)<br>08:55 (LAR01) | 06:09<br>18:11 |       |                                | 06:18<br>19:45 | 05:39<br>20:17 | 05:25<br>20:39 |  |
| 20                  | 07:24<br>17:00 | 08:38 (LAR01)<br>08:40 (LAR01) | 65   | 08:55 (LAR01)<br>07:51 (LAR01) | 18:11<br>06:06 |       |                                | 19:45<br>06:14 | 20:17<br>05:37 | 20:39<br>05:25 |  |
| 21                  | 07:23<br>17:01 | 07:59 (LAR01)<br>08:42 (LAR01) | 64   | 08:55 (LAR01)<br>07:51 (LAR01) | 18:12<br>06:04 |       |                                | 19:46<br>06:13 | 20:18<br>05:36 | 20:39<br>05:26 |  |
| 22                  | 07:23<br>17:02 | 08:42 (LAR01)<br>07:57 (LAR01) | 62   | 08:53 (LAR01)<br>07:52 (LAR01) | 18:13<br>06:03 |       |                                | 19:47<br>06:11 | 20:19<br>05:35 | 20:39<br>05:26 |  |
| 23                  | 07:22<br>17:04 | 08:43 (LAR01)<br>08:44 (LAR01) | 61   | 08:53 (LAR01)<br>08:52 (LAR01) | 18:14<br>18:15 |       |                                | 19:48<br>19:50 | 20:20<br>20:21 | 20:39<br>20:40 |  |
| 24                  | 07:21<br>17:05 | 07:56 (LAR01)<br>08:45 (LAR01) | 60   | 07:52 (LAR01)<br>08:50 (LAR01) | 06:01<br>18:16 |       |                                | 06:10<br>19:51 | 05:35<br>20:22 | 05:26<br>20:40 |  |
| 25                  | 07:21<br>17:06 | 07:55 (LAR01)<br>08:45 (LAR01) | 58   | 07:52 (LAR01)<br>08:50 (LAR01) | 05:59<br>18:16 |       |                                | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 |  |
| 26                  | 07:20<br>17:07 | 07:55 (LAR01)<br>08:48 (LAR01) | 58   | 07:53 (LAR01)<br>08:48 (LAR01) | 05:57<br>18:19 |       |                                | 06:07<br>19:53 | 05:33<br>20:24 | 05:27<br>20:40 |  |
| 27                  | 07:19<br>17:09 | 08:46 (LAR01)<br>07:54 (LAR01) | 56   | 08:49 (LAR01)<br>07:55 (LAR01) | 18:18<br>05:54 |       |                                | 19:52<br>06:04 | 20:23<br>05:32 | 20:40<br>05:27 |  |
| 28                  | 07:18<br>17:10 | 07:55 (LAR01)<br>08:49 (LAR01) | 52   | 07:54 (LAR01)<br>08:47 (LAR01) | 05:56<br>18:20 |       |                                | 06:06<br>19:54 | 05:32<br>20:25 | 05:27<br>20:40 |  |
| 29                  | 07:17<br>17:11 | 07:53 (LAR01)<br>08:51 (LAR01) | 49   | 07:56 (LAR01)<br>08:45 (LAR01) | 05:52<br>18:21 |       |                                | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 |  |
| 30                  | 07:16<br>17:12 | 07:53 (LAR01)<br>08:51 (LAR01) |      |                                | 06:51<br>19:22 |       |                                | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 |  |
| 31                  | 07:15<br>17:14 | 07:52 (LAR01)<br>08:52 (LAR01) |      |                                | 06:49<br>19:23 |       |                                | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:40 |  |
| Potential sun hours | 295            | 07:52 (LAR01)<br>08:53 (LAR01) | 296  |                                | 19:24<br>369   |       |                                | 20:28<br>400   | 20:28<br>450   | 20:40<br>455   |  |
| Total, worst case   | 834            |                                | 1771 |                                | 208            |       |                                |                |                |                |  |
| Sun reduction       | 0,44           |                                | 0,46 |                                | 0,44           |       |                                |                |                |                |  |
| Oper. time red.     | 0,70           |                                | 0,70 |                                | 0,70           |       |                                |                |                |                |  |
| Wind dir. red.      | 0,67           |                                | 0,67 |                                | 0,67           |       |                                |                |                |                |  |
| Total reduction     | 0,21           |                                | 0,21 |                                | 0,21           |       |                                |                |                |                |  |
| Total, real         | 173            |                                | 380  |                                | 43             |       |                                |                |                |                |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

**Shadow receptor:** R6 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  | August | September | October | November      | December      |
|---------------------|-------|--------|-----------|---------|---------------|---------------|
| 1                   | 05:29 | 05:54  | 06:26     | 06:57   | 06:32         | 07:19 (LAR01) |
|                     | 20:40 | 20:20  | 19:36     | 18:44   | 16:56         | 08:26 (LAR01) |
| 2                   | 05:30 | 05:55  | 06:27     | 06:58   | 06:33         | 07:18 (LAR01) |
|                     | 20:40 | 20:19  | 19:34     | 18:43   | 16:55         | 08:26 (LAR01) |
| 3                   | 05:30 | 05:56  | 06:28     | 06:59   | 06:35         | 07:19 (LAR01) |
|                     | 20:40 | 20:18  | 19:33     | 18:41   | 16:54         | 08:27 (LAR01) |
| 4                   | 05:31 | 05:57  | 06:29     | 07:00   | 06:36         | 07:19 (LAR01) |
|                     | 20:39 | 20:17  | 19:31     | 18:39   | 16:53         | 08:26 (LAR01) |
| 5                   | 05:31 | 05:58  | 06:30     | 07:01   | 06:37         | 07:19 (LAR01) |
|                     | 20:39 | 20:16  | 19:29     | 18:37   | 16:51         | 08:26 (LAR01) |
| 6                   | 05:32 | 05:59  | 06:31     | 07:02   | 06:38         | 07:21 (LAR01) |
|                     | 20:39 | 20:14  | 19:28     | 18:36   | 16:50         | 08:26 (LAR01) |
| 7                   | 05:32 | 06:00  | 06:32     | 07:03   | 08:48 (LAR01) | 06:39         |
|                     | 20:39 | 20:13  | 19:26     | 18:34   | 09:02 (LAR01) | 16:49         |
| 8                   | 05:33 | 06:01  | 06:33     | 07:04   | 08:42 (LAR01) | 06:41         |
|                     | 20:38 | 20:12  | 19:24     | 18:32   | 09:06 (LAR01) | 16:48         |
| 9                   | 05:34 | 06:02  | 06:34     | 07:05   | 08:39 (LAR01) | 06:42         |
|                     | 20:38 | 20:11  | 19:22     | 18:31   | 09:09 (LAR01) | 16:47         |
| 10                  | 05:34 | 06:03  | 06:35     | 07:06   | 08:36 (LAR01) | 06:43         |
|                     | 20:37 | 20:09  | 19:21     | 18:29   | 09:12 (LAR01) | 16:46         |
| 11                  | 05:35 | 06:04  | 06:36     | 07:08   | 08:34 (LAR01) | 06:44         |
|                     | 20:37 | 20:08  | 19:19     | 18:27   | 09:14 (LAR01) | 16:45         |
| 12                  | 05:36 | 06:05  | 06:37     | 07:09   | 08:32 (LAR01) | 06:46         |
|                     | 20:37 | 20:07  | 19:17     | 18:26   | 09:15 (LAR01) | 16:44         |
| 13                  | 05:37 | 06:06  | 06:38     | 07:10   | 08:30 (LAR01) | 06:47         |
|                     | 20:36 | 20:05  | 19:16     | 18:24   | 09:17 (LAR01) | 16:43         |
| 14                  | 05:37 | 06:07  | 06:39     | 07:11   | 08:29 (LAR01) | 06:48         |
|                     | 20:35 | 20:04  | 19:14     | 18:23   | 09:19 (LAR01) | 16:42         |
| 15                  | 05:38 | 06:08  | 06:40     | 07:12   | 08:27 (LAR01) | 06:49         |
|                     | 20:35 | 20:02  | 19:12     | 18:21   | 09:20 (LAR01) | 16:41         |
| 16                  | 05:39 | 06:09  | 06:41     | 07:13   | 08:26 (LAR01) | 06:50         |
|                     | 20:34 | 20:01  | 19:10     | 18:19   | 09:21 (LAR01) | 16:40         |
| 17                  | 05:40 | 06:10  | 06:42     | 07:14   | 08:25 (LAR01) | 06:52         |
|                     | 20:34 | 19:59  | 19:09     | 18:18   | 09:21 (LAR01) | 16:39         |
| 18                  | 05:41 | 06:11  | 06:43     | 07:15   | 08:23 (LAR01) | 06:53         |
|                     | 20:33 | 19:58  | 19:07     | 18:16   | 09:22 (LAR01) | 16:38         |
| 19                  | 05:41 | 06:12  | 06:44     | 07:17   | 08:23 (LAR01) | 06:54         |
|                     | 20:32 | 19:57  | 19:05     | 18:15   | 09:23 (LAR01) | 16:38         |
| 20                  | 05:42 | 06:13  | 06:45     | 07:18   | 08:22 (LAR01) | 06:55         |
|                     | 20:31 | 19:55  | 19:03     | 18:13   | 09:24 (LAR01) | 16:37         |
| 21                  | 05:43 | 06:14  | 06:46     | 07:19   | 08:21 (LAR01) | 06:56         |
|                     | 20:31 | 19:54  | 19:02     | 18:12   | 09:24 (LAR01) | 16:36         |
| 22                  | 05:44 | 06:15  | 06:47     | 07:20   | 08:20 (LAR01) | 06:58         |
|                     | 20:30 | 19:52  | 19:00     | 18:10   | 09:24 (LAR01) | 16:36         |
| 23                  | 05:45 | 06:16  | 06:48     | 07:21   | 08:20 (LAR01) | 06:59         |
|                     | 20:29 | 19:50  | 18:58     | 18:09   | 09:25 (LAR01) | 16:35         |
| 24                  | 05:46 | 06:17  | 06:49     | 07:22   | 08:20 (LAR01) | 07:00         |
|                     | 20:28 | 19:49  | 18:56     | 18:07   | 09:26 (LAR01) | 16:34         |
| 25                  | 05:47 | 06:18  | 06:50     | 06:24   | 07:19 (LAR01) | 07:01         |
|                     | 20:27 | 19:47  | 18:55     | 17:06   | 08:26 (LAR01) | 16:34         |
| 26                  | 05:48 | 06:19  | 06:51     | 06:25   | 07:19 (LAR01) | 07:02         |
|                     | 20:26 | 19:46  | 18:53     | 17:04   | 08:26 (LAR01) | 16:33         |
| 27                  | 05:49 | 06:20  | 06:52     | 06:26   | 07:19 (LAR01) | 07:03         |
|                     | 20:25 | 19:44  | 18:51     | 17:03   | 08:27 (LAR01) | 16:33         |
| 28                  | 05:50 | 06:21  | 06:53     | 06:27   | 07:19 (LAR01) | 07:05         |
|                     | 20:24 | 19:43  | 18:49     | 17:02   | 08:27 (LAR01) | 16:32         |
| 29                  | 05:51 | 06:22  | 06:55     | 06:28   | 07:18 (LAR01) | 07:06         |
|                     | 20:23 | 19:41  | 18:48     | 17:00   | 08:26 (LAR01) | 16:32         |
| 30                  | 05:52 | 06:23  | 06:56     | 06:30   | 07:18 (LAR01) | 07:07         |
|                     | 20:22 | 19:39  | 18:46     | 16:59   | 08:26 (LAR01) | 16:31         |
| 31                  | 05:53 | 06:24  | 06:57     | 06:31   | 07:19 (LAR01) | 07:08         |
|                     | 20:21 | 19:38  | 18:45     | 16:58   | 08:27 (LAR01) | 16:39         |
| Potential sun hours | 462   | 429    | 375       | 344     | 296           | 285           |
| Total, worst case   |       |        |           | 1361    |               | 1492          |
| Sun reduction       |       |        |           | 0,44    |               | 0,41          |
| Oper. time red.     |       |        |           | 0,70    |               | 0,70          |
| Wind dir. red.      |       |        |           | 0,67    |               | 0,67          |
| Total reduction     |       |        |           | 0,20    |               | 0,19          |
| Total, real         |       |        |           | 279     |               | 284           |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R60 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (45)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May                        | June                   |
|---------------------|----------------|----------------|----------------|----------------|----------------------------|------------------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 07:11 (LAR14)<br>19:58     | 17:57 (LAR03)<br>05:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 81 07:10 (LAR14)<br>19:58  | 18:29 (LAR03)<br>20:29 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 85 07:10 (LAR14)<br>19:59  | 18:27 (LAR03)<br>20:29 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 88 07:09 (LAR14)<br>20:02  | 18:00 (LAR03)<br>20:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 90 07:08 (LAR14)<br>20:03  | 18:05 (LAR03)<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 92 07:08 (LAR14)<br>20:04  | 18:11 (LAR03)<br>20:32 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 94 07:08 (LAR14)<br>20:05  | 18:14 (LAR03)<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 97 07:07 (LAR14)<br>20:06  | 18:05 (LAR03)<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 101 07:08 (LAR14)<br>20:07 | 18:01 (LAR03)<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 103 07:08 (LAR14)<br>20:08 | 18:24 (LAR03)<br>20:35 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 104 07:08 (LAR14)<br>20:09 | 18:05 (LAR03)<br>20:35 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 104 07:09 (LAR14)<br>20:10 | 18:14 (LAR03)<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 104 07:09 (LAR14)<br>20:11 | 18:11 (LAR03)<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 102 07:11 (LAR14)<br>20:12 | 18:05 (LAR03)<br>20:37 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 100 07:11 (LAR14)<br>20:13 | 18:01 (LAR03)<br>20:37 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 100 07:12 (LAR14)<br>20:14 | 18:00 (LAR03)<br>20:38 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 98 07:14 (LAR14)<br>20:15  | 18:00 (LAR03)<br>20:38 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 88 07:16 (LAR14)<br>20:16  | 18:00 (LAR03)<br>20:38 |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 77 17:47 (LAR03)<br>20:17  | 18:00 (LAR03)<br>20:39 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 55 18:42 (LAR03)<br>20:18  | 18:00 (LAR03)<br>20:39 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 54 17:48 (LAR03)<br>20:19  | 18:00 (LAR03)<br>20:39 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 53 17:48 (LAR03)<br>20:20  | 18:00 (LAR03)<br>20:39 |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 51 17:49 (LAR03)<br>20:21  | 18:00 (LAR03)<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 50 17:49 (LAR03)<br>20:22  | 18:00 (LAR03)<br>20:40 |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 48 18:37 (LAR03)<br>20:23  | 17:50 (LAR03)<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 47 18:37 (LAR03)<br>20:24  | 17:50 (LAR03)<br>20:40 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 45 17:51 (LAR03)<br>20:25  | 17:51 (LAR03)<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 42 17:51 (LAR03)<br>20:26  | 17:51 (LAR03)<br>20:40 |
| 29                  | 07:17<br>17:11 | 06:37<br>19:22 | 05:50<br>18:21 | 06:01<br>19:56 | 40 17:55 (LAR03)<br>20:27  | 17:55 (LAR03)<br>20:40 |
| 30                  | 07:16<br>17:12 | 06:35<br>19:23 | 05:49<br>18:21 | 06:00<br>19:57 | 37 18:32 (LAR03)<br>20:28  | 18:32 (LAR03)<br>20:40 |
| 31                  | 07:15<br>17:14 | 06:34<br>19:24 | 05:47<br>18:21 | 05:59<br>19:58 | 34 18:30 (LAR03)<br>20:29  | 18:30 (LAR03)<br>20:40 |
| Potential sun hours | 295            | 296            | 369            | 400            | 451                        | 455                    |
| Total, worst case   |                |                | 375            | 2265           | 154                        | 801                    |
| Sun reduction       |                |                | 0,44           | 0,48           | 0,47                       | 0,54                   |
| Oper. time red.     |                |                | 0,70           | 0,70           | 0,70                       | 0,70                   |
| Wind dir. red.      |                |                | 0,62           | 0,62           | 0,60                       | 0,56                   |
| Total reduction     |                |                | 0,19           | 0,21           | 0,19                       | 0,21                   |
| Total, real         |                |                | 71             | 467            | 30                         | 171                    |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|

## SHADOW - Calendar

Shadow receptor: R60 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (45)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August        |       | September     |               | October       |               | November |       | December |     |
|---------------------|-------|---------------|-------|---------------|---------------|---------------|---------------|----------|-------|----------|-----|
| 1                   | 05:29 | 05:52 (LAR07) | 05:53 |               | 06:25         | 07:07 (LAR14) | 06:57         | 06:32    | 07:08 |          |     |
|                     | 20:40 | 06:20 (LAR07) | 20:20 |               | 19:36         | 19:13 (LAR02) | 18:44         | 16:56    | 16:31 |          |     |
| 2                   | 05:29 | 05:52 (LAR07) | 05:54 |               | 06:26         | 07:06 (LAR14) | 06:58         | 06:33    | 07:09 |          |     |
|                     | 20:40 | 06:19 (LAR07) | 20:19 |               | 19:34         | 19:11 (LAR02) | 18:42         | 16:55    | 16:31 |          |     |
| 3                   | 05:30 | 05:53 (LAR07) | 05:55 |               | 06:27         | 07:05 (LAR14) | 06:59         | 06:34    | 07:10 |          |     |
|                     | 20:40 | 06:20 (LAR07) | 20:18 |               | 19:33         | 19:10 (LAR02) | 18:41         | 16:54    | 16:30 |          |     |
| 4                   | 05:30 | 05:53 (LAR07) | 05:56 |               | 06:28         | 07:05 (LAR14) | 07:00         | 06:36    | 07:11 |          |     |
|                     | 20:39 | 06:19 (LAR07) | 20:17 |               | 19:31         | 19:08 (LAR02) | 18:39         | 16:53    | 16:30 |          |     |
| 5                   | 05:31 | 05:54 (LAR07) | 05:57 |               | 06:30         | 07:04 (LAR14) | 07:01         | 06:37    | 07:12 |          |     |
|                     | 20:39 | 06:19 (LAR07) | 20:15 |               | 19:29         | 19:06 (LAR02) | 18:37         | 16:51    | 16:30 |          |     |
| 6                   | 05:32 | 05:55 (LAR07) | 05:59 |               | 06:31         | 07:04 (LAR14) | 07:02         | 06:38    | 07:13 |          |     |
|                     | 20:39 | 06:20 (LAR07) | 20:14 |               | 19:27         | 19:05 (LAR02) | 18:36         | 16:50    | 16:30 |          |     |
| 7                   | 05:32 | 05:55 (LAR07) | 06:00 |               | 06:32         | 07:03 (LAR14) | 07:03         | 06:39    | 07:14 |          |     |
|                     | 20:39 | 06:19 (LAR07) | 20:13 |               | 19:26         | 18:39 (LAR03) | 18:34         | 16:49    | 16:30 |          |     |
| 8                   | 05:33 | 05:56 (LAR07) | 06:01 | 18:18 (LAR03) | 06:33         | 07:03 (LAR14) | 07:04         | 06:41    | 07:15 |          |     |
|                     | 20:38 | 06:19 (LAR07) | 20:12 | 9             | 18:27 (LAR03) | 19:24         | 18:38 (LAR03) | 18:32    | 16:48 | 16:30    |     |
| 9                   | 05:34 | 05:57 (LAR07) | 06:02 | 18:13 (LAR03) | 06:34         | 07:03 (LAR14) | 07:05         | 06:42    | 07:16 |          |     |
|                     | 20:38 | 06:19 (LAR07) | 20:10 | 18            | 18:31 (LAR03) | 19:22         | 18:37 (LAR03) | 18:31    | 16:47 | 16:30    |     |
| 10                  | 05:34 | 05:57 (LAR07) | 06:03 | 18:10 (LAR03) | 06:35         | 07:03 (LAR14) | 07:06         | 06:43    | 07:17 |          |     |
|                     | 20:37 | 06:18 (LAR07) | 20:09 | 24            | 18:34 (LAR03) | 19:21         | 18:35 (LAR03) | 18:29    | 16:46 | 16:30    |     |
| 11                  | 05:35 | 05:58 (LAR07) | 06:04 | 18:08 (LAR03) | 06:36         | 07:03 (LAR14) | 07:07         | 06:44    | 07:17 |          |     |
|                     | 20:37 | 06:17 (LAR07) | 20:08 | 28            | 18:36 (LAR03) | 19:19         | 18:34 (LAR03) | 18:27    | 16:45 | 16:30    |     |
| 12                  | 05:36 | 05:59 (LAR07) | 06:05 | 18:06 (LAR03) | 06:37         | 07:04 (LAR14) | 07:09         | 06:45    | 07:18 |          |     |
|                     | 20:36 | 06:17 (LAR07) | 20:06 | 32            | 18:38 (LAR03) | 19:17         | 18:32 (LAR03) | 18:26    | 16:44 | 16:30    |     |
| 13                  | 05:36 | 05:59 (LAR07) | 06:06 | 18:04 (LAR03) | 06:38         | 07:04 (LAR14) | 07:10         | 06:47    | 07:19 |          |     |
|                     | 20:36 | 06:16 (LAR07) | 20:05 | 35            | 18:39 (LAR03) | 19:15         | 18:30 (LAR03) | 18:24    | 16:43 | 16:30    |     |
| 14                  | 05:37 | 06:01 (LAR07) | 06:07 | 18:02 (LAR03) | 06:39         | 07:05 (LAR14) | 07:11         | 06:48    | 07:20 |          |     |
|                     | 20:35 | 06:15 (LAR07) | 20:04 | 38            | 18:40 (LAR03) | 19:14         | 18:28 (LAR03) | 18:22    | 16:42 | 16:30    |     |
| 15                  | 05:38 | 06:03 (LAR07) | 06:08 | 18:01 (LAR03) | 06:40         | 07:06 (LAR14) | 07:12         | 06:49    | 07:21 |          |     |
|                     | 20:35 | 06:14 (LAR07) | 20:02 | 40            | 18:41 (LAR03) | 19:12         | 18:25 (LAR03) | 18:21    | 16:41 | 16:30    |     |
| 16                  | 05:39 | 06:06 (LAR07) | 06:09 | 17:59 (LAR03) | 06:41         | 07:07 (LAR14) | 07:13         | 06:50    | 07:21 |          |     |
|                     | 20:34 | 06:11 (LAR07) | 20:01 | 43            | 18:42 (LAR03) | 19:10         | 18:22 (LAR03) | 18:19    | 16:40 | 16:31    |     |
| 17                  | 05:40 |               | 06:10 | 17:58 (LAR03) | 06:42         | 07:09 (LAR14) | 07:14         | 06:52    | 07:22 |          |     |
|                     | 20:34 |               | 19:59 | 45            | 18:43 (LAR03) | 19:08         | 18:18 (LAR03) | 18:18    | 16:39 | 16:31    |     |
| 18                  | 05:40 |               | 06:11 | 17:57 (LAR03) | 06:43         | 07:11 (LAR14) | 07:15         | 06:53    | 07:23 |          |     |
|                     | 20:33 |               | 19:58 | 47            | 18:44 (LAR03) | 19:07         | 18:11 (LAR03) | 18:16    | 16:38 | 16:31    |     |
| 19                  | 05:41 |               | 06:12 | 17:55 (LAR03) | 06:44         |               | 07:17         | 06:54    | 07:23 |          |     |
|                     | 20:32 |               | 19:56 | 49            | 18:44 (LAR03) | 19:05         |               | 18:15    | 16:38 | 16:32    |     |
| 20                  | 05:42 |               | 06:13 | 17:54 (LAR03) | 06:45         |               | 07:18         | 06:55    | 07:24 |          |     |
|                     | 20:31 |               | 19:55 | 51            | 18:45 (LAR03) | 19:03         |               | 18:13    | 16:37 | 16:32    |     |
| 21                  | 05:43 |               | 06:14 | 17:53 (LAR03) | 06:46         |               | 07:19         | 06:56    | 07:25 |          |     |
|                     | 20:31 |               | 19:53 | 52            | 18:45 (LAR03) | 19:01         |               | 18:12    | 16:36 | 16:32    |     |
| 22                  | 05:44 |               | 06:15 | 17:52 (LAR03) | 06:47         |               | 07:20         | 06:58    | 07:25 |          |     |
|                     | 20:30 |               | 19:52 | 54            | 18:46 (LAR03) | 19:00         |               | 18:10    | 16:35 | 16:33    |     |
| 23                  | 05:45 |               | 06:16 | 17:52 (LAR03) | 06:48         |               | 07:21         | 06:59    | 07:26 |          |     |
|                     | 20:29 |               | 19:50 | 54            | 18:46 (LAR03) | 18:58         |               | 18:09    | 16:35 | 16:33    |     |
| 24                  | 05:46 |               | 06:17 | 07:26 (LAR14) | 06:49         |               | 07:22         | 07:00    | 07:26 |          |     |
|                     | 20:28 |               | 19:49 | 58            | 18:46 (LAR03) | 18:56         |               | 18:07    | 16:34 | 16:34    |     |
| 25                  | 05:47 |               | 06:18 | 07:20 (LAR14) | 06:50         |               | 06:24         | 07:01    | 07:26 |          |     |
|                     | 20:27 |               | 19:47 | 77            | 19:18 (LAR02) | 18:55         |               | 17:06    | 16:34 | 16:35    |     |
| 26                  | 05:48 |               | 06:19 | 07:17 (LAR14) | 06:51         |               | 06:25         | 07:02    | 07:27 |          |     |
|                     | 20:26 |               | 19:46 | 89            | 19:20 (LAR02) | 18:53         |               | 17:04    | 16:33 | 16:35    |     |
| 27                  | 05:49 |               | 06:20 | 07:15 (LAR14) | 06:52         |               | 06:26         | 07:03    | 07:27 |          |     |
|                     | 20:25 |               | 19:44 | 96            | 19:21 (LAR02) | 18:51         |               | 17:03    | 16:33 | 16:36    |     |
| 28                  | 05:50 |               | 06:21 | 07:13 (LAR14) | 06:53         |               | 06:27         | 07:05    | 07:27 |          |     |
|                     | 20:24 |               | 19:42 | 100           | 19:20 (LAR02) | 18:49         |               | 17:02    | 16:32 | 16:36    |     |
| 29                  | 05:51 |               | 06:22 | 07:11 (LAR14) | 06:54         |               | 06:28         | 07:06    | 07:28 |          |     |
|                     | 20:23 |               | 19:41 | 103           | 19:19 (LAR02) | 18:48         |               | 17:00    | 16:32 | 16:37    |     |
| 30                  | 05:52 |               | 06:23 | 07:10 (LAR14) | 06:55         |               | 06:30         | 07:07    | 07:28 |          |     |
|                     | 20:22 |               | 19:39 | 104           | 19:17 (LAR02) | 18:46         |               | 16:59    | 16:31 | 16:38    |     |
| 31                  | 05:52 |               | 06:24 | 07:09 (LAR14) |               |               | 06:31         |          | 07:28 |          |     |
|                     | 20:21 |               | 19:38 | 103           | 19:15 (LAR02) |               | 16:58         |          | 16:39 |          |     |
| Potential sun hours | 462   |               | 429   |               | 375           |               | 344           |          | 296   |          | 285 |
| Total, worst case   |       | 332           |       | 1349          |               | 1430          |               |          |       |          |     |
| Sun reduction       |       | 0,61          |       | 0,67          |               | 0,58          |               |          |       |          |     |
| Oper. time red.     |       | 0,70          |       | 0,70          |               | 0,70          |               |          |       |          |     |
| Wind dir. red.      |       | 0,56          |       | 0,62          |               | 0,62          |               |          |       |          |     |
| Total reduction     |       | 0,24          |       | 0,29          |               | 0,25          |               |          |       |          |     |
| Total, real         |       | 79            |       | 388           |               | 356           |               |          |       |          |     |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R61 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (46)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May                            | June           |
|---------------------|----------------|----------------|----------------|----------------|--------------------------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 07:14 (LAR14)<br>18:44 (LAR03) | 05:58<br>20:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 07:13 (LAR14)<br>18:44 (LAR03) | 05:57<br>20:29 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 07:13 (LAR14)<br>18:45 (LAR03) | 05:56<br>20:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 07:13 (LAR14)<br>18:45 (LAR03) | 05:54<br>20:31 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 07:12 (LAR14)<br>18:44 (LAR03) | 05:53<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 07:13 (LAR14)<br>18:45 (LAR03) | 05:52<br>20:32 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 07:12 (LAR14)<br>18:44 (LAR03) | 05:51<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 07:12 (LAR14)<br>18:43 (LAR03) | 05:49<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 07:13 (LAR14)<br>18:43 (LAR03) | 05:48<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 07:13 (LAR14)<br>18:43 (LAR03) | 05:47<br>20:35 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 07:13 (LAR14)<br>18:42 (LAR03) | 05:46<br>20:35 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 07:14 (LAR14)<br>18:41 (LAR03) | 05:45<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 07:15 (LAR14)<br>18:40 (LAR03) | 05:44<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 07:16 (LAR14)<br>18:40 (LAR03) | 05:43<br>20:37 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 07:17 (LAR14)<br>18:38 (LAR03) | 05:42<br>20:37 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 07:18 (LAR14)<br>18:37 (LAR03) | 05:41<br>20:38 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 07:21 (LAR14)<br>18:36 (LAR03) | 05:40<br>20:38 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 07:24 (LAR14)<br>18:34 (LAR03) | 05:39<br>20:38 |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 17:58 (LAR03)<br>18:33 (LAR03) | 05:38<br>20:39 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 17:59 (LAR03)<br>18:31 (LAR03) | 05:37<br>20:39 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 18:02 (LAR03)<br>18:29 (LAR03) | 05:36<br>20:39 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 18:03 (LAR03)<br>18:27 (LAR03) | 05:35<br>20:39 |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 18:06 (LAR03)<br>18:24 (LAR03) | 05:34<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 06:26 (LAR14)<br>17:38 (LAR03) | 05:34<br>20:40 |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 06:23 (LAR14)<br>17:39 (LAR03) | 05:33<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 06:21 (LAR14)<br>17:40 (LAR03) | 05:32<br>20:40 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 06:20 (LAR14)<br>17:42 (LAR03) | 05:31<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 06:18 (LAR14)<br>17:43 (LAR03) | 05:31<br>20:40 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 07:17 (LAR14)<br>18:43 (LAR03) | 05:30<br>20:40 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 07:15 (LAR14)<br>18:43 (LAR03) | 05:30<br>20:40 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 | 05:59<br>19:58 | 07:15 (LAR14)<br>18:44 (LAR03) | 05:29<br>20:40 |
| Potential sun hours | 295            | 296            | 369            | 400            | 451                            | 455            |
| Total, worst case   |                |                | 682            | 1617           |                                | 700            |
| Sun reduction       |                |                | 0,44           | 0,48           |                                | 0,54           |
| Oper. time red.     |                |                | 0,70           | 0,70           |                                | 0,70           |
| Wind dir. red.      |                |                | 0,61           | 0,61           |                                | 0,56           |
| Total reduction     |                |                | 0,19           | 0,21           |                                | 0,21           |
| Total, real         |                |                | 129            | 332            |                                | 149            |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R61 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (46)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August        |       | September     |               | October       |       | November |  | December |     |
|---------------------|-------|---------------|-------|---------------|---------------|---------------|-------|----------|--|----------|-----|
| 1                   | 05:29 | 05:52 (LAR07) | 05:53 | 06:25         | 07:12 (LAR14) | 06:57         | 06:32 | 07:08    |  |          |     |
|                     | 20:40 | 06:16 (LAR07) | 20:20 | 19:36         | 18:40 (LAR03) | 18:44         | 16:56 | 16:31    |  |          |     |
| 2                   | 05:29 | 05:52 (LAR07) | 05:54 | 06:26         | 07:11 (LAR14) | 06:58         | 06:33 | 07:09    |  |          |     |
|                     | 20:40 | 06:16 (LAR07) | 20:19 | 19:34         | 18:41 (LAR03) | 18:42         | 16:55 | 16:31    |  |          |     |
| 3                   | 05:30 | 05:53 (LAR07) | 05:55 | 06:27         | 07:10 (LAR14) | 06:59         | 06:34 | 07:10    |  |          |     |
|                     | 20:40 | 06:16 (LAR07) | 20:18 | 19:33         | 18:40 (LAR03) | 18:41         | 16:54 | 16:30    |  |          |     |
| 4                   | 05:30 | 05:53 (LAR07) | 05:56 | 06:28         | 07:09 (LAR14) | 07:00         | 06:36 | 07:11    |  |          |     |
|                     | 20:39 | 06:15 (LAR07) | 20:17 | 19:31         | 18:40 (LAR03) | 18:39         | 16:53 | 16:30    |  |          |     |
| 5                   | 05:31 | 05:54 (LAR07) | 05:57 | 06:30         | 07:08 (LAR14) | 07:01         | 06:37 | 07:12    |  |          |     |
|                     | 20:39 | 06:15 (LAR07) | 20:15 | 19:29         | 18:40 (LAR03) | 18:37         | 16:51 | 16:30    |  |          |     |
| 6                   | 05:32 | 05:55 (LAR07) | 05:59 | 06:31         | 07:08 (LAR14) | 07:02         | 06:38 | 07:13    |  |          |     |
|                     | 20:39 | 06:15 (LAR07) | 20:14 | 19:27         | 18:40 (LAR03) | 18:36         | 16:50 | 16:30    |  |          |     |
| 7                   | 05:32 | 05:56 (LAR07) | 06:00 | 06:32         | 07:07 (LAR14) | 07:03         | 06:39 | 07:14    |  |          |     |
|                     | 20:39 | 06:14 (LAR07) | 20:13 | 19:26         | 18:39 (LAR03) | 18:34         | 16:49 | 16:30    |  |          |     |
| 8                   | 05:33 | 05:57 (LAR07) | 06:01 | 06:33         | 07:07 (LAR14) | 07:04         | 06:41 | 07:15    |  |          |     |
|                     | 20:38 | 06:14 (LAR07) | 20:12 | 19:24         | 18:39 (LAR03) | 18:32         | 16:48 | 16:30    |  |          |     |
| 9                   | 05:34 | 05:58 (LAR07) | 06:02 | 06:34         | 07:07 (LAR14) | 07:05         | 06:42 | 07:16    |  |          |     |
|                     | 20:38 | 06:14 (LAR07) | 20:10 | 19:22         | 18:38 (LAR03) | 18:31         | 16:47 | 16:30    |  |          |     |
| 10                  | 05:34 | 05:59 (LAR07) | 06:03 | 06:35         | 07:06 (LAR14) | 07:06         | 06:43 | 07:17    |  |          |     |
|                     | 20:37 | 06:12 (LAR07) | 20:09 | 19:21         | 18:37 (LAR03) | 18:29         | 16:46 | 16:30    |  |          |     |
| 11                  | 05:35 | 06:01 (LAR07) | 06:04 | 06:36         | 07:06 (LAR14) | 07:07         | 06:44 | 07:17    |  |          |     |
|                     | 20:37 | 06:11 (LAR07) | 20:08 | 19:19         | 18:37 (LAR03) | 18:27         | 16:45 | 16:30    |  |          |     |
| 12                  | 05:36 | 06:04 (LAR07) | 06:05 | 06:37         | 07:06 (LAR14) | 07:09         | 06:45 | 07:18    |  |          |     |
|                     | 20:36 | 06:09 (LAR07) | 20:06 | 19:17         | 18:36 (LAR03) | 18:26         | 16:44 | 16:30    |  |          |     |
| 13                  | 05:36 |               | 06:06 | 06:38         | 07:07 (LAR14) | 07:10         | 06:47 | 07:19    |  |          |     |
|                     | 20:36 |               | 20:05 | 19:15         | 18:35 (LAR03) | 18:24         | 16:43 | 16:30    |  |          |     |
| 14                  | 05:37 |               | 06:07 | 06:39         | 07:07 (LAR14) | 07:11         | 06:48 | 07:20    |  |          |     |
|                     | 20:35 |               | 20:04 | 19:14         | 18:33 (LAR03) | 18:22         | 16:42 | 16:30    |  |          |     |
| 15                  | 05:38 |               | 06:08 | 06:40         | 07:07 (LAR14) | 07:12         | 06:49 | 07:21    |  |          |     |
|                     | 20:35 |               | 20:02 | 19:12         | 18:32 (LAR03) | 18:21         | 16:41 | 16:30    |  |          |     |
| 16                  | 05:39 |               | 06:09 | 06:41         | 07:08 (LAR14) | 07:13         | 06:50 | 07:21    |  |          |     |
|                     | 20:34 |               | 20:01 | 19:10         | 18:31 (LAR03) | 18:19         | 16:40 | 16:31    |  |          |     |
| 17                  | 05:40 |               | 06:10 | 06:42         | 07:09 (LAR14) | 07:14         | 06:52 | 07:22    |  |          |     |
|                     | 20:34 |               | 19:59 | 19:08         | 18:29 (LAR03) | 18:18         | 16:39 | 16:31    |  |          |     |
| 18                  | 05:40 |               | 06:11 | 06:43         | 07:10 (LAR14) | 07:15         | 06:53 | 07:23    |  |          |     |
|                     | 20:33 |               | 19:58 | 19:07         | 18:27 (LAR03) | 18:16         | 16:38 | 16:31    |  |          |     |
| 19                  | 05:41 |               | 06:12 | 06:44         | 07:11 (LAR14) | 07:17         | 06:54 | 07:23    |  |          |     |
|                     | 20:32 |               | 19:56 | 18:16 (LAR03) | 19:05         | 18:25 (LAR03) | 18:15 | 16:38    |  |          |     |
| 20                  | 05:42 |               | 06:13 | 06:45         | 07:13 (LAR14) | 07:18         | 06:55 | 07:24    |  |          |     |
|                     | 20:31 |               | 19:55 | 18:30 (LAR03) | 19:03         | 18:22 (LAR03) | 18:13 | 16:37    |  |          |     |
| 21                  | 05:43 |               | 06:14 | 06:46         | 07:17 (LAR14) | 07:19         | 06:56 | 07:25    |  |          |     |
|                     | 20:31 |               | 19:53 | 18:08 (LAR03) | 19:01         | 18:19 (LAR03) | 18:12 | 16:36    |  |          |     |
| 22                  | 05:44 |               | 06:15 | 06:47         | 07:18 (LAR14) | 07:20         | 06:58 | 07:25    |  |          |     |
|                     | 20:30 |               | 19:52 | 18:35 (LAR03) | 19:00         | 18:01 (LAR03) | 18:10 | 16:35    |  |          |     |
| 23                  | 05:45 |               | 06:16 | 06:48         | 07:19 (LAR14) | 07:21         | 06:59 | 07:26    |  |          |     |
|                     | 20:29 |               | 19:50 | 18:04 (LAR03) | 18:58         | 18:09         | 16:35 | 16:33    |  |          |     |
| 24                  | 05:46 |               | 06:17 | 06:49         | 07:20 (LAR14) | 07:22         | 07:00 | 07:26    |  |          |     |
|                     | 20:28 |               | 19:49 | 18:37 (LAR03) | 18:56         | 18:07         | 16:34 | 16:34    |  |          |     |
| 25                  | 05:47 |               | 06:18 | 06:50         | 07:28 (LAR14) | 06:50         | 06:24 | 07:26    |  |          |     |
|                     | 20:27 |               | 19:47 | 18:38 (LAR03) | 18:55         | 17:06         | 16:34 | 16:35    |  |          |     |
| 26                  | 05:48 |               | 06:19 | 06:51         | 07:24 (LAR14) | 06:51         | 06:25 | 07:27    |  |          |     |
|                     | 20:26 |               | 19:46 | 18:39 (LAR03) | 18:53         | 17:04         | 16:33 | 16:35    |  |          |     |
| 27                  | 05:49 |               | 06:20 | 06:52         | 07:21 (LAR14) | 06:52         | 06:26 | 07:27    |  |          |     |
|                     | 20:25 |               | 19:44 | 18:40 (LAR03) | 18:51         | 17:03         | 16:33 | 16:36    |  |          |     |
| 28                  | 05:50 |               | 06:21 | 06:53         | 07:19 (LAR14) | 06:53         | 06:27 | 07:27    |  |          |     |
|                     | 20:24 |               | 19:42 | 18:40 (LAR03) | 18:49         | 17:02         | 16:32 | 16:36    |  |          |     |
| 29                  | 05:51 |               | 06:22 | 06:54         | 07:17 (LAR14) | 06:54         | 06:28 | 07:28    |  |          |     |
|                     | 20:23 |               | 19:41 | 18:41 (LAR03) | 18:48         | 17:00         | 16:32 | 16:37    |  |          |     |
| 30                  | 05:51 |               | 06:23 | 06:55         | 07:15 (LAR14) | 06:55         | 06:30 | 07:28    |  |          |     |
|                     | 20:22 |               | 19:39 | 18:41 (LAR03) | 18:46         | 16:59         | 16:31 | 16:38    |  |          |     |
| 31                  | 05:52 |               | 06:24 | 06:56         | 07:14 (LAR14) |               | 06:31 | 07:28    |  |          |     |
|                     | 20:21 |               | 19:38 | 18:41 (LAR03) |               | 16:58         | 16:31 | 16:39    |  |          |     |
| Potential sun hours | 462   |               | 429   |               | 375           |               | 344   | 296      |  |          | 285 |
| Total, worst case   |       | 213           |       | 629           |               | 1703          |       |          |  |          |     |
| Sun reduction       |       | 0,61          |       | 0,67          |               | 0,58          |       |          |  |          |     |
| Oper. time red.     |       | 0,70          |       | 0,70          |               | 0,70          |       |          |  |          |     |
| Wind dir. red.      |       | 0,56          |       | 0,61          |               | 0,61          |       |          |  |          |     |
| Total reduction     |       | 0,24          |       | 0,29          |               | 0,25          |       |          |  |          |     |
| Total, real         |       | 51            |       | 180           |               | 423           |       |          |  |          |     |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R62 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (47)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March                          | April          | May                            | June           |
|---------------------|----------------|----------------|--------------------------------|----------------|--------------------------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50                 | 06:45<br>19:25 | 07:15 (LAR14)<br>18:52 (LAR03) | 05:58<br>19:58 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51                 | 06:44<br>19:26 | 07:12 (LAR14)<br>18:53 (LAR03) | 05:57<br>19:59 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52                 | 06:42<br>19:27 | 07:10 (LAR14)<br>18:55 (LAR03) | 05:56<br>20:00 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54                 | 06:40<br>19:29 | 07:08 (LAR14)<br>18:56 (LAR03) | 05:54<br>20:02 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55                 | 06:39<br>19:30 | 07:06 (LAR14)<br>18:56 (LAR03) | 05:53<br>20:03 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56                 | 06:37<br>19:31 | 07:05 (LAR14)<br>18:57 (LAR03) | 05:52<br>20:04 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57                 | 06:35<br>19:32 | 07:03 (LAR14)<br>18:58 (LAR03) | 05:51<br>20:05 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58                 | 06:34<br>19:33 | 07:02 (LAR14)<br>18:57 (LAR03) | 05:49<br>20:06 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59                 | 06:32<br>19:34 | 07:01 (LAR14)<br>18:58 (LAR03) | 05:48<br>20:07 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01                 | 06:30<br>19:35 | 07:00 (LAR14)<br>18:58 (LAR03) | 05:47<br>20:08 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02                 | 06:29<br>19:36 | 06:59 (LAR14)<br>18:58 (LAR03) | 05:46<br>20:09 |
| 12                  | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03                 | 06:27<br>19:37 | 06:59 (LAR14)<br>18:58 (LAR03) | 05:45<br>20:10 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04                 | 06:25<br>19:38 | 06:58 (LAR14)<br>18:57 (LAR03) | 05:44<br>20:11 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05                 | 06:24<br>19:40 | 06:58 (LAR14)<br>18:58 (LAR03) | 05:43<br>20:12 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06                 | 06:22<br>19:41 | 06:57 (LAR14)<br>18:57 (LAR03) | 05:42<br>20:13 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07                 | 06:21<br>19:42 | 06:56 (LAR14)<br>18:56 (LAR03) | 05:41<br>20:14 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09                 | 06:19<br>19:43 | 06:57 (LAR14)<br>18:56 (LAR03) | 05:40<br>20:15 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10                 | 06:17<br>19:44 | 06:56 (LAR14)<br>18:55 (LAR03) | 05:39<br>20:16 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11                 | 06:16<br>19:45 | 06:57 (LAR14)<br>18:55 (LAR03) | 05:38<br>20:17 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12                 | 06:14<br>19:46 | 06:56 (LAR14)<br>18:53 (LAR03) | 05:37<br>20:18 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13                 | 06:13<br>19:47 | 06:57 (LAR14)<br>18:53 (LAR03) | 05:36<br>20:19 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14                 | 06:11<br>19:48 | 06:57 (LAR14)<br>18:51 (LAR03) | 05:35<br>20:20 |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15                 | 06:10<br>19:49 | 06:58 (LAR14)<br>18:50 (LAR03) | 05:34<br>20:21 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16                 | 06:08<br>19:51 | 06:58 (LAR14)<br>18:49 (LAR03) | 05:34<br>20:22 |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:17                 | 06:07<br>19:52 | 06:59 (LAR14)<br>18:47 (LAR03) | 05:33<br>20:23 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19                 | 06:05<br>19:53 | 07:00 (LAR14)<br>18:46 (LAR03) | 05:32<br>20:24 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20                 | 06:04<br>19:54 | 07:00 (LAR14)<br>18:43 (LAR03) | 05:31<br>20:25 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21                 | 06:03<br>19:55 | 07:01 (LAR14)<br>18:41 (LAR03) | 05:31<br>20:25 |
| 29                  | 07:17<br>17:11 | 06:50<br>19:22 | 18:38 (LAR03)<br>18:40 (LAR03) | 06:01<br>19:56 | 07:03 (LAR14)<br>18:38 (LAR03) | 05:30<br>20:26 |
| 30                  | 07:16<br>17:12 | 06:49<br>19:23 | 18:30 (LAR03)<br>18:47 (LAR03) | 06:00<br>19:57 | 07:04 (LAR14)<br>07:30 (LAR14) | 05:30<br>20:27 |
| 31                  | 07:15<br>17:14 | 06:47<br>19:24 | 07:20 (LAR14)<br>18:50 (LAR03) | 05:59<br>20:28 |                                | 05:29<br>20:28 |
| Potential sun hours | 295            | 296            | 369                            | 400            | 451                            | 455            |
| Total, worst case   |                |                | 54                             | 2273           |                                | 51             |
| Sun reduction       |                |                | 0,44                           | 0,48           |                                | 0,47           |
| Oper. time red.     |                |                | 0,70                           | 0,70           |                                | 0,70           |
| Wind dir. red.      |                |                | 0,62                           | 0,61           |                                | 0,61           |
| Total reduction     |                |                | 0,19                           | 0,21           |                                | 0,20           |
| Total, real         |                |                | 10                             | 467            |                                | 10             |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|



## SHADOW - Calendar

Shadow receptor: R62 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (47)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September              | October                        | November       | December       |
|---------------------|----------------|----------------|------------------------|--------------------------------|----------------|----------------|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36         | 06:58 (LAR14)<br>18:57 (LAR03) | 06:57<br>18:44 | 07:08<br>16:31 |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34         | 06:58 (LAR14)<br>18:56 (LAR03) | 06:58<br>18:42 | 07:09<br>16:31 |
| 3                   | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:33         | 06:58 (LAR14)<br>18:55 (LAR03) | 06:59<br>18:41 | 07:10<br>16:30 |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31         | 06:59 (LAR14)<br>18:55 (LAR03) | 07:00<br>18:39 | 07:11<br>16:30 |
| 5                   | 05:31<br>20:39 | 05:57<br>20:15 | 06:30<br>19:29         | 06:59 (LAR14)<br>18:54 (LAR03) | 07:01<br>18:37 | 07:12<br>16:30 |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27         | 07:00 (LAR14)<br>18:53 (LAR03) | 07:02<br>18:36 | 07:13<br>16:30 |
| 7                   | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26         | 07:01 (LAR14)<br>18:51 (LAR03) | 07:03<br>18:34 | 07:14<br>16:30 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24         | 07:02 (LAR14)<br>18:50 (LAR03) | 07:04<br>18:32 | 07:15<br>16:30 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22         | 07:03 (LAR14)<br>18:48 (LAR03) | 07:05<br>18:31 | 07:16<br>16:30 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>07:20 (LAR14) | 07:05 (LAR14)                  | 07:06          | 07:17          |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>07:16 (LAR14) | 07:07 (LAR14)                  | 07:07          | 07:17          |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>07:14 (LAR14) | 07:10 (LAR14)                  | 07:09          | 07:18          |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>07:12 (LAR14) | 07:11 (LAR03)                  | 07:10          | 07:19          |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>07:10 (LAR14) | 07:12 (LAR03)                  | 07:11          | 07:20          |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>07:09 (LAR14) | 07:13 (LAR03)                  | 07:12          | 07:21          |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>07:07 (LAR14) | 07:14 (LAR03)                  | 07:13          | 07:21          |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>07:06 (LAR14) | 07:15 (LAR03)                  | 07:14          | 07:22          |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>07:05 (LAR14) | 07:16 (LAR03)                  | 07:15          | 07:23          |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>07:04 (LAR14) | 07:17 (LAR03)                  | 07:17          | 07:23          |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>07:03 (LAR14) | 07:18 (LAR03)                  | 07:18          | 07:24          |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>07:02 (LAR14) | 07:19 (LAR03)                  | 07:19          | 07:25          |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>07:02 (LAR14) | 07:20 (LAR03)                  | 07:20          | 07:25          |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>07:01 (LAR14) | 07:21 (LAR03)                  | 07:21          | 07:26          |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>07:01 (LAR14) | 07:22 (LAR03)                  | 07:22          | 07:26          |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>07:00 (LAR14) | 07:23 (LAR03)                  | 07:23          | 07:26          |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>06:59 (LAR14) | 07:24 (LAR03)                  | 07:24          | 07:27          |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>06:59 (LAR14) | 07:25 (LAR03)                  | 07:25          | 07:27          |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>06:59 (LAR14) | 07:26 (LAR03)                  | 07:26          | 07:28          |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>06:59 (LAR14) | 07:27 (LAR03)                  | 07:27          | 07:28          |
| 30                  | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>06:59 (LAR14) | 07:28 (LAR03)                  | 07:28          | 07:28          |
| 31                  | 05:52<br>20:21 | 06:24<br>19:38 | 06:56<br>06:58 (LAR14) | 07:29 (LAR03)                  | 07:29          | 07:28          |
| Potential sun hours | 462            | 429            | 375                    | 344                            | 296            | 285            |
| Total, worst case   |                | 1517           | 901                    |                                |                |                |
| Sun reduction       |                | 0,67           | 0,58                   |                                |                |                |
| Oper. time red.     |                | 0,70           | 0,70                   |                                |                |                |
| Wind dir. red.      |                | 0,61           | 0,61                   |                                |                |                |
| Total reduction     |                | 0,29           | 0,25                   |                                |                |                |
| Total, real         |                | 434            | 224                    |                                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R63 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (48)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March                          | April          | May                            | June           |
|---------------------|----------------|----------------|--------------------------------|----------------|--------------------------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50                 | 06:45<br>19:25 | 07:31 (LAR14)<br>18:49 (LAR03) | 05:58<br>19:58 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51                 | 06:44<br>19:26 | 07:29 (LAR14)<br>18:48 (LAR03) | 05:57<br>19:59 |
| 3                   | 07:29<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52                 | 06:42<br>19:27 | 07:29 (LAR14)<br>18:48 (LAR03) | 05:56<br>20:00 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53                 | 06:40<br>19:29 | 07:28 (LAR14)<br>18:46 (LAR03) | 05:54<br>20:01 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55                 | 06:39<br>19:30 | 07:27 (LAR14)<br>18:45 (LAR03) | 05:53<br>20:03 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56                 | 06:37<br>19:31 | 07:27 (LAR14)<br>18:44 (LAR03) | 05:52<br>20:04 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57                 | 06:35<br>19:32 | 07:26 (LAR14)<br>18:42 (LAR03) | 05:51<br>20:05 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58                 | 06:34<br>19:33 | 07:25 (LAR14)<br>18:39 (LAR03) | 05:49<br>20:06 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59                 | 06:32<br>19:34 | 07:25 (LAR14)<br>18:37 (LAR03) | 05:48<br>20:07 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01                 | 06:30<br>19:35 | 07:25 (LAR14)<br>18:30 (LAR03) | 05:47<br>20:08 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02                 | 06:29<br>19:36 | 07:24 (LAR14)<br>18:34 (LAR14) | 05:46<br>20:09 |
| 12                  | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03                 | 06:27<br>19:37 | 07:24 (LAR14)<br>18:34 (LAR14) | 05:45<br>20:10 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04                 | 06:25<br>19:38 | 07:24 (LAR14)<br>18:33 (LAR14) | 05:44<br>20:11 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05                 | 06:24<br>19:40 | 07:24 (LAR14)<br>18:33 (LAR14) | 05:43<br>20:12 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06                 | 06:22<br>19:41 | 07:24 (LAR14)<br>18:32 (LAR14) | 05:42<br>20:13 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07                 | 06:21<br>19:42 | 07:23 (LAR14)<br>18:31 (LAR14) | 05:41<br>20:14 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09                 | 06:19<br>19:43 | 07:24 (LAR14)<br>18:31 (LAR14) | 05:40<br>20:15 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10                 | 06:17<br>19:44 | 07:23 (LAR14)<br>18:29 (LAR14) | 05:39<br>20:16 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11                 | 06:16<br>19:45 | 07:24 (LAR14)<br>18:29 (LAR14) | 05:38<br>20:17 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12                 | 06:14<br>19:46 | 07:24 (LAR14)<br>18:28 (LAR14) | 05:37<br>20:18 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13                 | 06:13<br>19:47 | 07:25 (LAR14)<br>18:27 (LAR14) | 05:36<br>20:19 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14                 | 06:11<br>19:48 | 07:24 (LAR14)<br>18:26 (LAR14) | 05:35<br>20:20 |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15                 | 06:10<br>19:49 | 07:25 (LAR14)<br>18:25 (LAR14) | 05:34<br>20:21 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16                 | 06:08<br>19:51 | 07:25 (LAR14)<br>18:23 (LAR14) | 05:34<br>20:22 |
| 25                  | 07:20<br>17:06 | 06:44<br>17:45 | 05:57<br>18:17                 | 06:07<br>19:52 | 07:26 (LAR14)<br>18:23 (LAR14) | 05:33<br>20:23 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19                 | 06:05<br>19:53 | 07:28 (LAR14)<br>18:22 (LAR14) | 05:32<br>20:24 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20                 | 06:04<br>19:54 | 07:28 (LAR14)<br>18:20 (LAR14) | 05:31<br>20:25 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21                 | 06:02<br>19:55 | 07:29 (LAR14)<br>18:19 (LAR14) | 05:31<br>20:25 |
| 29                  | 07:17<br>17:11 | 06:37<br>19:22 | 06:50<br>19:22                 | 06:01<br>19:56 | 07:30 (LAR14)<br>18:18 (LAR14) | 05:30<br>20:26 |
| 30                  | 07:16<br>17:12 | 06:39<br>19:23 | 07:33 (LAR14)<br>19:23         | 06:00<br>19:57 | 07:31 (LAR14)<br>18:15 (LAR14) | 05:30<br>20:27 |
| 31                  | 07:15<br>17:13 | 06:47<br>19:24 | 07:32 (LAR14)<br>18:50 (LAR03) | 05:29<br>20:28 |                                | 05:29<br>20:28 |
| Potential sun hours | 295            | 296            | 369                            | 400            | 451                            | 455            |
| Total, worst case   |                |                | 932                            | 2147           | 203                            |                |
| Sun reduction       |                |                | 0,44                           | 0,48           | 0,47                           |                |
| Oper. time red.     |                |                | 0,70                           | 0,70           | 0,70                           |                |
| Wind dir. red.      |                |                | 0,62                           | 0,62           | 0,62                           |                |
| Total reduction     |                |                | 0,19                           | 0,21           | 0,20                           |                |
| Total, real         |                |                | 178                            | 447            | 41                             |                |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R63 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (48)

### Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September                       | October                                 | November       | December       |
|---------------------|----------------|----------------|---------------------------------|---|----------------|----------------|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36                  | 07:23 (LAR14)<br>08:33 (LAR14)          | 06:57<br>18:44 | 07:08<br>16:56 |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34                  | 07:23 (LAR14)<br>18:29 (LAR03)          | 06:58<br>18:42 | 07:09<br>16:55 |
| 3                   | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:33                  | 07:22 (LAR14)<br>18:34 (LAR03)          | 06:59<br>18:41 | 07:10<br>16:54 |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31                  | 07:22 (LAR14)<br>18:36 (LAR03)          | 07:00<br>18:39 | 07:11<br>16:53 |
| 5                   | 05:31<br>20:39 | 05:57<br>20:15 | 06:30<br>19:29                  | 07:22 (LAR14)<br>18:38 (LAR03)          | 07:01<br>18:37 | 07:12<br>16:51 |
| 6                   | 05:32<br>20:39 | 05:58<br>20:14 | 06:31<br>08:09 (LAR14)<br>19:27 | 07:22 (LAR14)<br>18:39 (LAR03)          | 07:02<br>18:36 | 07:13<br>16:50 |
| 7                   | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>07:51 (LAR14)<br>19:26 | 07:22 (LAR14)<br>18:40 (LAR03)          | 07:03<br>18:34 | 07:14<br>16:49 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>07:48 (LAR14)<br>19:24 | 06:33<br>07:22 (LAR14)<br>18:40 (LAR03) | 07:04<br>18:32 | 07:15<br>16:48 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>07:46 (LAR14)<br>19:22 | 06:34<br>07:22 (LAR14)<br>18:41 (LAR03) | 07:05<br>18:31 | 07:16<br>16:47 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>07:44 (LAR14)<br>19:21 | 06:35<br>07:23 (LAR14)<br>18:41 (LAR03) | 07:06<br>18:29 | 07:17<br>16:46 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>07:42 (LAR14)<br>19:19 | 06:36<br>07:23 (LAR14)<br>18:41 (LAR03) | 07:07<br>18:27 | 07:17<br>16:45 |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>07:41 (LAR14)<br>19:17 | 06:37<br>07:23 (LAR14)<br>18:41 (LAR03) | 07:09<br>18:26 | 07:18<br>16:44 |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>07:39 (LAR14)<br>19:15 | 06:38<br>07:24 (LAR14)<br>18:40 (LAR03) | 07:10<br>18:24 | 07:19<br>16:43 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>07:38 (LAR14)<br>19:14 | 06:39<br>07:24 (LAR14)<br>18:40 (LAR03) | 07:11<br>18:22 | 07:20<br>16:42 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>07:36 (LAR14)<br>19:12 | 06:40<br>07:25 (LAR14)<br>18:40 (LAR03) | 07:12<br>18:21 | 07:21<br>16:41 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>07:35 (LAR14)<br>19:10 | 06:41<br>07:26 (LAR14)<br>18:39 (LAR03) | 07:13<br>18:19 | 07:21<br>16:40 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>07:34 (LAR14)<br>19:08 | 06:42<br>07:27 (LAR14)<br>18:38 (LAR03) | 07:14<br>18:18 | 07:22<br>16:39 |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>07:33 (LAR14)<br>19:07 | 06:43<br>07:28 (LAR14)<br>18:37 (LAR03) | 07:15<br>18:16 | 07:23<br>16:38 |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>07:32 (LAR14)<br>19:05 | 06:44<br>07:29 (LAR14)<br>18:36 (LAR03) | 07:17<br>18:15 | 07:23<br>16:38 |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>07:31 (LAR14)<br>19:03 | 06:45<br>07:31 (LAR14)<br>18:34 (LAR03) | 07:18<br>18:13 | 07:24<br>16:37 |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>07:30 (LAR14)<br>19:01 | 06:46<br>07:33 (LAR14)<br>18:33 (LAR03) | 07:19<br>18:12 | 07:25<br>16:36 |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>07:29 (LAR14)<br>19:00 | 06:47<br>07:35 (LAR14)<br>18:31 (LAR03) | 07:20<br>18:10 | 07:25<br>16:35 |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>07:29 (LAR14)<br>18:58 | 06:48<br>07:38 (LAR14)<br>18:28 (LAR03) | 07:21<br>18:09 | 07:26<br>16:35 |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>07:28 (LAR14)<br>18:56 | 06:49<br>07:44 (LAR14)<br>18:24 (LAR03) | 07:22<br>18:07 | 07:26<br>16:34 |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>07:27 (LAR14)<br>18:54 | 06:50<br>07:33 (LAR14)<br>17:06         | 06:24<br>16:34 | 07:26<br>16:34 |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>07:27 (LAR14)<br>18:53 | 06:51<br>07:34 (LAR14)<br>17:04         | 06:25<br>16:33 | 07:27<br>16:35 |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>07:26 (LAR14)<br>18:51 | 06:52<br>07:35 (LAR14)<br>17:03         | 06:26<br>16:33 | 07:27<br>16:36 |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>07:25 (LAR14)<br>18:49 | 06:53<br>07:36 (LAR14)<br>17:02         | 06:27<br>16:32 | 07:27<br>16:36 |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>07:25 (LAR14)<br>18:48 | 06:54<br>07:37 (LAR14)<br>17:00         | 06:28<br>16:32 | 07:28<br>16:37 |
| 30                  | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>07:24 (LAR14)<br>18:46 | 06:55<br>07:38 (LAR14)<br>16:59         | 06:30<br>16:31 | 07:28<br>16:38 |
| 31                  | 05:52<br>20:21 | 06:24<br>19:38 | 06:56<br>07:23 (LAR14)<br>18:43 | 06:56<br>07:39 (LAR14)<br>16:58         | 06:31<br>16:30 | 07:28<br>16:39 |
| Potential sun hours | 462            | 429            | 375                             | 344                                     | 296            | 285            |
| Total, worst case   |                | 1373           | 1951                            |   |                |                |
| Sun reduction       |                | 0,67           | 0,58                            |   |                |                |
| Oper. time red.     |                | 0,70           | 0,70                            |   |                |                |
| Wind dir. red.      |                | 0,62           | 0,62                            |   |                |                |
| Total reduction     |                | 0,29           | 0,25                            |   |                |                |
| Total, real         |                | 400            | 489                             |   |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R64 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (49)

#### Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April                           | May                             | June           |
|---------------------|----------------|----------------|----------------|---------------------------------|---------------------------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 07:44 (LAR14)<br>06:45<br>17:25 | 09:00 (LAR14)<br>05:58<br>19:25 | 05:29<br>20:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 07:43 (LAR14)<br>06:44<br>17:26 | 09:07 (LAR14)<br>05:57<br>19:26 | 05:28<br>20:29 |
| 3                   | 07:29<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 07:42 (LAR14)<br>06:42<br>19:27 | 09:11 (LAR14)<br>05:56<br>20:00 | 05:28<br>20:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53 | 07:43 (LAR14)<br>06:40<br>19:29 | 05:54<br>20:01                  | 05:27<br>20:31 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 07:42 (LAR14)<br>06:39<br>19:30 | 05:53<br>20:03                  | 05:27<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 07:41 (LAR14)<br>06:37<br>19:31 | 05:52<br>20:04                  | 05:27<br>20:32 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 07:42 (LAR14)<br>06:35<br>19:32 | 05:51<br>20:05                  | 05:26<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 07:41 (LAR14)<br>06:34<br>19:33 | 05:49<br>20:06                  | 05:26<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 07:40 (LAR14)<br>06:32<br>19:34 | 05:48<br>20:07                  | 05:26<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 07:41 (LAR14)<br>06:30<br>19:35 | 05:47<br>20:08                  | 05:25<br>20:35 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 07:41 (LAR14)<br>06:29<br>19:36 | 05:46<br>20:09                  | 05:25<br>20:35 |
| 12                  | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 07:40 (LAR14)<br>06:27<br>19:37 | 05:45<br>20:10                  | 05:25<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 07:41 (LAR14)<br>06:25<br>19:38 | 05:44<br>20:11                  | 05:25<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 07:41 (LAR14)<br>06:24<br>19:40 | 05:43<br>20:12                  | 05:25<br>20:37 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 07:40 (LAR14)<br>06:22<br>19:41 | 05:42<br>20:13                  | 05:25<br>20:37 |
| 16                  | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 07:41 (LAR14)<br>06:21<br>19:42 | 05:41<br>20:14                  | 05:25<br>20:38 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 07:41 (LAR14)<br>06:19<br>19:43 | 05:40<br>20:15                  | 05:25<br>20:38 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 07:41 (LAR14)<br>06:17<br>19:44 | 05:39<br>20:16                  | 05:25<br>20:38 |
| 19                  | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 07:41 (LAR14)<br>06:16<br>19:45 | 05:38<br>20:17                  | 05:25<br>20:39 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 07:43 (LAR14)<br>06:14<br>19:46 | 05:37<br>20:18                  | 05:25<br>20:39 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 07:43 (LAR14)<br>06:13<br>19:47 | 05:36<br>20:19                  | 05:25<br>20:39 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 07:43 (LAR14)<br>06:11<br>19:48 | 05:35<br>20:20                  | 05:26<br>20:39 |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 07:44 (LAR14)<br>06:10<br>19:49 | 05:34<br>20:21                  | 05:26<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 07:45 (LAR14)<br>06:08<br>19:51 | 05:34<br>20:22                  | 05:26<br>20:40 |
| 25                  | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 07:46 (LAR14)<br>06:07<br>19:52 | 05:33<br>20:23                  | 05:26<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 07:47 (LAR14)<br>06:05<br>19:53 | 05:32<br>20:24                  | 05:27<br>20:40 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 07:49 (LAR14)<br>06:04<br>19:54 | 05:31<br>20:25                  | 05:27<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 07:50 (LAR14)<br>06:02<br>19:55 | 05:31<br>20:25                  | 05:28<br>20:40 |
| 29                  | 07:17<br>17:11 |                | 06:50<br>19:22 | 08:51 (LAR14)<br>06:01<br>19:56 | 05:30<br>20:26                  | 05:28<br>20:40 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 08:53 (LAR14)<br>06:00<br>19:57 | 05:30<br>20:27                  | 05:28<br>20:40 |
| 31                  | 07:15<br>17:13 |                | 06:47<br>19:24 | 08:56 (LAR14)<br>05:29<br>19:58 | 05:29<br>20:28                  |                |
| Potential sun hours | 295            | 296            | 369            | 400                             | 451                             | 455            |
| Total, worst case   |                | 1253           |                | 2576                            |                                 | 25             |
| Sun reduction       |                | 0,46           |                | 0,44                            |                                 | 0,48           |
| Oper. time red.     |                | 0,70           |                | 0,70                            |                                 | 0,70           |
| Wind dir. red.      |                | 0,67           |                | 0,65                            |                                 | 0,67           |
| Total reduction     |                | 0,21           |                | 0,20                            |                                 | 0,22           |
| Total, real         |                | 267            |                | 517                             |                                 | 6              |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R64 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (49)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October                | November                       | December                       |
|---------------------|----------------|----------------|----------------|------------------------|--------------------------------|--------------------------------|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44         | 08:20 (LAR14)<br>18:15 (LAR03) | 07:08 (LAR14)<br>16:31 (LAR14) |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42         | 08:19 (LAR14)<br>18:14 (LAR03) | 07:09 (LAR14)<br>16:31 (LAR14) |
| 3                   | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41         | 08:19 (LAR14)<br>18:12 (LAR03) | 07:10 (LAR14)<br>16:30 (LAR14) |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 07:00<br>18:39         | 08:18 (LAR14)<br>18:11 (LAR03) | 07:11 (LAR14)<br>16:30 (LAR14) |
| 5                   | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37         | 08:18 (LAR14)<br>18:09 (LAR03) | 07:12 (LAR14)<br>16:30 (LAR14) |
| 6                   | 05:32<br>20:39 | 05:58<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36         | 08:17 (LAR14)<br>18:07 (LAR03) | 07:13 (LAR14)<br>16:30 (LAR14) |
| 7                   | 05:32<br>20:38 | 05:59<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34         | 08:17 (LAR14)<br>18:04 (LAR03) | 07:14 (LAR14)<br>16:30 (LAR14) |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32         | 08:18 (LAR14)<br>17:59 (LAR03) | 07:15 (LAR14)<br>16:30 (LAR14) |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31         | 08:17 (LAR14)<br>09:39 (LAR14) | 07:16 (LAR14)<br>16:30 (LAR14) |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29         | 08:17 (LAR14)<br>09:38 (LAR14) | 07:17 (LAR14)<br>16:30 (LAR14) |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>09:12 (LAR14) | 08:17 (LAR14)<br>09:38 (LAR14) | 07:17 (LAR14)<br>16:30 (LAR14) |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>09:16 (LAR14) | 08:17 (LAR14)<br>18:26 (LAR03) | 07:18 (LAR14)<br>16:30 (LAR14) |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>09:19 (LAR14) | 08:17 (LAR14)<br>18:24 (LAR03) | 07:19 (LAR14)<br>16:30 (LAR14) |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>09:22 (LAR14) | 08:17 (LAR14)<br>18:22 (LAR03) | 07:20 (LAR14)<br>16:30 (LAR14) |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>09:24 (LAR14) | 08:18 (LAR14)<br>18:21 (LAR03) | 07:21 (LAR14)<br>16:30 (LAR14) |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>09:26 (LAR14) | 08:18 (LAR14)<br>18:19 (LAR03) | 07:21 (LAR14)<br>16:31 (LAR14) |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>09:27 (LAR14) | 08:18 (LAR14)<br>18:18 (LAR03) | 07:22 (LAR14)<br>16:31 (LAR14) |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>09:29 (LAR14) | 08:19 (LAR14)<br>18:16 (LAR03) | 07:23 (LAR14)<br>16:31 (LAR14) |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:09 (LAR03) | 08:19 (LAR14)<br>18:15 (LAR03) | 07:23 (LAR14)<br>16:31 (LAR14) |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:12 (LAR03) | 08:20 (LAR14)<br>18:13 (LAR03) | 07:24 (LAR14)<br>16:32 (LAR14) |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:13 (LAR03) | 08:21 (LAR14)<br>18:12 (LAR03) | 07:25 (LAR14)<br>16:32 (LAR14) |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:14 (LAR03) | 08:22 (LAR14)<br>18:10 (LAR03) | 07:25 (LAR14)<br>16:33 (LAR14) |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:15 (LAR03) | 08:22 (LAR14)<br>18:09 (LAR03) | 07:26 (LAR14)<br>16:33 (LAR14) |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:16 (LAR03) | 08:24 (LAR14)<br>18:07 (LAR03) | 07:26 (LAR14)<br>16:34 (LAR14) |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 07:24<br>18:17 (LAR03) | 08:25 (LAR14)<br>18:06 (LAR03) | 07:27 (LAR14)<br>16:34 (LAR14) |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:25<br>18:17 (LAR03) | 08:26 (LAR14)<br>17:04 (LAR03) | 07:27 (LAR14)<br>16:35 (LAR14) |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:26<br>18:17 (LAR03) | 08:27 (LAR14)<br>17:03 (LAR03) | 07:28 (LAR14)<br>16:36 (LAR14) |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:27<br>18:17 (LAR03) | 08:28 (LAR14)<br>17:02 (LAR03) | 07:29 (LAR14)<br>16:36 (LAR14) |
| 29                  | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:28<br>18:16 (LAR03) | 08:29 (LAR14)<br>17:00 (LAR03) | 07:30 (LAR14)<br>16:37 (LAR14) |
| 30                  | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:29<br>18:15 (LAR03) | 08:30 (LAR14)<br>16:59 (LAR03) | 07:31 (LAR14)<br>16:38 (LAR14) |
| 31                  | 05:52<br>20:21 | 06:24<br>19:38 |                | 07:30<br>16:58 (LAR03) | 08:31 (LAR14)<br>08:15 (LAR14) | 07:32 (LAR14)<br>16:39 (LAR14) |
| Potential sun hours | 462            | 430            | 375            | 344                    | 296                            | 285                            |
| Total, worst case   |                |                | 1458           | 2364                   | 80                             |                                |
| Sun reduction       |                |                | 0,58           | 0,44                   | 0,41                           |                                |
| Oper. time red.     |                |                | 0,70           | 0,70                   | 0,70                           |                                |
| Wind dir. red.      |                |                | 0,65           | 0,66                   | 0,67                           |                                |
| Total reduction     |                |                | 0,26           | 0,20                   | 0,19                           |                                |
| Total, real         |                |                | 383            | 476                    | 15                             |                                |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|

## SHADOW - Calendar

**Shadow receptor:** R65 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (50)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| January             |                | February |                                | March |                                | April          |    | May                            |                | June |                                |    |                                |
|---------------------|----------------|----------|--------------------------------|-------|--------------------------------|----------------|----|--------------------------------|----------------|------|--------------------------------|----|--------------------------------|
| 1                   | 07:28<br>16:40 |          | 07:14<br>17:15                 | 58    | 08:07 (LAR14)<br>09:05 (LAR14) | 06:37<br>17:50 | 31 | 16:40 (LAR03)<br>17:11 (LAR03) | 19:25<br>19:58 |      | 05:29<br>20:29                 | 54 | 07:12 (LAR07)<br>06:18 (LAR07) |
| 2                   | 07:29<br>16:41 |          | 07:13<br>17:16                 | 59    | 08:07 (LAR14)<br>09:06 (LAR14) | 06:36<br>17:51 | 30 | 16:40 (LAR03)<br>17:10 (LAR03) | 19:26<br>19:59 | 12   | 06:40 (LAR07)<br>06:52 (LAR07) | 55 | 07:13 (LAR07)<br>06:19 (LAR07) |
| 3                   | 07:29<br>16:41 |          | 07:12<br>17:17                 | 59    | 08:07 (LAR14)<br>09:06 (LAR14) | 06:34<br>17:52 | 29 | 16:40 (LAR03)<br>17:09 (LAR03) | 19:27<br>19:27 | 20   | 06:35 (LAR07)<br>06:55 (LAR07) | 54 | 07:13 (LAR07)<br>06:19 (LAR07) |
| 4                   | 07:29<br>16:42 |          | 07:11<br>17:19                 | 60    | 08:06 (LAR14)<br>09:06 (LAR14) | 06:33<br>17:53 | 27 | 16:41 (LAR03)<br>17:08 (LAR03) | 19:29<br>19:29 | 26   | 06:32 (LAR07)<br>06:58 (LAR07) | 55 | 07:13 (LAR07)<br>06:19 (LAR07) |
| 5                   | 07:29<br>16:43 |          | 07:10<br>17:20                 | 60    | 08:06 (LAR14)<br>09:06 (LAR14) | 06:31<br>17:55 | 25 | 16:42 (LAR03)<br>17:07 (LAR03) | 19:30<br>19:30 | 30   | 06:30 (LAR07)<br>07:00 (LAR07) | 54 | 07:13 (LAR07)<br>06:19 (LAR07) |
| 6                   | 07:29<br>16:44 | 5        | 08:25 (LAR14)<br>08:30 (LAR14) | 60    | 08:06 (LAR14)<br>09:06 (LAR14) | 06:29<br>17:56 | 22 | 16:43 (LAR03)<br>17:05 (LAR03) | 19:31<br>19:31 | 33   | 06:29 (LAR07)<br>07:02 (LAR07) | 55 | 07:14 (LAR07)<br>06:19 (LAR07) |
| 7                   | 07:29<br>16:45 | 12       | 08:39 (LAR14)<br>08:34 (LAR14) | 61    | 08:06 (LAR14)<br>09:07 (LAR14) | 06:28<br>17:57 | 17 | 16:46 (LAR03)<br>17:03 (LAR03) | 19:32<br>19:32 | 36   | 06:27 (LAR07)<br>07:03 (LAR07) | 54 | 07:14 (LAR07)<br>06:19 (LAR07) |
| 8                   | 07:28<br>16:46 | 16       | 08:21 (LAR14)<br>08:37 (LAR14) | 60    | 08:07 (LAR14)<br>09:07 (LAR14) | 06:26<br>17:58 | 12 | 17:03 (LAR03)<br>17:00 (LAR03) | 19:33<br>19:33 | 39   | 06:25 (LAR07)<br>07:04 (LAR07) | 54 | 07:13 (LAR07)<br>06:20 (LAR07) |
| 9                   | 07:28<br>16:47 | 21       | 08:18 (LAR14)<br>08:39 (LAR14) | 60    | 08:06 (LAR14)<br>09:06 (LAR14) | 06:24<br>17:59 |    | 06:32<br>19:34                 | 05:48<br>20:07 | 41   | 06:24 (LAR07)<br>07:05 (LAR07) | 54 | 07:14 (LAR07)<br>06:20 (LAR07) |
| 10                  | 07:28<br>16:48 | 23       | 08:18 (LAR14)<br>08:41 (LAR14) | 59    | 08:07 (LAR14)<br>09:06 (LAR14) | 06:23<br>18:01 |    | 06:30<br>19:35                 | 05:47<br>20:08 | 43   | 06:23 (LAR07)<br>07:06 (LAR07) | 54 | 07:14 (LAR07)<br>06:21 (LAR07) |
| 11                  | 07:28<br>16:49 | 26       | 08:17 (LAR14)<br>08:43 (LAR14) | 59    | 08:07 (LAR14)<br>09:06 (LAR14) | 06:21<br>18:02 |    | 06:29<br>19:36                 | 05:46<br>20:09 | 45   | 06:22 (LAR07)<br>07:07 (LAR07) | 53 | 07:14 (LAR07)<br>06:21 (LAR07) |
| 12                  | 07:28<br>16:50 | 29       | 08:15 (LAR14)<br>08:44 (LAR14) | 58    | 08:08 (LAR14)<br>09:06 (LAR14) | 06:19<br>18:03 |    | 06:27<br>19:37                 | 05:45<br>20:10 | 46   | 06:21 (LAR07)<br>07:07 (LAR07) | 53 | 07:14 (LAR07)<br>06:21 (LAR07) |
| 13                  | 07:27<br>16:52 | 31       | 08:15 (LAR14)<br>08:46 (LAR14) | 58    | 08:07 (LAR14)<br>09:05 (LAR14) | 06:18<br>18:04 |    | 06:25<br>19:38                 | 05:44<br>20:11 | 47   | 06:21 (LAR07)<br>07:08 (LAR07) | 53 | 07:14 (LAR07)<br>06:21 (LAR07) |
| 14                  | 07:27<br>16:53 | 34       | 08:14 (LAR14)<br>08:48 (LAR14) | 57    | 08:08 (LAR14)<br>09:05 (LAR14) | 06:16<br>18:05 |    | 06:24<br>19:40                 | 05:43<br>20:12 | 48   | 06:20 (LAR07)<br>07:08 (LAR07) | 54 | 07:15 (LAR07)<br>06:22 (LAR07) |
| 15                  | 07:26<br>16:54 | 36       | 08:13 (LAR14)<br>08:49 (LAR14) | 55    | 08:09 (LAR14)<br>09:04 (LAR14) | 06:14<br>18:06 |    | 06:22<br>19:41                 | 05:42<br>20:13 | 49   | 06:20 (LAR07)<br>07:09 (LAR07) | 53 | 07:15 (LAR07)<br>06:22 (LAR07) |
| 16                  | 07:26<br>16:55 | 38       | 08:13 (LAR14)<br>08:51 (LAR14) | 67    | 08:09 (LAR14)<br>17:03 (LAR03) | 06:13<br>18:07 |    | 06:21<br>19:42                 | 05:41<br>20:14 | 50   | 06:19 (LAR07)<br>07:09 (LAR07) | 53 | 07:15 (LAR07)<br>06:22 (LAR07) |
| 17                  | 07:26<br>16:56 | 40       | 08:12 (LAR14)<br>08:52 (LAR14) | 71    | 08:10 (LAR14)<br>17:06 (LAR03) | 06:11<br>18:09 |    | 06:19<br>19:43                 | 05:40<br>20:15 | 52   | 06:18 (LAR07)<br>07:10 (LAR07) | 53 | 07:15 (LAR07)<br>06:22 (LAR07) |
| 18                  | 07:25<br>16:57 | 42       | 08:11 (LAR14)<br>08:53 (LAR14) | 73    | 08:10 (LAR14)<br>17:07 (LAR03) | 06:09<br>18:10 |    | 06:17<br>19:44                 | 05:39<br>20:16 | 52   | 06:18 (LAR07)<br>07:10 (LAR07) | 53 | 07:15 (LAR07)<br>06:22 (LAR07) |
| 19                  | 07:24<br>16:59 | 44       | 08:11 (LAR14)<br>08:55 (LAR14) | 73    | 08:12 (LAR14)<br>17:09 (LAR03) | 06:08<br>18:11 |    | 06:16<br>19:45                 | 05:38<br>20:17 | 52   | 06:19 (LAR07)<br>07:11 (LAR07) | 53 | 07:15 (LAR07)<br>06:22 (LAR07) |
| 20                  | 07:24<br>17:00 | 46       | 08:10 (LAR14)<br>08:56 (LAR14) | 73    | 08:12 (LAR14)<br>17:09 (LAR03) | 06:06<br>18:12 |    | 06:14<br>19:46                 | 05:37<br>20:18 | 53   | 06:18 (LAR07)<br>07:11 (LAR07) | 53 | 07:15 (LAR07)<br>06:22 (LAR07) |
| 21                  | 07:23<br>17:01 | 47       | 08:09 (LAR14)<br>08:56 (LAR14) | 71    | 08:14 (LAR14)<br>17:10 (LAR03) | 06:04<br>18:13 |    | 06:13<br>19:47                 | 05:36<br>20:19 | 53   | 06:18 (LAR07)<br>07:11 (LAR07) | 53 | 07:15 (LAR07)<br>06:22 (LAR07) |
| 22                  | 07:23<br>17:02 | 48       | 08:10 (LAR14)<br>08:58 (LAR14) | 72    | 08:14 (LAR14)<br>17:11 (LAR03) | 06:02<br>18:14 |    | 06:11<br>19:48                 | 05:35<br>20:20 | 54   | 06:17 (LAR07)<br>07:11 (LAR07) | 53 | 07:16 (LAR07)<br>06:23 (LAR07) |
| 23                  | 07:22<br>17:03 | 50       | 08:09 (LAR14)<br>08:59 (LAR14) | 70    | 08:16 (LAR14)<br>17:12 (LAR03) | 06:01<br>18:15 |    | 06:10<br>19:49                 | 05:34<br>20:21 | 54   | 06:18 (LAR07)<br>07:12 (LAR07) | 53 | 07:16 (LAR07)<br>06:23 (LAR07) |
| 24                  | 07:21<br>17:05 | 52       | 08:08 (LAR14)<br>09:00 (LAR14) | 66    | 08:17 (LAR14)<br>17:11 (LAR03) | 05:59<br>18:16 |    | 06:08<br>19:51                 | 05:34<br>20:22 | 54   | 06:18 (LAR07)<br>07:12 (LAR07) | 53 | 07:16 (LAR07)<br>06:23 (LAR07) |
| 25                  | 07:20<br>17:06 | 52       | 08:08 (LAR14)<br>09:00 (LAR14) | 61    | 08:20 (LAR14)<br>17:12 (LAR03) | 05:57<br>18:17 |    | 06:07<br>19:52                 | 05:33<br>20:23 | 55   | 06:17 (LAR07)<br>07:12 (LAR07) | 53 | 07:16 (LAR07)<br>06:23 (LAR07) |
| 26                  | 07:20<br>17:07 | 54       | 08:07 (LAR14)<br>09:01 (LAR14) | 55    | 08:22 (LAR14)<br>17:11 (LAR03) | 05:56<br>18:19 |    | 06:05<br>19:53                 | 05:32<br>20:24 | 55   | 06:18 (LAR07)<br>07:13 (LAR07) | 53 | 07:17 (LAR07)<br>06:24 (LAR07) |
| 27                  | 07:19<br>17:08 | 55       | 08:08 (LAR14)<br>09:03 (LAR14) | 47    | 08:27 (LAR14)<br>17:12 (LAR03) | 05:54<br>18:20 |    | 06:04<br>19:54                 | 05:31<br>20:25 | 54   | 06:18 (LAR07)<br>07:12 (LAR07) | 53 | 07:17 (LAR07)<br>06:24 (LAR07) |
| 28                  | 07:18<br>17:10 | 55       | 08:08 (LAR14)<br>09:03 (LAR14) | 32    | 16:39 (LAR03)<br>17:11 (LAR03) | 05:52<br>18:21 |    | 06:02<br>19:55                 | 05:31<br>20:25 | 55   | 06:17 (LAR07)<br>07:12 (LAR07) | 53 | 07:17 (LAR07)<br>06:24 (LAR07) |
| 29                  | 07:17<br>17:11 | 57       | 08:07 (LAR14)<br>09:04 (LAR14) |       |                                | 06:50<br>19:22 |    | 06:01<br>19:56                 | 05:30<br>20:26 | 55   | 06:18 (LAR07)<br>07:13 (LAR07) | 53 | 07:17 (LAR07)<br>06:24 (LAR07) |
| 30                  | 07:16<br>17:12 | 57       | 08:07 (LAR14)<br>09:04 (LAR14) |       |                                | 06:49<br>19:23 |    | 06:00<br>19:57                 | 05:30<br>20:27 | 55   | 06:17 (LAR07)<br>07:12 (LAR07) | 53 | 07:17 (LAR07)<br>06:24 (LAR07) |
| 31                  | 07:15<br>17:13 | 58       | 08:07 (LAR14)<br>09:05 (LAR14) |       |                                | 06:47<br>19:24 |    |                                | 05:29<br>20:28 | 55   | 06:18 (LAR07)<br>07:13 (LAR07) |    |                                |
| Potential sun hours | 295            |          | 296                            |       |                                | 369            |    | 400                            | 451            |      | 455                            |    |                                |
| Total, worst case   | 1028           |          | 1714                           |       |                                | 193            |    |                                | 1373           |      | 1604                           |    |                                |
| Sun reduction       | 0,44           |          | 0,46                           |       |                                | 0,44           |    |                                | 0,47           |      | 0,54                           |    |                                |
| Oper. time red.     | 0,70           |          | 0,70                           |       |                                | 0,70           |    |                                | 0,70           |      | 0,70                           |    |                                |
| Wind dir. red.      | 0,67           |          | 0,65                           |       |                                | 0,56           |    |                                | 0,56           |      | 0,56                           |    |                                |
| Total reduction     | 0,21           |          | 0,21                           |       |                                | 0,18           |    |                                | 0,18           |      | 0,21                           |    |                                |
| Total, real         | 216            |          | 359                            |       |                                | 34             |    |                                | 254            |      | 344                            |    |                                |

### Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|



## SHADOW - Calendar

**Shadow receptor:** R65 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (50)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                     | July  |                  | August |                  | September |       | October          |                  | November         |                  | December         |  |
|---------------------|-------|------------------|--------|------------------|-----------|-------|------------------|------------------|------------------|------------------|------------------|--|
| 1                   | 05:29 | 06:25 (LAR07)    | 05:53  | 06:32 (LAR07)    | 06:25     | 06:57 | 06:32            | 07:36 (LAR14)    | 07:08            | 07:59 (LAR14)    |                  |  |
|                     | 20:40 | 53 07:18 (LAR07) | 20:20  | 46 07:18 (LAR07) | 19:36     | 18:44 | 16:56            | 60 08:36 (LAR14) | 16:31            | 27 08:26 (LAR14) |                  |  |
| 2                   | 05:29 | 06:24 (LAR07)    | 05:54  | 06:33 (LAR07)    | 06:26     | 06:58 | 06:33            | 07:36 (LAR14)    | 07:09            | 08:00 (LAR14)    |                  |  |
|                     | 20:40 | 54 07:18 (LAR07) | 20:19  | 44 07:17 (LAR07) | 19:34     | 18:42 | 16:55            | 60 08:36 (LAR14) | 16:31            | 24 08:24 (LAR14) |                  |  |
| 3                   | 05:30 | 06:25 (LAR07)    | 05:55  | 06:34 (LAR07)    | 06:27     | 06:59 | 06:34            | 07:36 (LAR14)    | 07:10            | 08:02 (LAR14)    |                  |  |
|                     | 20:39 | 54 07:19 (LAR07) | 20:18  | 42 07:16 (LAR07) | 19:33     | 18:41 | 16:54            | 60 08:36 (LAR14) | 16:30            | 21 08:23 (LAR14) |                  |  |
| 4                   | 05:30 | 06:25 (LAR07)    | 05:56  | 06:35 (LAR07)    | 06:28     | 07:00 | 06:36            | 07:36 (LAR14)    | 07:11            | 08:04 (LAR14)    |                  |  |
|                     | 20:39 | 53 07:18 (LAR07) | 20:17  | 40 07:15 (LAR07) | 19:31     | 18:39 | 16:53            | 60 08:36 (LAR14) | 16:30            | 18 08:22 (LAR14) |                  |  |
| 5                   | 05:31 | 06:25 (LAR07)    | 05:57  | 06:36 (LAR07)    | 06:29     | 07:01 | 7 17:27 (LAR03)  | 06:37            | 07:36 (LAR14)    | 07:12            | 08:07 (LAR14)    |  |
|                     | 20:39 | 54 07:19 (LAR07) | 20:15  | 38 07:14 (LAR07) | 19:29     | 18:37 | 17:34 (LAR03)    | 16:51            | 60 08:36 (LAR14) | 16:30            | 13 08:20 (LAR14) |  |
| 6                   | 05:32 | 06:26 (LAR07)    | 05:58  | 06:37 (LAR07)    | 06:31     | 07:02 | 17:23 (LAR03)    | 06:38            | 07:36 (LAR14)    | 07:13            | 08:11 (LAR14)    |  |
|                     | 20:39 | 54 07:20 (LAR07) | 20:14  | 35 07:12 (LAR07) | 19:27     | 18:36 | 15 17:38 (LAR03) | 16:50            | 60 08:36 (LAR14) | 16:30            | 6 08:17 (LAR14)  |  |
| 7                   | 05:32 | 06:25 (LAR07)    | 06:00  | 06:39 (LAR07)    | 06:32     | 07:03 | 17:20 (LAR03)    | 06:39            | 07:37 (LAR14)    | 07:14            |                  |  |
|                     | 20:38 | 54 07:19 (LAR07) | 20:13  | 32 07:11 (LAR07) | 19:26     | 18:34 | 19 17:39 (LAR03) | 16:49            | 60 08:37 (LAR14) | 16:30            |                  |  |
| 8                   | 05:33 | 06:26 (LAR07)    | 06:01  | 06:41 (LAR07)    | 06:33     | 07:04 | 17:19 (LAR03)    | 06:41            | 07:37 (LAR14)    | 07:15            |                  |  |
|                     | 20:38 | 54 07:20 (LAR07) | 20:12  | 28 07:09 (LAR07) | 19:24     | 18:32 | 23 17:42 (LAR03) | 16:48            | 59 08:36 (LAR14) | 16:30            |                  |  |
| 9                   | 05:34 | 06:26 (LAR07)    | 06:02  | 06:43 (LAR07)    | 06:34     | 07:05 | 17:17 (LAR03)    | 06:42            | 07:37 (LAR14)    | 07:16            |                  |  |
|                     | 20:38 | 55 07:21 (LAR07) | 20:10  | 24 07:07 (LAR07) | 19:22     | 18:31 | 26 17:43 (LAR03) | 16:47            | 59 08:36 (LAR14) | 16:30            |                  |  |
| 10                  | 05:34 | 06:25 (LAR07)    | 06:03  | 06:45 (LAR07)    | 06:35     | 07:06 | 17:15 (LAR03)    | 06:43            | 07:38 (LAR14)    | 07:17            |                  |  |
|                     | 20:37 | 55 07:20 (LAR07) | 20:09  | 18 07:03 (LAR07) | 19:21     | 18:29 | 28 17:43 (LAR03) | 16:46            | 58 08:36 (LAR14) | 16:30            |                  |  |
| 11                  | 05:35 | 06:26 (LAR07)    | 06:04  | 06:50 (LAR07)    | 06:36     | 07:07 | 17:14 (LAR03)    | 06:44            | 07:38 (LAR14)    | 07:17            |                  |  |
|                     | 20:37 | 55 07:21 (LAR07) | 20:08  | 8 06:58 (LAR07)  | 19:19     | 18:27 | 30 17:44 (LAR03) | 16:45            | 58 08:36 (LAR14) | 16:30            |                  |  |
| 12                  | 05:36 | 06:26 (LAR07)    | 06:05  |                  | 06:37     | 07:09 | 17:13 (LAR03)    | 06:45            | 07:38 (LAR14)    | 07:18            |                  |  |
|                     | 20:36 | 55 07:21 (LAR07) | 20:06  |                  | 19:17     | 18:26 | 31 17:44 (LAR03) | 16:44            | 57 08:35 (LAR14) | 16:30            |                  |  |
| 13                  | 05:36 | 06:26 (LAR07)    | 06:06  |                  | 06:38     | 07:10 | 17:12 (LAR03)    | 06:47            | 07:39 (LAR14)    | 07:19            |                  |  |
|                     | 20:36 | 55 07:21 (LAR07) | 20:05  |                  | 19:15     | 18:24 | 32 17:44 (LAR03) | 16:43            | 57 08:36 (LAR14) | 16:30            |                  |  |
| 14                  | 05:37 | 06:26 (LAR07)    | 06:07  |                  | 06:39     | 07:11 | 17:11 (LAR03)    | 06:48            | 07:40 (LAR14)    | 07:20            |                  |  |
|                     | 20:35 | 55 07:21 (LAR07) | 20:04  |                  | 19:14     | 18:22 | 33 17:44 (LAR03) | 16:42            | 55 08:35 (LAR14) | 16:30            |                  |  |
| 15                  | 05:38 | 06:26 (LAR07)    | 06:08  |                  | 06:40     | 07:12 | 08:58 (LAR14)    | 06:49            | 07:40 (LAR14)    | 07:21            |                  |  |
|                     | 20:35 | 55 07:21 (LAR07) | 20:02  |                  | 19:12     | 18:21 | 50 17:44 (LAR03) | 16:41            | 55 08:35 (LAR14) | 16:30            |                  |  |
| 16                  | 05:39 | 06:27 (LAR07)    | 06:09  |                  | 06:41     | 07:13 | 08:54 (LAR14)    | 06:50            | 07:41 (LAR14)    | 07:21            |                  |  |
|                     | 20:34 | 55 07:22 (LAR07) | 20:01  |                  | 19:10     | 18:19 | 58 17:44 (LAR03) | 16:40            | 54 08:35 (LAR14) | 16:31            |                  |  |
| 17                  | 05:40 | 06:26 (LAR07)    | 06:10  |                  | 06:42     | 07:14 | 08:51 (LAR14)    | 06:52            | 07:42 (LAR14)    | 07:22            |                  |  |
|                     | 20:34 | 55 07:21 (LAR07) | 19:59  |                  | 19:08     | 18:18 | 62 17:43 (LAR03) | 16:39            | 52 08:34 (LAR14) | 16:31            |                  |  |
| 18                  | 05:40 | 06:27 (LAR07)    | 06:11  |                  | 06:43     | 07:15 | 08:48 (LAR14)    | 06:53            | 07:42 (LAR14)    | 07:23            |                  |  |
|                     | 20:33 | 54 07:21 (LAR07) | 19:58  |                  | 19:07     | 18:16 | 67 17:43 (LAR03) | 16:38            | 52 08:34 (LAR14) | 16:31            |                  |  |
| 19                  | 05:41 | 06:27 (LAR07)    | 06:12  |                  | 06:44     | 07:17 | 08:46 (LAR14)    | 06:54            | 07:43 (LAR14)    | 07:23            |                  |  |
|                     | 20:32 | 54 07:21 (LAR07) | 19:56  |                  | 19:05     | 18:15 | 70 17:42 (LAR03) | 16:38            | 50 08:33 (LAR14) | 16:32            |                  |  |
| 20                  | 05:42 | 06:27 (LAR07)    | 06:13  |                  | 06:45     | 07:18 | 08:45 (LAR14)    | 06:55            | 07:45 (LAR14)    | 07:24            |                  |  |
|                     | 20:31 | 55 07:22 (LAR07) | 19:55  |                  | 19:03     | 18:13 | 72 17:42 (LAR03) | 16:37            | 48 08:33 (LAR14) | 16:32            |                  |  |
| 21                  | 05:43 | 06:28 (LAR07)    | 06:14  |                  | 06:46     | 07:19 | 08:44 (LAR14)    | 06:56            | 07:45 (LAR14)    | 07:25            |                  |  |
|                     | 20:31 | 54 07:22 (LAR07) | 19:53  |                  | 19:01     | 18:12 | 72 17:41 (LAR03) | 16:36            | 47 08:32 (LAR14) | 16:32            |                  |  |
| 22                  | 05:44 | 06:28 (LAR07)    | 06:15  |                  | 06:47     | 07:20 | 08:42 (LAR14)    | 06:58            | 07:46 (LAR14)    | 07:25            |                  |  |
|                     | 20:30 | 54 07:22 (LAR07) | 19:52  |                  | 19:00     | 18:10 | 73 17:39 (LAR03) | 16:35            | 46 08:32 (LAR14) | 16:33            |                  |  |
| 23                  | 05:45 | 06:28 (LAR07)    | 06:16  |                  | 06:48     | 07:21 | 08:41 (LAR14)    | 06:59            | 07:47 (LAR14)    | 07:26            |                  |  |
|                     | 20:29 | 54 07:22 (LAR07) | 19:50  |                  | 18:58     | 18:09 | 73 17:38 (LAR03) | 16:35            | 44 08:31 (LAR14) | 16:33            |                  |  |
| 24                  | 05:46 | 06:28 (LAR07)    | 06:17  |                  | 06:49     | 07:22 | 08:41 (LAR14)    | 07:00            | 07:49 (LAR14)    | 07:26            |                  |  |
|                     | 20:28 | 53 07:21 (LAR07) | 19:49  |                  | 18:56     | 18:07 | 72 17:37 (LAR03) | 16:34            | 42 08:31 (LAR14) | 16:34            |                  |  |
| 25                  | 05:47 | 06:28 (LAR07)    | 06:18  |                  | 06:50     | 06:24 | 07:40 (LAR14)    | 07:01            | 07:50 (LAR14)    | 07:26            |                  |  |
|                     | 20:27 | 53 07:21 (LAR07) | 19:47  |                  | 18:54     | 17:06 | 69 16:35 (LAR03) | 16:34            | 40 08:30 (LAR14) | 16:34            |                  |  |
| 26                  | 05:48 | 06:29 (LAR07)    | 06:19  |                  | 06:51     | 06:25 | 07:39 (LAR14)    | 07:02            | 07:51 (LAR14)    | 07:27            |                  |  |
|                     | 20:26 | 51 07:20 (LAR07) | 19:46  |                  | 18:53     | 17:04 | 65 16:31 (LAR03) | 16:33            | 38 08:29 (LAR14) | 16:35            |                  |  |
| 27                  | 05:49 | 06:29 (LAR07)    | 06:20  |                  | 06:52     | 06:26 | 07:38 (LAR14)    | 07:03            | 07:52 (LAR14)    | 07:27            |                  |  |
|                     | 20:25 | 51 07:20 (LAR07) | 19:44  |                  | 18:51     | 17:03 | 55 08:33 (LAR14) | 16:33            | 36 08:28 (LAR14) | 16:36            |                  |  |
| 28                  | 05:50 | 06:30 (LAR07)    | 06:21  |                  | 06:53     | 06:27 | 07:38 (LAR14)    | 07:04            | 07:53 (LAR14)    | 07:27            |                  |  |
|                     | 20:24 | 50 07:20 (LAR07) | 19:42  |                  | 18:49     | 17:02 | 56 08:34 (LAR14) | 16:32            | 35 08:28 (LAR14) | 16:36            |                  |  |
| 29                  | 05:50 | 06:30 (LAR07)    | 06:22  |                  | 06:54     | 06:28 | 07:37 (LAR14)    | 07:06            | 07:56 (LAR14)    | 07:28            |                  |  |
|                     | 20:23 | 49 07:19 (LAR07) | 19:41  |                  | 18:48     | 17:00 | 58 08:35 (LAR14) | 16:32            | 32 08:28 (LAR14) | 16:37            |                  |  |
| 30                  | 05:51 | 06:31 (LAR07)    | 06:23  |                  | 06:55     | 06:30 | 07:36 (LAR14)    | 07:07            | 07:57 (LAR14)    | 07:28            |                  |  |
|                     | 20:22 | 48 07:19 (LAR07) | 19:39  |                  | 18:46     | 16:59 | 59 08:35 (LAR14) | 16:31            | 30 08:27 (LAR14) | 16:38            |                  |  |
| 31                  | 05:52 | 06:32 (LAR07)    | 06:24  |                  |           | 06:31 | 07:37 (LAR14)    |                  |                  | 07:28            |                  |  |
|                     | 20:21 | 46 07:18 (LAR07) | 19:38  |                  |           | 16:58 | 59 08:36 (LAR14) |                  |                  | 16:39            |                  |  |
| Potential sun hours | 462   |                  | 430    |                  | 375       | 344   | 296              |                  |                  | 285              |                  |  |
| Total, worst case   | 1651  |                  | 355    |                  |           | 1334  | 1524             |                  |                  | 109              |                  |  |
| Sun reduction       | 0,61  |                  | 0,67   |                  |           | 0,44  | 0,41             |                  |                  | 0,36             |                  |  |
| Oper. time red.     | 0,70  |                  | 0,70   |                  |           | 0,70  | 0,70             |                  |                  | 0,70             |                  |  |
| Wind dir. red.      | 0,56  |                  | 0,56   |                  |           | 0,63  | 0,67             |                  |                  | 0,67             |                  |  |
| Total reduction     | 0,24  |                  | 0,26   |                  |           | 0,19  | 0,19             |                  |                  | 0,17             |                  |  |
| Total, real         | 397   |                  | 94     |                  |           | 257   | 293              |                  |                  | 19               |                  |  |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R66 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (51)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March                          | April          | May                            | June           |                |
|---------------------|----------------|----------------|--------------------------------|----------------|--------------------------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 15:20 (LAR07)<br>16:17 (LAR07) | 06:37<br>17:50 | 15:26 (LAR07)<br>16:13 (LAR07) | 06:45<br>19:25 | 05:58<br>19:58 |
| 2                   | 16:41<br>07:29 | 07:13<br>17:16 | 15:20 (LAR07)<br>16:18 (LAR07) | 06:36<br>17:51 | 15:28 (LAR07)<br>16:12 (LAR07) | 06:44<br>19:26 | 05:57<br>19:59 |
| 3                   | 16:41<br>07:29 | 07:12<br>17:17 | 15:19 (LAR07)<br>16:18 (LAR07) | 06:34<br>17:52 | 15:29 (LAR07)<br>16:10 (LAR07) | 06:42<br>19:27 | 05:56<br>20:00 |
| 4                   | 16:41<br>07:29 | 07:11<br>17:19 | 15:18 (LAR07)<br>16:19 (LAR07) | 06:33<br>17:53 | 15:32 (LAR07)<br>16:09 (LAR07) | 06:40<br>19:28 | 05:54<br>20:01 |
| 5                   | 16:43<br>07:29 | 07:10<br>17:20 | 15:18 (LAR07)<br>16:19 (LAR07) | 06:31<br>17:55 | 15:34 (LAR07)<br>16:06 (LAR07) | 06:38<br>19:30 | 05:53<br>20:03 |
| 6                   | 16:44<br>07:29 | 07:09<br>17:21 | 15:18 (LAR07)<br>16:20 (LAR07) | 06:29<br>17:56 | 15:36 (LAR07)<br>16:03 (LAR07) | 06:37<br>19:31 | 05:52<br>20:04 |
| 7                   | 16:44<br>07:28 | 07:08<br>17:22 | 15:18 (LAR07)<br>16:21 (LAR07) | 06:28<br>17:57 | 15:41 (LAR07)<br>16:09 (LAR07) | 06:35<br>19:32 | 05:51<br>20:05 |
| 8                   | 16:45<br>07:28 | 07:07<br>17:24 | 15:18 (LAR07)<br>16:22 (LAR07) | 06:26<br>17:58 | 15:59 (LAR07)                  | 06:33          | 05:49          |
| 9                   | 16:46<br>07:28 | 07:05<br>17:25 | 15:17 (LAR07)<br>16:21 (LAR07) | 06:24<br>17:59 |                                | 06:32          | 05:48          |
| 10                  | 16:47<br>07:28 | 07:04<br>17:26 | 15:17 (LAR07)<br>16:22 (LAR07) | 06:23<br>18:00 |                                | 06:32          | 05:48          |
| 11                  | 16:47<br>07:28 | 07:04<br>17:26 | 15:17 (LAR07)<br>16:22 (LAR07) | 06:23<br>18:00 |                                | 06:30          | 05:47          |
| 12                  | 16:48<br>07:28 | 07:03<br>17:28 | 15:17 (LAR07)<br>16:22 (LAR07) | 06:21<br>18:02 |                                | 06:30          | 05:47          |
| 13                  | 16:49<br>07:27 | 07:02<br>17:29 | 15:17 (LAR07)<br>16:23 (LAR07) | 06:19<br>18:03 |                                | 06:29          | 05:46          |
| 14                  | 16:49<br>07:27 | 07:00<br>17:30 | 15:17 (LAR07)<br>16:22 (LAR07) | 06:18<br>18:04 |                                | 06:29          | 05:46          |
| 15                  | 16:50<br>07:27 | 06:59<br>17:31 | 15:17 (LAR07)<br>16:23 (LAR07) | 06:16<br>18:05 |                                | 06:27          | 05:45          |
| 16                  | 16:50<br>07:26 | 06:58<br>17:33 | 15:17 (LAR07)<br>16:22 (LAR07) | 06:14<br>18:06 |                                | 06:27          | 05:45          |
| 17                  | 16:51<br>07:26 | 06:56<br>17:34 | 15:17 (LAR07)<br>16:23 (LAR07) | 06:13<br>18:07 |                                | 06:25          | 05:44          |
| 18                  | 16:51<br>07:25 | 06:55<br>17:35 | 15:18 (LAR07)<br>16:23 (LAR07) | 06:11<br>18:08 |                                | 06:25          | 05:44          |
| 19                  | 16:52<br>07:25 | 06:54<br>17:36 | 15:18 (LAR07)<br>16:22 (LAR07) | 06:09<br>18:10 |                                | 06:24          | 05:43          |
| 20                  | 16:53<br>07:24 | 06:53<br>17:37 | 15:18 (LAR07)<br>16:22 (LAR07) | 06:07<br>18:11 |                                | 06:22          | 05:42          |
| 21                  | 16:53<br>07:24 | 06:52<br>17:38 | 15:18 (LAR07)<br>16:22 (LAR07) | 06:06<br>18:11 |                                | 06:22          | 05:42          |
| 22                  | 16:54<br>07:24 | 06:51<br>17:39 | 15:18 (LAR07)<br>16:21 (LAR07) | 06:04<br>18:12 |                                | 06:20          | 05:41          |
| 23                  | 16:54<br>07:23 | 06:49<br>17:40 | 15:19 (LAR07)<br>16:21 (LAR07) | 06:04<br>18:13 |                                | 06:20          | 05:41          |
| 24                  | 16:55<br>07:23 | 06:48<br>17:41 | 15:19 (LAR07)<br>16:20 (LAR07) | 06:02<br>18:14 |                                | 06:19          | 05:40          |
| 25                  | 16:55<br>07:22 | 06:46<br>17:42 | 15:20 (LAR07)<br>16:20 (LAR07) | 06:01<br>18:15 |                                | 06:19          | 05:40          |
| 26                  | 16:56<br>07:22 | 06:45<br>17:43 | 15:21 (LAR07)<br>16:20 (LAR07) | 05:59<br>18:16 |                                | 06:17          | 05:39          |
| 27                  | 16:56<br>07:21 | 06:44<br>17:44 | 15:22 (LAR07)<br>16:19 (LAR07) | 05:57<br>18:17 |                                | 06:17          | 05:39          |
| 28                  | 16:57<br>07:21 | 06:43<br>17:45 | 15:22 (LAR07)<br>16:19 (LAR07) | 05:56<br>18:17 |                                | 06:16          | 05:38          |
| 29                  | 16:57<br>07:20 | 06:42<br>17:46 | 15:23 (LAR07)<br>16:17 (LAR07) | 05:54<br>18:19 |                                | 06:16          | 05:38          |
| 30                  | 16:58<br>07:20 | 06:41<br>17:47 | 15:24 (LAR07)<br>16:17 (LAR07) | 05:54<br>18:20 |                                | 06:15          | 05:37          |
| 31                  | 16:58<br>07:19 | 06:40<br>17:47 | 15:24 (LAR07)<br>16:17 (LAR07) | 05:54<br>18:20 |                                | 06:14          | 05:37          |
| Potential sun hours | 295            | 296            | 369                            | 400            | 451                            | 455            |                |
| Total, worst case   | 566            | 1719           | 246                            |                | 20                             | 450            |                |
| Sun reduction       | 0,44           | 0,46           | 0,44                           |                | 0,47                           | 0,54           |                |
| Oper. time red.     | 0,70           | 0,70           | 0,70                           |                | 0,70                           | 0,70           |                |
| Wind dir. red.      | 0,56           | 0,56           | 0,56                           |                | 0,67                           | 0,67           |                |
| Total reduction     | 0,17           | 0,18           | 0,17                           |                | 0,22                           | 0,25           |                |
| Total, real         | 97             | 304            | 42                             |                | 4                              | 113            |                |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R66 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (51)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August        |               | September |       | October |     | November      |       | December        |       |
|---------------------|-------|---------------|---------------|-----------|-------|---------|-----|---------------|-------|-----------------|-------|
| 1                   | 05:29 | 19:59 (LAR05) | 05:53         | 06:25     | 06:56 |         |     | 06:32         |       | 14:47 (LAR07)   | 07:08 |
|                     | 20:40 | 15            | 20:14 (LAR05) | 20:20     | 19:36 | 18:44   |     | 16:56         | 65    | 15:52 (LAR07)   | 16:31 |
| 2                   | 05:29 | 19:59 (LAR05) | 05:54         | 06:26     | 06:58 |         |     | 06:33         |       | 14:47 (LAR07)   | 07:09 |
|                     | 20:40 | 15            | 20:14 (LAR05) | 20:19     | 19:34 | 18:42   |     | 16:55         | 64    | 15:51 (LAR07)   | 16:31 |
| 3                   | 05:30 | 19:59 (LAR05) | 05:55         | 06:27     | 06:59 |         |     | 06:34         |       | 14:47 (LAR07)   | 07:10 |
|                     | 20:39 | 15            | 20:14 (LAR05) | 20:18     | 19:32 | 18:41   |     | 16:54         | 63    | 15:50 (LAR07)   | 16:30 |
| 4                   | 05:30 | 19:59 (LAR05) | 05:56         | 06:28     | 07:00 |         |     | 06:36         |       | 14:48 (LAR07)   | 07:11 |
|                     | 20:39 | 14            | 20:13 (LAR05) | 20:17     | 19:31 | 18:39   |     | 16:52         | 63    | 15:51 (LAR07)   | 16:30 |
| 5                   | 05:31 | 20:00 (LAR05) | 05:57         | 06:29     | 07:01 |         |     | 06:37         |       | 14:48 (LAR07)   | 07:12 |
|                     | 20:39 | 13            | 20:13 (LAR05) | 20:15     | 19:29 | 18:37   |     | 16:51         | 62    | 15:50 (LAR07)   | 16:30 |
| 6                   | 05:32 | 20:01 (LAR05) | 05:58         | 06:30     | 07:02 |         |     | 06:38         |       | 14:48 (LAR07)   | 07:13 |
|                     | 20:39 | 13            | 20:14 (LAR05) | 20:14     | 19:27 | 18:36   | 12  | 16:32 (LAR07) | 16:50 | 15:49 (LAR07)   | 16:30 |
| 7                   | 05:32 | 20:00 (LAR05) | 05:59         | 06:31     | 07:03 |         |     | 16:14 (LAR07) | 06:39 | 14:49 (LAR07)   | 07:14 |
|                     | 20:38 | 13            | 20:13 (LAR05) | 20:13     | 19:26 | 18:34   | 23  | 16:37 (LAR07) | 16:49 | 15:49 (LAR07)   | 16:30 |
| 8                   | 05:33 | 20:01 (LAR05) | 06:00         | 06:33     | 07:04 |         |     | 16:11 (LAR07) | 06:41 | 14:49 (LAR07)   | 07:15 |
|                     | 20:38 | 12            | 20:13 (LAR05) | 20:12     | 19:24 | 18:32   | 29  | 16:40 (LAR07) | 16:48 | 15:49 (LAR07)   | 16:30 |
| 9                   | 05:33 | 20:01 (LAR05) | 06:01         | 06:34     | 07:05 |         |     | 16:08 (LAR07) | 06:42 | 14:50 (LAR07)   | 07:16 |
|                     | 20:38 | 11            | 20:12 (LAR05) | 20:10     | 19:22 | 18:31   | 34  | 16:42 (LAR07) | 16:47 | 15:48 (LAR07)   | 16:30 |
| 10                  | 05:34 | 20:02 (LAR05) | 06:03         | 06:35     | 07:06 |         |     | 16:05 (LAR07) | 06:43 | 14:51 (LAR07)   | 07:17 |
|                     | 20:37 | 10            | 20:12 (LAR05) | 20:09     | 19:21 | 18:29   | 39  | 16:44 (LAR07) | 16:46 | 15:48 (LAR07)   | 16:30 |
| 11                  | 05:35 | 20:03 (LAR05) | 06:04         | 06:36     | 07:07 |         |     | 16:03 (LAR07) | 06:44 | 14:52 (LAR07)   | 07:17 |
|                     | 20:37 | 9             | 20:12 (LAR05) | 20:08     | 19:19 | 18:27   | 42  | 16:45 (LAR07) | 16:45 | 15:47 (LAR07)   | 16:30 |
| 12                  | 05:36 | 20:04 (LAR05) | 06:05         | 06:37     | 07:09 |         |     | 16:01 (LAR07) | 06:45 | 14:53 (LAR07)   | 07:18 |
|                     | 20:36 | 7             | 20:11 (LAR05) | 20:06     | 19:17 | 18:26   | 45  | 16:46 (LAR07) | 16:44 | 15:46 (LAR07)   | 16:30 |
| 13                  | 05:36 | 20:04 (LAR05) | 06:06         | 06:38     | 07:10 |         |     | 15:59 (LAR07) | 06:47 | 14:54 (LAR07)   | 07:19 |
|                     | 20:36 | 6             | 20:10 (LAR05) | 20:05     | 19:15 | 18:24   | 48  | 16:47 (LAR07) | 16:43 | 15:46 (LAR07)   | 16:30 |
| 14                  | 05:37 | 20:05 (LAR05) | 06:07         | 06:39     | 07:11 |         |     | 15:57 (LAR07) | 06:48 | 14:55 (LAR07)   | 07:20 |
|                     | 20:35 | 5             | 20:10 (LAR05) | 20:04     | 19:14 | 18:22   | 51  | 16:48 (LAR07) | 16:42 | 15:45 (LAR07)   | 16:30 |
| 15                  | 05:38 | 20:06 (LAR05) | 06:08         | 06:40     | 07:12 |         |     | 15:56 (LAR07) | 06:49 | 14:56 (LAR07)   | 07:21 |
|                     | 20:35 | 4             | 20:10 (LAR05) | 20:02     | 19:12 | 18:21   | 54  | 16:50 (LAR07) | 16:41 | 15:43 (LAR07)   | 16:30 |
| 16                  | 05:39 | 20:08 (LAR05) | 06:09         | 06:41     | 07:13 |         |     | 15:55 (LAR07) | 06:50 | 14:58 (LAR07)   | 07:21 |
|                     | 20:34 | 1             | 20:09 (LAR05) | 20:01     | 19:10 | 18:19   | 55  | 16:50 (LAR07) | 16:40 | 15:43 (LAR07)   | 16:30 |
| 17                  | 05:40 |               | 06:10         | 06:42     | 07:14 |         |     | 15:53 (LAR07) | 06:52 | 14:59 (LAR07)   | 07:22 |
|                     | 20:33 |               | 19:59         | 19:08     | 18:18 | 17:27   | 57  | 16:50 (LAR07) | 16:39 | 15:42 (LAR07)   | 16:31 |
| 18                  | 05:40 |               | 06:11         | 06:43     | 07:15 |         |     | 15:52 (LAR07) | 06:53 | 15:00 (LAR07)   | 07:23 |
|                     | 20:33 |               | 19:58         | 19:07     | 18:16 | 17:25   | 59  | 16:51 (LAR07) | 16:38 | 15:41 (LAR07)   | 16:31 |
| 19                  | 05:41 |               | 06:12         | 06:44     | 07:16 |         |     | 15:51 (LAR07) | 06:54 | 15:01 (LAR07)   | 07:23 |
|                     | 20:32 |               | 19:56         | 19:05     | 18:15 | 17:24   | 60  | 16:51 (LAR07) | 16:37 | 15:39 (LAR07)   | 16:31 |
| 20                  | 05:42 |               | 06:13         | 06:45     | 07:18 |         |     | 15:51 (LAR07) | 06:55 | 15:04 (LAR07)   | 07:24 |
|                     | 20:31 |               | 19:55         | 19:03     | 18:13 | 17:22   | 61  | 16:52 (LAR07) | 16:37 | 15:39 (LAR07)   | 16:32 |
| 21                  | 05:43 |               | 06:14         | 06:46     | 07:19 |         |     | 15:49 (LAR07) | 06:56 | 15:06 (LAR07)   | 07:24 |
|                     | 20:31 |               | 19:53         | 19:01     | 18:12 | 17:21   | 63  | 16:52 (LAR07) | 16:36 | 15:37 (LAR07)   | 16:32 |
| 22                  | 05:44 |               | 06:15         | 06:47     | 07:20 |         |     | 15:49 (LAR07) | 06:58 | 15:08 (LAR07)   | 07:25 |
|                     | 20:30 |               | 19:52         | 19:00     | 18:10 | 17:19   | 63  | 16:52 (LAR07) | 16:35 | 15:35 (LAR07)   | 16:33 |
| 23                  | 05:45 |               | 06:16         | 06:48     | 07:21 |         |     | 15:48 (LAR07) | 06:59 | 15:10 (LAR07)   | 07:25 |
|                     | 20:29 |               | 19:50         | 18:58     | 18:09 | 17:18   | 64  | 16:52 (LAR07) | 16:35 | 15:33 (LAR07)   | 16:33 |
| 24                  | 05:46 |               | 06:17         | 06:49     | 07:22 |         |     | 15:48 (LAR07) | 07:00 | 15:14 (LAR07)   | 07:26 |
|                     | 20:28 |               | 19:49         | 18:56     | 18:07 | 17:16   | 65  | 16:53 (LAR07) | 16:34 | 15:31 (LAR07)   | 16:34 |
| 25                  | 05:47 |               | 06:18         | 06:50     | 06:23 |         |     | 14:47 (LAR07) | 07:01 | 15:18 (LAR07)   | 07:26 |
|                     | 20:27 |               | 19:47         | 18:54     | 17:06 | 16:15   | 65  | 15:52 (LAR07) | 16:33 | 9 15:27 (LAR07) | 16:34 |
| 26                  | 05:48 |               | 06:19         | 06:51     | 06:25 |         |     | 14:47 (LAR07) | 07:02 |                 | 07:27 |
|                     | 20:26 |               | 19:46         | 18:53     | 17:04 | 16:13   | 65  | 15:52 (LAR07) | 16:33 |                 | 16:35 |
| 27                  | 05:48 |               | 06:20         | 06:52     | 06:26 |         |     | 14:46 (LAR07) | 07:03 |                 | 07:27 |
|                     | 20:25 |               | 19:44         | 18:51     | 17:03 | 16:12   | 66  | 15:52 (LAR07) | 16:32 |                 | 16:36 |
| 28                  | 05:49 |               | 06:21         | 06:53     | 06:27 |         |     | 14:47 (LAR07) | 07:04 |                 | 07:27 |
|                     | 20:24 |               | 19:42         | 18:49     | 17:01 | 16:11   | 66  | 15:53 (LAR07) | 16:32 |                 | 16:36 |
| 29                  | 05:50 |               | 06:22         | 06:54     | 06:28 |         |     | 14:46 (LAR07) | 07:06 |                 | 07:28 |
|                     | 20:23 |               | 19:41         | 18:48     | 17:00 | 16:09   | 66  | 15:52 (LAR07) | 16:32 |                 | 16:37 |
| 30                  | 05:51 |               | 06:23         | 06:55     | 06:29 |         |     | 14:46 (LAR07) | 07:07 |                 | 07:28 |
|                     | 20:22 |               | 19:39         | 18:46     | 16:59 | 16:08   | 66  | 15:52 (LAR07) | 16:31 |                 | 16:38 |
| 31                  | 05:52 |               | 06:24         | 06:31     | 06:31 |         |     | 14:47 (LAR07) |       |                 | 07:28 |
|                     | 20:21 |               | 19:37         | 16:57     | 16:57 | 16:07   | 65  | 15:52 (LAR07) |       |                 | 16:39 |
| Potential sun hours | 462   |               | 430           | 375       | 344   |         | 296 |               |       |                 | 285   |
| Total, worst case   | 163   |               |               |           |       | 1383    |     | 1179          |       |                 |       |
| Sun reduction       | 0,61  |               |               |           |       | 0,44    |     | 0,41          |       |                 |       |
| Oper. time red.     | 0,70  |               |               |           |       | 0,70    |     | 0,70          |       |                 |       |
| Wind dir. red.      | 0,67  |               |               |           |       | 0,56    |     | 0,56          |       |                 |       |
| Total reduction     | 0,28  |               |               |           |       | 0,17    |     | 0,16          |       |                 |       |
| Total, real         | 46    |               |               |           |       | 233     |     | 185           |       |                 |       |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R67 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (52)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| January             |       | February      |               | March         |       | April         |               | May           |               | June          |               |       |       |
|---------------------|-------|---------------|---------------|---------------|-------|---------------|---------------|---------------|---------------|---------------|---------------|-------|-------|
| 1                   | 07:28 | 08:56 (LAR14) | 07:14         | 16:13 (LAR03) | 06:37 | 06:45         | 07:25 (LAR07) | 05:58         | 05:29         |               |               |       |       |
|                     | 16:40 | 39            | 09:35 (LAR14) | 17:15         | 29    | 16:42 (LAR03) | 17:50         | 19:25         | 54            | 08:19 (LAR07) | 19:58         | 20:29 |       |
| 2                   | 07:29 | 08:57 (LAR14) | 07:13         | 16:13 (LAR03) | 06:36 | 06:44         | 07:24 (LAR07) | 05:57         | 05:28         |               |               |       |       |
|                     | 16:41 | 38            | 09:35 (LAR14) | 17:16         | 30    | 16:43 (LAR03) | 17:51         | 19:26         | 55            | 08:19 (LAR07) | 19:59         | 20:29 |       |
| 3                   | 07:29 | 08:58 (LAR14) | 07:12         | 16:13 (LAR03) | 06:34 | 06:42         | 07:24 (LAR07) | 05:56         | 05:28         |               |               |       |       |
|                     | 16:41 | 37            | 09:35 (LAR14) | 17:17         | 30    | 16:43 (LAR03) | 17:52         | 19:27         | 56            | 08:20 (LAR07) | 20:00         | 20:30 |       |
| 4                   | 07:29 | 08:59 (LAR14) | 07:11         | 16:12 (LAR03) | 06:33 | 06:40         | 07:23 (LAR07) | 05:54         | 05:27         |               |               |       |       |
|                     | 16:42 | 36            | 09:35 (LAR14) | 17:19         | 30    | 16:42 (LAR03) | 17:53         | 19:29         | 56            | 08:19 (LAR07) | 20:02         | 20:31 |       |
| 5                   | 07:29 | 09:00 (LAR14) | 07:10         | 16:13 (LAR03) | 06:31 | 06:39         | 07:23 (LAR07) | 05:53         | 05:27         |               |               |       |       |
|                     | 16:43 | 35            | 09:35 (LAR14) | 17:20         | 30    | 16:43 (LAR03) | 17:55         | 19:30         | 56            | 08:19 (LAR07) | 20:03         | 20:32 |       |
| 6                   | 07:29 | 09:01 (LAR14) | 07:09         | 16:13 (LAR03) | 06:29 | 06:37         | 07:23 (LAR07) | 05:52         | 05:26         |               |               |       |       |
|                     | 16:44 | 34            | 09:35 (LAR14) | 17:21         | 30    | 16:43 (LAR03) | 17:56         | 19:31         | 56            | 08:19 (LAR07) | 20:04         | 20:32 |       |
| 7                   | 07:29 | 09:02 (LAR14) | 07:08         | 16:14 (LAR03) | 06:28 | 06:35         | 07:22 (LAR07) | 05:51         | 05:26         |               |               |       |       |
|                     | 16:45 | 32            | 09:34 (LAR14) | 17:22         | 29    | 16:43 (LAR03) | 17:57         | 19:32         | 56            | 08:18 (LAR07) | 20:05         | 20:33 |       |
| 8                   | 07:28 | 09:03 (LAR14) | 07:07         | 16:15 (LAR03) | 06:26 | 06:34         | 07:21 (LAR07) | 05:49         | 05:26         |               |               |       |       |
|                     | 16:46 | 31            | 09:34 (LAR14) | 17:24         | 27    | 16:42 (LAR03) | 17:58         | 19:33         | 56            | 08:17 (LAR07) | 20:06         | 20:34 |       |
| 9                   | 07:28 | 09:04 (LAR14) | 07:06         | 16:15 (LAR03) | 06:24 | 06:32         | 07:22 (LAR07) | 05:48         | 05:26         |               |               |       |       |
|                     | 16:47 | 29            | 09:33 (LAR14) | 17:25         | 26    | 16:41 (LAR03) | 17:59         | 19:34         | 56            | 08:18 (LAR07) | 20:07         | 20:34 |       |
| 10                  | 07:28 | 09:05 (LAR14) | 07:04         | 16:16 (LAR03) | 06:23 | 06:30         | 07:22 (LAR07) | 05:47         | 05:25         |               |               |       |       |
|                     | 16:48 | 28            | 09:33 (LAR14) | 17:26         | 25    | 16:41 (LAR03) | 18:01         | 19:35         | 55            | 08:17 (LAR07) | 20:08         | 20:35 |       |
| 11                  | 07:28 | 09:07 (LAR14) | 07:03         | 16:17 (LAR03) | 06:21 | 06:29         | 07:21 (LAR07) | 05:46         | 05:25         |               |               |       |       |
|                     | 16:49 | 25            | 09:32 (LAR14) | 17:28         | 23    | 16:40 (LAR03) | 18:02         | 19:36         | 54            | 08:15 (LAR07) | 20:09         | 20:35 |       |
| 12                  | 07:28 | 09:08 (LAR14) | 07:02         | 16:19 (LAR03) | 06:19 | 06:27         | 07:22 (LAR07) | 05:45         | 05:25         |               |               |       |       |
|                     | 16:50 | 23            | 09:31 (LAR14) | 17:29         | 20    | 16:39 (LAR03) | 18:03         | 19:37         | 53            | 08:15 (LAR07) | 20:10         | 20:36 |       |
| 13                  | 07:27 | 09:11 (LAR14) | 07:00         | 16:20 (LAR03) | 06:18 | 06:25         | 07:22 (LAR07) | 05:44         | 05:25         |               |               |       |       |
|                     | 16:52 | 19            | 09:30 (LAR14) | 17:30         | 16    | 16:36 (LAR03) | 18:04         | 19:38         | 52            | 08:14 (LAR07) | 20:11         | 20:36 |       |
| 14                  | 07:27 | 09:14 (LAR14) | 06:59         | 16:23 (LAR03) | 06:16 | 06:24         | 07:22 (LAR07) | 05:43         | 05:25         |               |               |       |       |
|                     | 16:53 | 14            | 09:28 (LAR14) | 17:31         | 11    | 16:34 (LAR03) | 18:05         | 19:40         | 52            | 08:14 (LAR07) | 20:12         | 20:37 |       |
| 15                  | 07:26 | 09:17 (LAR14) | 06:58         |               | 06:14 | 06:22         | 07:22 (LAR07) | 05:42         | 05:25         |               |               |       |       |
|                     | 16:54 | 7             | 09:24 (LAR14) | 17:33         |       | 18:06         | 19:41         | 50            | 08:12 (LAR07) | 20:13         | 20:37         |       |       |
| 16                  | 07:26 |               | 06:57         |               | 06:13 | 06:21         | 07:22 (LAR07) | 05:41         | 05:25         |               |               |       |       |
|                     | 16:55 |               | 17:34         |               | 18:07 | 19:42         | 49            | 08:11 (LAR07) | 20:14         | 20:38         |               |       |       |
| 17                  | 07:26 |               | 06:55         |               | 06:11 | 06:19         | 07:24 (LAR07) | 05:40         | 05:25         |               |               |       |       |
|                     | 16:56 |               | 17:35         |               | 18:09 | 19:43         | 46            | 08:10 (LAR07) | 20:15         | 20:38         |               |       |       |
| 18                  | 07:25 |               | 06:54         |               | 06:09 | 06:17         | 07:24 (LAR07) | 05:39         | 05:25         |               |               |       |       |
|                     | 16:57 |               | 17:36         |               | 18:10 | 19:44         | 44            | 08:08 (LAR07) | 20:16         | 20:38         |               |       |       |
| 19                  | 07:24 |               | 06:52         |               | 06:08 | 06:16         | 07:25 (LAR07) | 05:38         | 05:25         |               |               |       |       |
|                     | 16:59 |               | 17:38         |               | 18:11 | 19:45         | 42            | 08:07 (LAR07) | 20:17         | 20:39         |               |       |       |
| 20                  | 07:24 |               | 06:51         |               | 06:06 | 06:14         | 07:26 (LAR07) | 05:37         | 05:25         |               |               |       |       |
|                     | 17:00 |               | 17:39         |               | 18:12 | 13            | 07:03 (LAR07) | 19:46         | 39            | 08:05 (LAR07) | 20:18         | 20:39 |       |
| 21                  | 07:23 | 16:21 (LAR03) | 06:49         |               | 06:04 | 06:45 (LAR07) | 06:13         | 07:27 (LAR07) | 05:36         | 05:25         |               |       |       |
|                     | 17:01 | 7             | 16:28 (LAR03) | 17:40         |       | 18:13         | 22            | 07:07 (LAR07) | 19:47         | 37            | 08:04 (LAR07) | 20:19 | 20:39 |
| 22                  | 07:23 | 16:19 (LAR03) | 06:48         |               | 06:02 | 06:41 (LAR07) | 06:11         | 07:28 (LAR07) | 05:35         | 05:26         |               |       |       |
|                     | 17:02 | 12            | 16:31 (LAR03) | 17:41         |       | 18:14         | 29            | 07:10 (LAR07) | 19:48         | 34            | 08:02 (LAR07) | 20:20 | 20:39 |
| 23                  | 07:22 | 16:17 (LAR03) | 06:47         |               | 06:01 | 06:38 (LAR07) | 06:10         | 07:30 (LAR07) | 05:34         | 05:26         |               |       |       |
|                     | 17:03 | 16            | 16:33 (LAR03) | 17:43         |       | 18:15         | 34            | 07:12 (LAR07) | 19:49         | 30            | 08:00 (LAR07) | 20:21 | 20:40 |
| 24                  | 07:21 | 16:16 (LAR03) | 06:45         |               | 05:59 | 06:36 (LAR07) | 06:08         | 07:31 (LAR07) | 05:34         | 05:26         |               |       |       |
|                     | 17:05 | 19            | 16:35 (LAR03) | 17:44         |       | 18:16         | 38            | 07:14 (LAR07) | 19:51         | 26            | 07:57 (LAR07) | 20:22 | 20:40 |
| 25                  | 07:20 | 16:15 (LAR03) | 06:44         |               | 05:57 | 06:34 (LAR07) | 06:07         | 07:34 (LAR07) | 05:33         | 05:26         |               |       |       |
|                     | 17:06 | 21            | 16:36 (LAR03) | 17:45         |       | 18:17         | 41            | 07:15 (LAR07) | 19:52         | 20            | 07:54 (LAR07) | 20:23 | 20:40 |
| 26                  | 07:20 | 16:14 (LAR03) | 06:42         |               | 05:56 | 06:32 (LAR07) | 06:05         | 07:39 (LAR07) | 05:32         | 05:27         |               |       |       |
|                     | 17:07 | 23            | 16:37 (LAR03) | 17:46         |       | 18:19         | 44            | 07:16 (LAR07) | 19:53         | 11            | 07:50 (LAR07) | 20:24 | 20:40 |
| 27                  | 07:19 | 16:14 (LAR03) | 06:40         |               | 05:54 | 06:31 (LAR07) | 06:04         |               | 05:31         | 05:27         |               |       |       |
|                     | 17:08 | 25            | 16:39 (LAR03) | 17:48         |       | 18:20         | 47            | 07:18 (LAR07) | 19:54         |               | 20:25         | 20:40 |       |
| 28                  | 07:18 | 16:14 (LAR03) | 06:39         |               | 05:52 | 06:30 (LAR07) | 06:02         |               | 05:31         | 05:27         |               |       |       |
|                     | 17:10 | 26            | 16:40 (LAR03) | 17:49         |       | 18:21         | 48            | 07:18 (LAR07) | 19:55         |               | 20:25         | 20:40 |       |
| 29                  | 07:17 | 16:13 (LAR03) |               |               | 06:50 | 07:28 (LAR07) | 06:01         |               | 05:30         | 05:28         |               |       |       |
|                     | 17:11 | 28            | 16:41 (LAR03) |               | 19:22 | 50            | 08:18 (LAR07) | 19:56         |               | 20:26         | 20:40         |       |       |
| 30                  | 07:16 | 16:13 (LAR03) |               |               | 06:49 | 07:27 (LAR07) | 06:00         |               | 05:30         | 05:28         |               |       |       |
|                     | 17:12 | 28            | 16:41 (LAR03) |               | 19:23 | 51            | 08:18 (LAR07) | 19:57         |               | 20:27         | 20:40         |       |       |
| 31                  | 07:15 | 16:13 (LAR03) |               |               | 06:47 | 07:26 (LAR07) |               |               | 05:29         |               |               |       |       |
|                     | 17:13 | 29            | 16:42 (LAR03) |               | 19:24 | 53            | 08:19 (LAR07) |               | 20:28         |               |               |       |       |
| Potential sun hours | 295   |               | 296           |               | 369   |               | 400           |               | 451           |               | 455           |       |       |
| Total, worst case   | 661   |               | 356           |               | 470   |               | 1195          |               |               |               |               |       |       |
| Sun reduction       | 0,44  |               | 0,46          |               | 0,44  |               | 0,48          |               |               |               |               |       |       |
| Oper. time red.     | 0,70  |               | 0,70          |               | 0,70  |               | 0,70          |               |               |               |               |       |       |
| Wind dir. red.      | 0,65  |               | 0,56          |               | 0,62  |               | 0,62          |               |               |               |               |       |       |
| Total reduction     | 0,20  |               | 0,18          |               | 0,19  |               | 0,21          |               |               |               |               |       |       |
| Total, real         | 133   |               | 64            |               | 91    |               | 250           |               |               |               |               |       |       |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R67 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (52)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October                        | November       | December                       |
|---------------------|----------------|----------------|----------------|--------------------------------|----------------|--------------------------------|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 07:20 (LAR07)<br>08:14 (LAR07) | 06:57<br>18:44 | 06:32<br>16:56                 |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 07:20 (LAR07)<br>08:15 (LAR07) | 06:58<br>18:42 | 06:33<br>16:55                 |
| 3                   | 05:30<br>20:40 | 05:55<br>20:18 | 06:27<br>19:33 | 07:19 (LAR07)<br>08:15 (LAR07) | 06:59<br>18:41 | 06:34<br>16:54                 |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 07:19 (LAR07)<br>08:14 (LAR07) | 07:00<br>18:39 | 06:36<br>16:53                 |
| 5                   | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:18 (LAR07)<br>08:14 (LAR07) | 07:01<br>18:37 | 06:37<br>16:51                 |
| 6                   | 05:32<br>20:39 | 05:58<br>20:14 | 06:31<br>19:27 | 07:18 (LAR07)<br>08:14 (LAR07) | 07:02<br>18:36 | 06:38<br>16:50                 |
| 7                   | 05:32<br>20:39 | 05:59<br>20:13 | 06:32<br>19:26 | 07:18 (LAR07)<br>08:14 (LAR07) | 07:03<br>18:34 | 06:39<br>16:49                 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:17 (LAR07)<br>08:13 (LAR07) | 07:04<br>18:32 | 06:41<br>16:48                 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:17 (LAR07)<br>08:13 (LAR07) | 07:05<br>18:31 | 06:42<br>16:47                 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:17 (LAR07)<br>08:12 (LAR07) | 07:06<br>18:29 | 06:43<br>16:46                 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:17 (LAR07)<br>08:11 (LAR07) | 07:07<br>18:27 | 06:44<br>16:45                 |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:18 (LAR07)<br>08:11 (LAR07) | 07:09<br>18:26 | 06:45<br>16:44                 |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:18 (LAR07)<br>08:10 (LAR07) | 07:10<br>18:24 | 06:47<br>16:43                 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:18 (LAR07)<br>08:09 (LAR07) | 07:11<br>18:22 | 06:48<br>16:42                 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:19 (LAR07)<br>08:07 (LAR07) | 07:12<br>18:21 | 06:49<br>16:41                 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:19 (LAR07)<br>08:06 (LAR07) | 07:13<br>18:19 | 06:50<br>16:40                 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 | 07:20 (LAR07)<br>08:04 (LAR07) | 07:14<br>18:18 | 06:52<br>16:39                 |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:21 (LAR07)<br>08:03 (LAR07) | 07:15<br>18:16 | 06:53<br>16:38                 |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:22 (LAR07)<br>08:01 (LAR07) | 07:17<br>18:15 | 06:54<br>16:38                 |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:24 (LAR07)<br>07:59 (LAR07) | 07:18<br>18:13 | 06:55<br>16:37                 |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:26 (LAR07)<br>07:56 (LAR07) | 07:19<br>18:12 | 06:56<br>16:36                 |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:28 (LAR07)<br>07:53 (LAR07) | 07:20<br>18:10 | 06:58<br>16:35                 |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:32 (LAR07)<br>07:48 (LAR07) | 07:21<br>18:09 | 06:59<br>16:35                 |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:29 (LAR07)<br>08:11 (LAR07) | 07:22<br>18:07 | 07:00<br>16:34                 |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 07:27 (LAR07)<br>08:12 (LAR07) | 06:24<br>17:06 | 07:01<br>16:34                 |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:26 (LAR07)<br>08:13 (LAR07) | 06:25<br>17:04 | 07:02<br>16:33                 |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:25 (LAR07)<br>08:14 (LAR07) | 06:26<br>17:03 | 07:03<br>16:33                 |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:24 (LAR07)<br>08:14 (LAR07) | 06:27<br>17:02 | 08:57 (LAR14)<br>15:52 (LAR03) |
| 29                  | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:22 (LAR07)<br>08:14 (LAR07) | 06:28<br>17:00 | 09:03 (LAR14)<br>15:50 (LAR03) |
| 30                  | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:22 (LAR07)<br>08:14 (LAR07) | 06:30<br>16:59 | 09:11 (LAR14)<br>15:48 (LAR03) |
| 31                  | 05:52<br>20:21 | 06:24<br>19:38 | 06:56<br>18:44 | 07:21 (LAR07)<br>08:14 (LAR07) | 06:31<br>16:58 | 09:12 (LAR14)<br>15:47 (LAR03) |
| Potential sun hours | 462            | 430            | 375            | 344                            | 296            | 285                            |
| Total, worst case   |                | 593            | 1091           | 73                             | 580            | 1173                           |
| Sun reduction       |                | 0,67           | 0,58           | 0,44                           | 0,41           | 0,36                           |
| Oper. time red.     |                | 0,70           | 0,70           | 0,70                           | 0,70           | 0,70                           |
| Wind dir. red.      |                | 0,62           | 0,62           | 0,56                           | 0,58           | 0,69                           |
| Total reduction     |                | 0,29           | 0,25           | 0,17                           | 0,16           | 0,18                           |
| Total, real         |                | 173            | 276            | 13                             | 95             | 207                            |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R68 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (53)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

#### Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| January             |       | February      |               | March |               | April |       | May |               | June |               |       |
|---------------------|-------|---------------|---------------|-------|---------------|-------|-------|-----|---------------|------|---------------|-------|
| 1                   | 07:28 |               | 07:14         |       | 07:59 (LAR14) | 06:37 | 06:45 |     | 05:58         |      | 06:56 (LAR07) | 05:29 |
|                     | 16:40 |               | 17:15         | 80    | 16:39 (LAR03) | 17:50 | 19:25 |     | 19:58         | 26   | 07:22 (LAR07) | 20:29 |
| 2                   | 07:29 | 08:08 (LAR14) | 07:13         |       | 08:00 (LAR14) | 06:36 | 06:44 |     | 05:57         |      | 06:58 (LAR07) | 05:28 |
|                     | 16:41 | 6             | 08:14 (LAR14) | 80    | 16:40 (LAR03) | 17:51 | 19:26 |     | 19:59         | 23   | 07:21 (LAR07) | 20:29 |
| 3                   | 07:29 | 08:06 (LAR14) | 07:12         |       | 08:00 (LAR14) | 06:34 | 06:42 |     | 05:56         |      | 06:59 (LAR07) | 05:28 |
|                     | 16:41 | 11            | 08:17 (LAR14) | 80    | 16:40 (LAR03) | 17:52 | 19:27 |     | 20:00         | 19   | 07:18 (LAR07) | 20:30 |
| 4                   | 07:29 | 08:05 (LAR14) | 07:11         |       | 08:00 (LAR14) | 06:33 | 06:40 |     | 05:54         |      | 07:02 (LAR07) | 05:27 |
|                     | 16:42 | 14            | 08:19 (LAR14) | 80    | 16:40 (LAR03) | 17:54 | 19:29 |     | 20:02         | 13   | 07:15 (LAR07) | 20:31 |
| 5                   | 07:29 | 08:04 (LAR14) | 07:10         |       | 08:00 (LAR14) | 06:31 | 06:39 |     | 05:53         |      |               | 05:27 |
|                     | 16:43 | 17            | 08:21 (LAR14) | 79    | 16:40 (LAR03) | 17:55 | 19:30 | 13  | 07:22 (LAR07) |      | 20:03         | 20:32 |
| 6                   | 07:29 | 08:04 (LAR14) | 07:09         |       | 08:01 (LAR14) | 06:29 | 06:37 |     | 07:06 (LAR07) |      | 05:52         | 05:27 |
|                     | 16:44 | 19            | 08:23 (LAR14) | 79    | 16:41 (LAR03) | 17:56 | 19:31 | 20  | 07:26 (LAR07) |      | 20:04         | 20:32 |
| 7                   | 07:29 | 08:03 (LAR14) | 07:08         |       | 08:02 (LAR14) | 06:28 | 06:35 |     | 07:03 (LAR07) |      | 05:51         | 05:26 |
|                     | 16:45 | 21            | 08:24 (LAR14) | 77    | 16:41 (LAR03) | 17:57 | 19:32 | 25  | 07:28 (LAR07) |      | 20:05         | 20:33 |
| 8                   | 07:28 | 08:03 (LAR14) | 07:07         |       | 08:03 (LAR14) | 06:26 | 06:34 |     | 07:00 (LAR07) |      | 05:49         | 05:26 |
|                     | 16:46 | 23            | 08:26 (LAR14) | 76    | 16:42 (LAR03) | 17:58 | 19:33 | 29  | 07:29 (LAR07) |      | 20:06         | 20:34 |
| 9                   | 07:28 | 08:02 (LAR14) | 07:06         |       | 08:03 (LAR14) | 06:24 | 06:32 |     | 06:59 (LAR07) |      | 05:48         | 05:26 |
|                     | 16:47 | 25            | 08:27 (LAR14) | 74    | 16:41 (LAR03) | 17:59 | 19:34 | 32  | 07:31 (LAR07) |      | 20:07         | 20:34 |
| 10                  | 07:28 | 08:02 (LAR14) | 07:04         |       | 08:04 (LAR14) | 06:23 | 06:30 |     | 06:57 (LAR07) |      | 05:47         | 05:25 |
|                     | 16:48 | 26            | 08:28 (LAR14) | 72    | 16:41 (LAR03) | 18:01 | 19:35 | 34  | 07:31 (LAR07) |      | 20:08         | 20:35 |
| 11                  | 07:28 | 08:01 (LAR14) | 07:03         |       | 08:06 (LAR14) | 06:21 | 06:29 |     | 06:55 (LAR07) |      | 05:46         | 05:25 |
|                     | 16:49 | 29            | 08:30 (LAR14) | 68    | 16:41 (LAR03) | 18:02 | 19:36 | 37  | 07:32 (LAR07) |      | 20:09         | 20:35 |
| 12                  | 07:28 | 08:00 (LAR14) | 07:02         |       | 08:08 (LAR14) | 06:19 | 06:27 |     | 06:55 (LAR07) |      | 05:45         | 05:25 |
|                     | 16:50 | 30            | 08:30 (LAR14) | 64    | 16:41 (LAR03) | 18:03 | 19:37 | 38  | 07:33 (LAR07) |      | 20:10         | 20:36 |
| 13                  | 07:27 | 08:00 (LAR14) | 07:01         |       | 08:09 (LAR14) | 06:18 | 06:25 |     | 06:53 (LAR07) |      | 05:44         | 05:25 |
|                     | 16:52 | 32            | 08:32 (LAR14) | 58    | 16:39 (LAR03) | 18:04 | 19:38 | 40  | 07:33 (LAR07) |      | 20:11         | 20:36 |
| 14                  | 07:27 | 08:00 (LAR14) | 06:59         |       | 08:11 (LAR14) | 06:16 | 06:24 |     | 06:53 (LAR07) |      | 05:43         | 05:25 |
|                     | 16:53 | 33            | 08:33 (LAR14) | 53    | 16:39 (LAR03) | 18:05 | 19:40 | 41  | 07:34 (LAR07) |      | 20:12         | 20:37 |
| 15                  | 07:26 | 08:00 (LAR14) | 06:58         |       | 08:15 (LAR14) | 06:14 | 06:22 |     | 06:52 (LAR07) |      | 05:42         | 05:25 |
|                     | 16:54 | 34            | 08:34 (LAR14) | 46    | 16:39 (LAR03) | 18:06 | 19:41 | 41  | 07:33 (LAR07) |      | 20:13         | 20:37 |
| 16                  | 07:26 | 08:00 (LAR14) | 06:57         |       | 16:09 (LAR03) | 06:13 | 06:21 |     | 06:51 (LAR07) |      | 05:41         | 05:25 |
|                     | 16:55 | 35            | 08:35 (LAR14) | 28    | 16:37 (LAR03) | 18:07 | 19:42 | 42  | 07:33 (LAR07) |      | 20:14         | 20:38 |
| 17                  | 07:26 | 07:59 (LAR14) | 06:55         |       | 16:11 (LAR03) | 06:11 | 06:19 |     | 06:51 (LAR07) |      | 05:40         | 05:25 |
|                     | 16:56 | 37            | 08:36 (LAR14) | 25    | 16:36 (LAR03) | 18:09 | 19:43 | 42  | 07:33 (LAR07) |      | 20:15         | 20:38 |
| 18                  | 07:25 | 07:58 (LAR14) | 06:54         |       | 16:12 (LAR03) | 06:09 | 06:17 |     | 06:50 (LAR07) |      | 05:39         | 05:25 |
|                     | 16:57 | 38            | 08:36 (LAR14) | 22    | 16:34 (LAR03) | 18:10 | 19:44 | 43  | 07:33 (LAR07) |      | 20:16         | 20:38 |
| 19                  | 07:25 | 07:59 (LAR14) | 06:52         |       | 16:14 (LAR03) | 06:08 | 06:16 |     | 06:51 (LAR07) |      | 05:38         | 05:25 |
|                     | 16:59 | 39            | 08:38 (LAR14) | 18    | 16:32 (LAR03) | 18:11 | 19:45 | 42  | 07:33 (LAR07) |      | 20:17         | 20:39 |
| 20                  | 07:24 | 07:58 (LAR14) | 06:51         |       | 16:18 (LAR03) | 06:06 | 06:14 |     | 06:50 (LAR07) |      | 05:37         | 05:25 |
|                     | 17:00 | 40            | 08:38 (LAR14) | 9     | 16:27 (LAR03) | 18:12 | 19:46 | 42  | 07:32 (LAR07) |      | 20:18         | 20:39 |
| 21                  | 07:23 | 07:58 (LAR14) | 06:49         |       |               | 06:04 | 06:13 |     | 06:50 (LAR07) |      | 05:36         | 05:25 |
|                     | 17:01 | 41            | 08:39 (LAR14) |       |               | 18:13 | 19:47 | 42  | 07:32 (LAR07) |      | 20:19         | 20:39 |
| 22                  | 07:23 | 07:58 (LAR14) | 06:48         |       |               | 06:02 | 06:11 |     | 06:50 (LAR07) |      | 05:35         | 05:26 |
|                     | 17:02 | 51            | 16:24 (LAR03) |       |               | 18:14 | 19:48 | 41  | 07:31 (LAR07) |      | 20:20         | 20:39 |
| 23                  | 07:22 | 07:58 (LAR14) | 06:47         |       |               | 06:01 | 06:10 |     | 06:50 (LAR07) |      | 05:34         | 05:26 |
|                     | 17:03 | 58            | 16:27 (LAR03) |       |               | 18:15 | 19:49 | 41  | 07:31 (LAR07) |      | 20:21         | 20:40 |
| 24                  | 07:21 | 07:58 (LAR14) | 06:45         |       |               | 05:59 | 06:08 |     | 06:50 (LAR07) |      | 05:34         | 05:26 |
|                     | 17:05 | 62            | 16:29 (LAR03) |       |               | 18:16 | 19:51 | 40  | 07:30 (LAR07) |      | 20:22         | 20:40 |
| 25                  | 07:20 | 07:58 (LAR14) | 06:44         |       |               | 05:57 | 06:07 |     | 06:51 (LAR07) |      | 05:33         | 05:26 |
|                     | 17:06 | 65            | 16:31 (LAR03) |       |               | 18:17 | 19:52 | 38  | 07:29 (LAR07) |      | 20:23         | 20:40 |
| 26                  | 07:20 | 07:58 (LAR14) | 06:42         |       |               | 05:56 | 06:05 |     | 06:52 (LAR07) |      | 05:32         | 05:27 |
|                     | 17:07 | 69            | 16:32 (LAR03) |       |               | 18:19 | 19:53 | 37  | 07:29 (LAR07) |      | 20:24         | 20:40 |
| 27                  | 07:19 | 07:59 (LAR14) | 06:40         |       |               | 05:54 | 06:04 |     | 06:52 (LAR07) |      | 05:31         | 05:27 |
|                     | 17:08 | 71            | 16:34 (LAR03) |       |               | 18:20 | 19:54 | 35  | 07:27 (LAR07) |      | 20:25         | 20:40 |
| 28                  | 07:18 | 07:59 (LAR14) | 06:39         |       |               | 05:52 | 06:02 |     | 06:53 (LAR07) |      | 05:31         | 05:28 |
|                     | 17:10 | 73            | 16:36 (LAR03) |       |               | 18:21 | 19:55 | 33  | 07:26 (LAR07) |      | 20:25         | 20:40 |
| 29                  | 07:17 | 07:59 (LAR14) |               |       |               | 06:50 | 06:01 |     | 06:54 (LAR07) |      | 05:30         | 05:28 |
|                     | 17:11 | 75            | 16:37 (LAR03) |       |               | 19:22 | 19:56 | 31  | 07:25 (LAR07) |      | 20:26         | 20:40 |
| 30                  | 07:16 | 07:59 (LAR14) |               |       |               | 06:49 | 06:00 |     | 06:54 (LAR07) |      | 05:30         | 05:28 |
|                     | 17:12 | 77            | 16:37 (LAR03) |       |               | 19:23 | 19:57 | 29  | 07:23 (LAR07) |      | 20:27         | 20:40 |
| 31                  | 07:15 | 07:59 (LAR14) |               |       |               | 06:47 |       |     |               |      | 05:29         |       |
|                     | 17:13 | 78            | 16:38 (LAR03) |       |               | 19:24 |       |     |               |      | 20:28         |       |
| Potential sun hours | 295   |               | 296           |       | 369           |       | 400   |     | 451           |      |               | 455   |
| Total, worst case   | 1229  |               | 1168          |       |               | 928   |       |     | 81            |      |               |       |
| Sun reduction       | 0,44  |               | 0,46          |       |               | 0,48  |       |     | 0,47          |      |               |       |
| Oper. time red.     | 0,70  |               | 0,70          |       |               | 0,70  |       |     | 0,70          |      |               |       |
| Wind dir. red.      | 0,65  |               | 0,61          |       |               | 0,60  |       |     | 0,60          |      |               |       |
| Total reduction     | 0,20  |               | 0,20          |       |               | 0,20  |       |     | 0,20          |      |               |       |
| Total, real         | 248   |               | 230           |       |               | 186   |       |     | 16            |      |               |       |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) |                      | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  | Minutes with flicker | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



### SHADOW - Calendar

Shadow receptor: R68 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (53)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October                        | November       | December       |
|---------------------|----------------|----------------|----------------|--------------------------------|----------------|----------------|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:54 (LAR07)<br>07:31 (LAR07) | 06:57<br>18:44 | 07:08<br>16:31 |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:55 (LAR07)<br>07:29 (LAR07) | 06:58<br>18:42 | 07:09<br>16:31 |
| 3                   | 05:30<br>20:40 | 05:55<br>20:18 | 06:27<br>19:33 | 06:56 (LAR07)<br>07:28 (LAR07) | 06:59<br>18:41 | 07:10<br>16:30 |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 06:57 (LAR07)<br>07:26 (LAR07) | 07:00<br>18:39 | 07:11<br>16:30 |
| 5                   | 05:31<br>20:39 | 05:57<br>20:15 | 06:30<br>19:29 | 06:58 (LAR07)<br>07:24 (LAR07) | 07:01<br>18:37 | 07:12<br>16:30 |
| 6                   | 05:32<br>20:39 | 05:58<br>20:14 | 06:31<br>19:27 | 07:00 (LAR07)<br>07:21 (LAR07) | 07:02<br>18:36 | 07:13<br>16:30 |
| 7                   | 05:32<br>20:39 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03 (LAR07)<br>07:17 (LAR07) | 07:03<br>18:34 | 07:14<br>16:30 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:15 (LAR07)<br>07:21 (LAR07) | 07:04<br>18:32 | 07:15<br>16:30 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:11 (LAR07)<br>07:25 (LAR07) | 07:05<br>18:31 | 07:16<br>16:30 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:08 (LAR07)<br>07:28 (LAR07) | 07:06<br>18:29 | 07:17<br>16:30 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:06 (LAR07)<br>07:30 (LAR07) | 07:07<br>18:27 | 07:17<br>16:30 |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:04 (LAR07)<br>07:31 (LAR07) | 07:09<br>18:26 | 07:18<br>16:30 |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:03 (LAR07)<br>07:32 (LAR07) | 07:10<br>18:24 | 07:19<br>16:30 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:01 (LAR07)<br>07:33 (LAR07) | 07:11<br>18:22 | 07:20<br>16:30 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:00 (LAR07)<br>07:34 (LAR07) | 07:12<br>18:21 | 07:21<br>16:30 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 06:59 (LAR07)<br>07:35 (LAR07) | 07:13<br>18:19 | 07:22<br>16:31 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 | 06:58 (LAR07)<br>07:36 (LAR07) | 07:14<br>18:18 | 07:23<br>16:31 |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 06:58 (LAR07)<br>07:36 (LAR07) | 07:15<br>18:16 | 07:23<br>16:31 |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 06:57 (LAR07)<br>07:36 (LAR07) | 07:17<br>18:15 | 07:23<br>16:32 |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 06:56 (LAR07)<br>07:37 (LAR07) | 07:18<br>18:13 | 07:24<br>16:32 |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 06:56 (LAR07)<br>07:37 (LAR07) | 07:19<br>18:12 | 07:25<br>16:32 |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 06:55 (LAR07)<br>07:37 (LAR07) | 07:20<br>18:10 | 07:25<br>16:33 |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 06:55 (LAR07)<br>07:37 (LAR07) | 07:21<br>18:09 | 07:26<br>16:33 |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 06:54 (LAR07)<br>07:37 (LAR07) | 07:22<br>18:07 | 07:26<br>16:34 |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 06:54 (LAR07)<br>07:36 (LAR07) | 07:23<br>18:05 | 07:26<br>16:34 |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 06:54 (LAR07)<br>07:36 (LAR07) | 07:24<br>18:04 | 07:27<br>16:35 |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:54 (LAR07)<br>07:36 (LAR07) | 07:25<br>18:03 | 07:27<br>16:36 |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:54 (LAR07)<br>07:35 (LAR07) | 07:26<br>18:02 | 07:27<br>16:36 |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:54 (LAR07)<br>07:34 (LAR07) | 07:27<br>18:01 | 07:28<br>16:37 |
| 30                  | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:54 (LAR07)<br>07:34 (LAR07) | 07:28<br>18:00 | 07:28<br>16:38 |
| 31                  | 05:52<br>20:21 | 06:24<br>19:38 | 06:56<br>18:45 | 06:54 (LAR07)<br>07:33 (LAR07) | 07:29<br>17:58 | 07:28<br>16:39 |
| Potential sun hours | 462            | 430            | 375            | 344                            | 296            | 285            |
| Total, worst case   |                | 831            | 193            | 415                            | 1813           | 193            |
| Sun reduction       |                | 0,67           | 0,58           | 0,44                           | 0,41           | 0,36           |
| Oper. time red.     |                | 0,70           | 0,70           | 0,70                           | 0,70           | 0,70           |
| Wind dir. red.      |                | 0,60           | 0,60           | 0,60                           | 0,64           | 0,67           |
| Total reduction     |                | 0,28           | 0,24           | 0,18                           | 0,18           | 0,17           |
| Total, real         |                | 233            | 47             | 76                             | 328            | 33             |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|--------------|------------------|---------------------------------|----------------------------------|
|              | Sun set (hh:mm)  | Minutes with flicker            | Last time (hh:mm) with flicker   |
|              |                  |                                 | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R69 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (54)

Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     |       | January       |               | February      |       | March         |               | April         |       | May           |       | June  |  |
|---------------------|-------|---------------|---------------|---------------|-------|---------------|---------------|---------------|-------|---------------|-------|-------|--|
| 1                   | 07:28 | 15:43 (LAR03) | 07:14         | 07:54 (LAR14) | 06:37 | 06:45         | 07:09 (LAR07) | 05:58         | 05:29 |               |       |       |  |
|                     | 16:40 | 16            | 15:59 (LAR03) | 17:15         | 79    | 16:22 (LAR03) | 17:50         | 19:25         | 27    | 07:36 (LAR07) | 19:58 | 20:29 |  |
| 2                   | 07:29 | 15:43 (LAR03) | 07:13         | 07:55 (LAR14) | 06:36 | 06:44         | 07:07 (LAR07) | 05:57         | 05:28 |               |       |       |  |
|                     | 16:41 | 17            | 16:00 (LAR03) | 17:16         | 76    | 16:21 (LAR03) | 17:51         | 19:26         | 30    | 07:37 (LAR07) | 19:59 | 20:29 |  |
| 3                   | 07:29 | 15:42 (LAR03) | 07:12         | 07:55 (LAR14) | 06:34 | 06:42         | 07:07 (LAR07) | 05:56         | 05:28 |               |       |       |  |
|                     | 16:41 | 19            | 16:01 (LAR03) | 17:17         | 76    | 16:21 (LAR03) | 17:52         | 19:27         | 32    | 07:39 (LAR07) | 20:00 | 20:30 |  |
| 4                   | 07:29 | 15:42 (LAR03) | 07:11         | 07:55 (LAR14) | 06:33 | 06:40         | 07:05 (LAR07) | 05:54         | 05:27 |               |       |       |  |
|                     | 16:42 | 21            | 16:03 (LAR03) | 17:19         | 73    | 16:20 (LAR03) | 17:54         | 19:29         | 34    | 07:39 (LAR07) | 20:02 | 20:31 |  |
| 5                   | 07:29 | 15:42 (LAR03) | 07:10         | 07:56 (LAR14) | 06:31 | 06:39         | 07:04 (LAR07) | 05:53         | 05:27 |               |       |       |  |
|                     | 16:43 | 22            | 16:04 (LAR03) | 17:20         | 70    | 16:19 (LAR03) | 17:55         | 19:30         | 35    | 07:39 (LAR07) | 20:03 | 20:32 |  |
| 6                   | 07:29 | 15:42 (LAR03) | 07:09         | 07:57 (LAR14) | 06:29 | 06:37         | 07:04 (LAR07) | 05:52         | 05:27 |               |       |       |  |
|                     | 16:44 | 23            | 16:05 (LAR03) | 17:21         | 67    | 16:19 (LAR03) | 17:56         | 19:31         | 36    | 07:40 (LAR07) | 20:04 | 20:32 |  |
| 7                   | 07:29 | 08:05 (LAR14) | 07:08         | 07:58 (LAR14) | 06:28 | 06:35         | 07:03 (LAR07) | 05:51         | 05:26 |               |       |       |  |
|                     | 16:45 | 28            | 16:07 (LAR03) | 17:22         | 63    | 16:18 (LAR03) | 17:57         | 19:32         | 36    | 07:39 (LAR07) | 20:05 | 20:33 |  |
| 8                   | 07:28 | 08:02 (LAR14) | 07:07         | 07:59 (LAR14) | 06:26 | 06:34         | 07:02 (LAR07) | 05:49         | 05:26 |               |       |       |  |
|                     | 16:46 | 37            | 16:08 (LAR03) | 17:24         | 59    | 16:17 (LAR03) | 17:58         | 19:33         | 37    | 07:39 (LAR07) | 20:06 | 20:34 |  |
| 9                   | 07:28 | 08:00 (LAR14) | 07:06         | 07:59 (LAR14) | 06:24 | 06:32         | 07:02 (LAR07) | 05:48         | 05:26 |               |       |       |  |
|                     | 16:47 | 41            | 16:08 (LAR03) | 17:25         | 54    | 16:15 (LAR03) | 17:59         | 19:34         | 37    | 07:39 (LAR07) | 20:07 | 20:34 |  |
| 10                  | 07:28 | 07:59 (LAR14) | 07:04         | 08:01 (LAR14) | 06:23 | 06:30         | 07:01 (LAR07) | 05:47         | 05:25 |               |       |       |  |
|                     | 16:48 | 47            | 16:10 (LAR03) | 17:26         | 47    | 16:13 (LAR03) | 18:01         | 19:35         | 38    | 07:39 (LAR07) | 20:08 | 20:35 |  |
| 11                  | 07:28 | 07:58 (LAR14) | 07:03         | 08:02 (LAR14) | 06:21 | 06:29         | 07:01 (LAR07) | 05:46         | 05:25 |               |       |       |  |
|                     | 16:49 | 50            | 16:11 (LAR03) | 17:28         | 39    | 16:10 (LAR03) | 18:02         | 19:36         | 37    | 07:38 (LAR07) | 20:09 | 20:35 |  |
| 12                  | 07:28 | 07:57 (LAR14) | 07:02         | 08:05 (LAR14) | 06:19 | 06:27         | 07:01 (LAR07) | 05:45         | 05:25 |               |       |       |  |
|                     | 16:50 | 53            | 16:11 (LAR03) | 17:29         | 20    | 08:25 (LAR14) | 18:03         | 19:37         | 37    | 07:38 (LAR07) | 20:10 | 20:36 |  |
| 13                  | 07:27 | 07:57 (LAR14) | 07:01         | 08:06 (LAR14) | 06:18 | 06:25         | 07:01 (LAR07) | 05:44         | 05:25 |               |       |       |  |
|                     | 16:52 | 56            | 16:13 (LAR03) | 17:30         | 16    | 08:22 (LAR14) | 18:04         | 19:38         | 36    | 07:37 (LAR07) | 20:11 | 20:36 |  |
| 14                  | 07:27 | 07:57 (LAR14) | 06:59         | 08:12 (LAR14) | 06:16 | 06:24         | 07:02 (LAR07) | 05:43         | 05:25 |               |       |       |  |
|                     | 16:53 | 59            | 16:14 (LAR03) | 17:31         | 5     | 08:17 (LAR14) | 18:05         | 19:40         | 35    | 07:37 (LAR07) | 20:12 | 20:37 |  |
| 15                  | 07:26 | 07:56 (LAR14) | 06:58         | 06:14         | 06:14 | 06:22         | 07:01 (LAR07) | 05:42         | 05:25 |               |       |       |  |
|                     | 16:54 | 61            | 16:14 (LAR03) | 17:33         | 18:06 | 19:41         | 34            | 07:35 (LAR07) | 20:13 | 20:37         |       |       |  |
| 16                  | 07:26 | 07:56 (LAR14) | 06:57         | 06:13         | 06:13 | 06:21         | 07:01 (LAR07) | 05:41         | 05:25 |               |       |       |  |
|                     | 16:55 | 64            | 16:16 (LAR03) | 17:34         | 18:07 | 19:42         | 33            | 07:34 (LAR07) | 20:14 | 20:38         |       |       |  |
| 17                  | 07:26 | 07:55 (LAR14) | 06:55         | 06:11         | 06:11 | 06:19         | 07:03 (LAR07) | 05:40         | 05:25 |               |       |       |  |
|                     | 16:56 | 67            | 16:16 (LAR03) | 17:35         | 18:09 | 19:43         | 30            | 07:33 (LAR07) | 20:15 | 20:38         |       |       |  |
| 18                  | 07:25 | 07:54 (LAR14) | 06:54         | 06:09         | 06:09 | 06:17         | 07:03 (LAR07) | 05:39         | 05:25 |               |       |       |  |
|                     | 16:57 | 69            | 16:16 (LAR03) | 17:36         | 18:10 | 19:44         | 29            | 07:32 (LAR07) | 20:16 | 20:38         |       |       |  |
| 19                  | 07:25 | 07:54 (LAR14) | 06:52         | 06:08         | 06:08 | 06:16         | 07:05 (LAR07) | 05:38         | 05:25 |               |       |       |  |
|                     | 16:59 | 71            | 16:18 (LAR03) | 17:38         | 18:11 | 19:45         | 25            | 07:30 (LAR07) | 20:17 | 20:39         |       |       |  |
| 20                  | 07:24 | 07:54 (LAR14) | 06:51         | 06:06         | 06:06 | 06:14         | 07:05 (LAR07) | 05:37         | 05:25 |               |       |       |  |
|                     | 17:00 | 73            | 16:18 (LAR03) | 17:39         | 18:12 | 19:46         | 23            | 07:28 (LAR07) | 20:18 | 20:39         |       |       |  |
| 21                  | 07:23 | 07:53 (LAR14) | 06:49         | 06:04         | 06:04 | 06:13         | 07:08 (LAR07) | 05:36         | 05:25 |               |       |       |  |
|                     | 17:01 | 74            | 16:18 (LAR03) | 17:40         | 18:13 | 19:47         | 18            | 07:26 (LAR07) | 20:19 | 20:39         |       |       |  |
| 22                  | 07:23 | 07:54 (LAR14) | 06:48         | 06:02         | 06:02 | 06:11         | 07:10 (LAR07) | 05:35         | 05:26 |               |       |       |  |
|                     | 17:02 | 76            | 16:20 (LAR03) | 17:41         | 18:14 | 19:48         | 13            | 07:23 (LAR07) | 20:20 | 20:39         |       |       |  |
| 23                  | 07:22 | 07:53 (LAR14) | 06:47         | 06:01         | 06:01 | 06:10         |               | 05:34         | 05:26 |               |       |       |  |
|                     | 17:03 | 77            | 16:20 (LAR03) | 17:43         | 18:15 | 19:49         |               | 20:21         | 20:40 |               |       |       |  |
| 24                  | 07:21 | 07:53 (LAR14) | 06:45         | 05:59         | 06:08 | 06:08         |               | 05:34         | 05:26 |               |       |       |  |
|                     | 17:05 | 78            | 16:20 (LAR03) | 17:44         | 18:16 | 19:51         |               | 20:22         | 20:40 |               |       |       |  |
| 25                  | 07:21 | 07:53 (LAR14) | 06:44         | 05:57         | 06:07 | 06:07         |               | 05:33         | 05:26 |               |       |       |  |
|                     | 17:06 | 78            | 16:20 (LAR03) | 17:45         | 18:17 | 19:52         |               | 20:23         | 20:40 |               |       |       |  |
| 26                  | 07:20 | 07:53 (LAR14) | 06:42         | 05:56         | 06:05 | 06:05         |               | 05:32         | 05:27 |               |       |       |  |
|                     | 17:07 | 78            | 16:20 (LAR03) | 17:46         | 18:19 | 19:53         |               | 20:24         | 20:40 |               |       |       |  |
| 27                  | 07:19 | 07:54 (LAR14) | 06:40         | 05:54         | 06:04 | 06:04         |               | 05:31         | 05:27 |               |       |       |  |
|                     | 17:08 | 80            | 16:22 (LAR03) | 17:48         | 18:20 | 19:54         |               | 20:25         | 20:40 |               |       |       |  |
| 28                  | 07:18 | 07:54 (LAR14) | 06:39         | 05:52         | 06:03 | 06:03         |               | 05:31         | 05:28 |               |       |       |  |
|                     | 17:10 | 80            | 16:22 (LAR03) | 17:49         | 18:21 | 19:55         |               | 20:25         | 20:40 |               |       |       |  |
| 29                  | 07:17 | 07:54 (LAR14) |               | 06:50         |       | 06:01         |               | 05:30         | 05:28 |               |       |       |  |
|                     | 17:11 | 80            | 16:22 (LAR03) |               | 19:22 | 12            | 07:30 (LAR07) | 19:56         | 20:26 | 20:40         |       |       |  |
| 30                  | 07:16 | 07:54 (LAR14) |               | 06:49         |       | 07:14 (LAR07) | 06:00         | 05:30         | 05:28 |               |       |       |  |
|                     | 17:12 | 79            | 16:22 (LAR03) |               | 19:23 | 19            | 07:33 (LAR07) | 19:57         | 20:27 | 20:40         |       |       |  |
| 31                  | 07:15 | 07:54 (LAR14) |               | 06:47         |       | 07:12 (LAR07) |               | 05:29         |       |               |       |       |  |
|                     | 17:13 | 80            | 16:22 (LAR03) |               | 19:24 | 23            | 07:35 (LAR07) | 20:28         |       |               |       |       |  |
| Potential sun hours | 295   |               | 296           |               | 369   |               | 400           |               | 451   |               | 455   |       |  |
| Total, worst case   | 1754  |               | 744           |               | 54    |               | 692           |               |       |               |       |       |  |
| Sun reduction       | 0,44  |               | 0,46          |               | 0,44  |               | 0,48          |               |       |               |       |       |  |
| Oper. time red.     | 0,70  |               | 0,70          |               | 0,70  |               | 0,70          |               |       |               |       |       |  |
| Wind dir. red.      | 0,60  |               | 0,62          |               | 0,61  |               | 0,61          |               |       |               |       |       |  |
| Total reduction     | 0,19  |               | 0,20          |               | 0,19  |               | 0,20          |               |       |               |       |       |  |
| Total, real         | 327   |               | 147           |               | 10    |               | 141           |               |       |               |       |       |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R69 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (54)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October                        | November       | December       |
|---------------------|----------------|----------------|----------------|--------------------------------|----------------|----------------|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 07:00 (LAR07)<br>07:37 (LAR07) | 06:57<br>18:44 | 07:08<br>16:31 |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:59 (LAR07)<br>07:37 (LAR07) | 06:58<br>18:42 | 07:09<br>16:31 |
| 3                   | 05:30<br>20:40 | 05:55<br>20:18 | 06:27<br>19:33 | 06:59 (LAR07)<br>07:36 (LAR07) | 06:59<br>18:41 | 07:10<br>16:30 |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 06:59 (LAR07)<br>07:36 (LAR07) | 07:00<br>18:39 | 07:11<br>16:30 |
| 5                   | 05:31<br>20:39 | 05:57<br>20:15 | 06:30<br>19:29 | 06:59 (LAR07)<br>07:35 (LAR07) | 07:01<br>18:37 | 07:12<br>16:30 |
| 6                   | 05:32<br>20:39 | 05:58<br>20:14 | 06:31<br>19:27 | 06:59 (LAR07)<br>07:35 (LAR07) | 07:02<br>18:36 | 07:13<br>16:30 |
| 7                   | 05:32<br>20:39 | 06:00<br>20:13 | 06:32<br>19:26 | 06:59 (LAR07)<br>07:34 (LAR07) | 07:03<br>18:34 | 07:14<br>16:30 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 06:59 (LAR07)<br>07:33 (LAR07) | 07:04<br>18:32 | 07:15<br>16:30 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:00 (LAR07)<br>07:32 (LAR07) | 07:05<br>18:31 | 07:16<br>16:30 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:00 (LAR07)<br>07:30 (LAR07) | 07:06<br>18:29 | 07:17<br>16:30 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:01 (LAR07)<br>07:29 (LAR07) | 07:07<br>18:27 | 07:17<br>16:30 |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:03 (LAR07)<br>07:27 (LAR07) | 07:09<br>18:26 | 07:18<br>16:30 |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:04 (LAR07)<br>07:24 (LAR07) | 07:10<br>18:24 | 07:19<br>16:30 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:07 (LAR07)<br>07:21 (LAR07) | 07:11<br>18:22 | 07:20<br>16:30 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12 (LAR07)<br>07:19 (LAR07) | 07:12<br>18:21 | 07:21<br>16:30 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:21 (LAR07)<br>07:18 (LAR07) | 07:13<br>18:19 | 07:21<br>16:31 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 | 07:22 (LAR07)<br>07:17 (LAR07) | 07:14<br>18:18 | 07:22<br>16:31 |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15 (LAR07)<br>07:14 (LAR07) | 07:15<br>18:16 | 07:23<br>16:31 |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16 (LAR07)<br>07:13 (LAR07) | 07:17<br>18:15 | 07:23<br>16:32 |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18 (LAR07)<br>07:23 (LAR07) | 07:18<br>18:13 | 07:24<br>16:32 |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:15 (LAR07)<br>07:29 (LAR07) | 07:19<br>18:12 | 07:25<br>16:32 |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:12 (LAR07)<br>07:31 (LAR07) | 07:20<br>18:10 | 07:25<br>16:33 |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:10 (LAR07)<br>07:33 (LAR07) | 07:21<br>18:09 | 07:26<br>16:33 |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:08 (LAR07)<br>07:34 (LAR07) | 07:22<br>18:07 | 07:26<br>16:34 |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:07 (LAR07)<br>07:35 (LAR07) | 07:23<br>18:06 | 07:26<br>16:34 |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:05 (LAR07)<br>07:36 (LAR07) | 07:24<br>18:05 | 07:27<br>16:35 |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:04 (LAR07)<br>07:37 (LAR07) | 07:25<br>18:04 | 07:27<br>16:35 |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:03 (LAR07)<br>07:37 (LAR07) | 07:26<br>18:03 | 07:28<br>16:36 |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:02 (LAR07)<br>07:38 (LAR07) | 07:27<br>18:02 | 07:28<br>16:37 |
| 30                  | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:02 (LAR07)<br>07:38 (LAR07) | 07:27<br>18:01 | 07:28<br>16:38 |
| 31                  | 05:52<br>20:21 | 06:24<br>19:38 | 06:56<br>18:45 | 07:00 (LAR07)<br>07:37 (LAR07) | 07:28<br>18:00 | 07:28<br>16:39 |
| Potential sun hours | 462            | 430            | 375            | 344                            | 296            | 285            |
| Total, worst case   |                | 319            | 438            | 91                             | 2105           | 424            |
| Sun reduction       |                | 0,67           | 0,58           | 0,44                           | 0,41           | 0,36           |
| Oper. time red.     |                | 0,70           | 0,70           | 0,70                           | 0,70           | 0,70           |
| Wind dir. red.      |                | 0,61           | 0,61           | 0,65                           | 0,61           | 0,57           |
| Total reduction     |                | 0,28           | 0,25           | 0,20                           | 0,17           | 0,15           |
| Total, real         |                | 91             | 108            | 18                             | 365            | 62             |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R70 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (55)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| January             |       | February      |               | March         |       | April         |               | May   |               | June          |       |
|---------------------|-------|---------------|---------------|---------------|-------|---------------|---------------|-------|---------------|---------------|-------|
| 1                   | 07:28 | 08:36 (LAR14) | 07:14         | 16:03 (LAR03) | 06:37 | 06:45         | 07:23 (LAR07) | 05:58 | 05:29         |               |       |
|                     | 16:40 | 43            | 09:19 (LAR14) | 17:15         | 32    | 16:35 (LAR03) | 17:50         | 19:25 | 50            | 08:13 (LAR07) | 19:58 |
| 2                   | 07:29 | 08:37 (LAR14) | 07:13         | 16:04 (LAR03) | 06:36 | 06:44         | 07:23 (LAR07) | 05:57 | 05:28         |               |       |
|                     | 16:41 | 42            | 09:19 (LAR14) | 17:16         | 31    | 16:35 (LAR03) | 17:51         | 19:26 | 49            | 08:12 (LAR07) | 19:59 |
| 3                   | 07:29 | 08:37 (LAR14) | 07:12         | 16:04 (LAR03) | 06:34 | 06:42         | 07:23 (LAR07) | 05:56 | 05:28         |               |       |
|                     | 16:41 | 42            | 09:19 (LAR14) | 17:17         | 31    | 16:35 (LAR03) | 17:52         | 19:27 | 50            | 08:13 (LAR07) | 20:00 |
| 4                   | 07:29 | 08:38 (LAR14) | 07:11         | 16:04 (LAR03) | 06:33 | 06:40         | 07:22 (LAR07) | 05:54 | 05:27         |               |       |
|                     | 16:42 | 41            | 09:19 (LAR14) | 17:19         | 29    | 16:33 (LAR03) | 17:53         | 19:29 | 50            | 08:12 (LAR07) | 20:02 |
| 5                   | 07:29 | 08:39 (LAR14) | 07:10         | 16:05 (LAR03) | 06:31 | 06:39         | 07:22 (LAR07) | 05:53 | 05:27         |               |       |
|                     | 16:43 | 41            | 09:20 (LAR14) | 17:20         | 28    | 16:33 (LAR03) | 17:55         | 19:30 | 49            | 08:11 (LAR07) | 20:03 |
| 6                   | 07:29 | 08:40 (LAR14) | 07:09         | 16:06 (LAR03) | 06:29 | 06:37         | 07:22 (LAR07) | 05:52 | 05:26         |               |       |
|                     | 16:44 | 40            | 09:20 (LAR14) | 17:21         | 27    | 16:33 (LAR03) | 17:56         | 19:31 | 49            | 08:11 (LAR07) | 20:04 |
| 7                   | 07:29 | 08:41 (LAR14) | 07:08         | 16:07 (LAR03) | 06:28 | 06:35         | 07:22 (LAR07) | 05:51 | 05:26         |               |       |
|                     | 16:45 | 39            | 09:20 (LAR14) | 17:22         | 25    | 16:32 (LAR03) | 17:57         | 19:32 | 48            | 08:10 (LAR07) | 20:05 |
| 8                   | 07:28 | 08:42 (LAR14) | 07:07         | 16:09 (LAR03) | 06:26 | 06:34         | 07:22 (LAR07) | 05:49 | 05:26         |               |       |
|                     | 16:46 | 38            | 09:20 (LAR14) | 17:24         | 22    | 16:31 (LAR03) | 17:58         | 19:33 | 47            | 08:09 (LAR07) | 20:06 |
| 9                   | 07:28 | 08:42 (LAR14) | 07:06         | 16:10 (LAR03) | 06:24 | 06:32         | 07:23 (LAR07) | 05:48 | 05:26         |               |       |
|                     | 16:47 | 37            | 09:19 (LAR14) | 17:25         | 19    | 16:29 (LAR03) | 17:59         | 19:34 | 46            | 08:09 (LAR07) | 20:07 |
| 10                  | 07:28 | 08:43 (LAR14) | 07:04         | 16:12 (LAR03) | 06:23 | 06:30         | 07:23 (LAR07) | 05:47 | 05:25         |               |       |
|                     | 16:48 | 37            | 09:20 (LAR14) | 17:26         | 15    | 16:27 (LAR03) | 18:01         | 19:35 | 44            | 08:07 (LAR07) | 20:08 |
| 11                  | 07:28 | 08:44 (LAR14) | 07:03         | 16:16 (LAR03) | 06:21 | 06:29         | 07:23 (LAR07) | 05:46 | 05:25         |               |       |
|                     | 16:49 | 36            | 09:20 (LAR14) | 17:28         | 8     | 16:24 (LAR03) | 18:02         | 19:36 | 43            | 08:06 (LAR07) | 20:09 |
| 12                  | 07:28 | 08:44 (LAR14) | 07:02         | 16:19 (LAR03) | 06:19 | 06:27         | 07:24 (LAR07) | 05:45 | 05:25         |               |       |
|                     | 16:50 | 35            | 09:19 (LAR14) | 17:29         |       | 18:03         | 19:37         | 41    | 08:05 (LAR07) | 20:10         | 20:36 |
| 13                  | 07:27 | 08:46 (LAR14) | 07:01         | 16:16 (LAR03) | 06:18 | 06:25         | 07:24 (LAR07) | 05:44 | 05:25         |               |       |
|                     | 16:52 | 38            | 16:16 (LAR03) | 17:30         |       | 18:04         | 19:38         | 39    | 08:03 (LAR07) | 20:11         | 20:36 |
| 14                  | 07:27 | 08:48 (LAR14) | 06:59         | 16:20 (LAR03) | 06:16 | 06:24         | 07:26 (LAR07) | 05:43 | 05:25         |               |       |
|                     | 16:53 | 42            | 16:20 (LAR03) | 17:31         |       | 18:05         | 19:40         | 37    | 08:03 (LAR07) | 20:12         | 20:37 |
| 15                  | 07:26 | 08:48 (LAR14) | 06:58         | 16:21 (LAR03) | 06:14 | 06:22         | 07:26 (LAR07) | 05:42 | 05:25         |               |       |
|                     | 16:54 | 44            | 16:21 (LAR03) | 17:33         |       | 18:06         | 19:41         | 34    | 08:00 (LAR07) | 20:13         | 20:37 |
| 16                  | 07:26 | 08:50 (LAR14) | 06:57         | 16:24 (LAR03) | 06:13 | 06:21         | 07:27 (LAR07) | 05:41 | 05:25         |               |       |
|                     | 16:55 | 45            | 16:24 (LAR03) | 17:34         |       | 18:07         | 19:42         | 31    | 07:58 (LAR07) | 20:14         | 20:38 |
| 17                  | 07:26 | 08:51 (LAR14) | 06:55         | 16:25 (LAR03) | 06:11 | 06:19         | 07:29 (LAR07) | 05:40 | 05:25         |               |       |
|                     | 16:56 | 45            | 16:25 (LAR03) | 17:35         |       | 18:09         | 19:43         | 27    | 07:56 (LAR07) | 20:15         | 20:38 |
| 18                  | 07:25 | 08:53 (LAR14) | 06:54         | 16:25 (LAR03) | 06:10 | 06:17         | 07:31 (LAR07) | 05:39 | 05:25         |               |       |
|                     | 16:57 | 42            | 16:25 (LAR03) | 17:36         |       | 18:10         | 19:44         | 22    | 07:53 (LAR07) | 20:16         | 20:38 |
| 19                  | 07:25 | 08:56 (LAR14) | 06:52         | 16:27 (LAR03) | 06:08 | 06:16         | 07:34 (LAR07) | 05:38 | 05:25         |               |       |
|                     | 16:59 | 40            | 16:27 (LAR03) | 17:38         |       | 18:11         | 19:45         | 16    | 07:50 (LAR07) | 20:17         | 20:39 |
| 20                  | 07:24 | 08:58 (LAR14) | 06:51         | 16:28 (LAR03) | 06:06 | 06:14         | 07:40 (LAR07) | 05:37 | 05:25         |               |       |
|                     | 17:00 | 37            | 16:28 (LAR03) | 17:39         |       | 18:12         | 19:46         | 3     | 07:43 (LAR07) | 20:18         | 20:39 |
| 21                  | 07:23 | 16:02 (LAR03) | 06:49         | 16:30 (LAR03) | 06:04 | 06:13         | 07:43 (LAR07) | 05:36 | 05:25         |               |       |
|                     | 17:01 | 27            | 16:29 (LAR03) | 17:40         |       | 18:13         | 19:47         |       | 20:19         | 20:39         |       |
| 22                  | 07:23 | 16:03 (LAR03) | 06:48         | 16:30 (LAR03) | 06:02 | 06:11         | 07:44 (LAR07) | 05:35 | 05:26         |               |       |
|                     | 17:02 | 27            | 16:30 (LAR03) | 17:41         |       | 18:14         | 19:48         |       | 20:20         | 20:39         |       |
| 23                  | 07:22 | 16:02 (LAR03) | 06:47         | 16:31 (LAR03) | 06:01 | 06:10         | 07:45 (LAR07) | 05:34 | 05:26         |               |       |
|                     | 17:03 | 29            | 16:31 (LAR03) | 17:43         |       | 18:15         | 19:49         |       | 20:21         | 20:40         |       |
| 24                  | 07:21 | 16:02 (LAR03) | 06:45         | 16:32 (LAR03) | 05:59 | 06:08         | 07:46 (LAR07) | 05:33 | 05:26         |               |       |
|                     | 17:05 | 30            | 16:32 (LAR03) | 17:44         |       | 18:16         | 19:51         |       | 20:22         | 20:40         |       |
| 25                  | 07:20 | 16:02 (LAR03) | 06:44         | 16:33 (LAR03) | 05:57 | 06:06         | 07:47 (LAR07) | 05:32 | 05:26         |               |       |
|                     | 17:06 | 30            | 16:32 (LAR03) | 17:45         |       | 18:17         | 19:52         |       | 20:23         | 20:40         |       |
| 26                  | 07:20 | 16:01 (LAR03) | 06:42         | 16:34 (LAR03) | 05:56 | 06:05         | 07:48 (LAR07) | 05:31 | 05:27         |               |       |
|                     | 17:07 | 31            | 16:32 (LAR03) | 17:46         |       | 18:19         | 19:53         |       | 20:24         | 20:40         |       |
| 27                  | 07:19 | 16:02 (LAR03) | 06:40         | 16:35 (LAR03) | 05:54 | 06:04         | 07:49 (LAR07) | 05:30 | 05:27         |               |       |
|                     | 17:08 | 32            | 16:34 (LAR03) | 17:48         |       | 18:20         | 19:54         |       | 20:25         | 20:40         |       |
| 28                  | 07:18 | 16:02 (LAR03) | 06:39         | 16:36 (LAR03) | 05:52 | 06:02         | 07:50 (LAR07) | 05:29 | 05:27         |               |       |
|                     | 17:10 | 32            | 16:34 (LAR03) | 17:49         |       | 18:21         | 19:55         |       | 20:25         | 20:40         |       |
| 29                  | 07:17 | 16:02 (LAR03) | 06:38         | 16:37 (LAR03) | 05:50 | 06:01         | 07:51 (LAR07) | 05:28 | 05:28         |               |       |
|                     | 17:11 | 32            | 16:34 (LAR03) |               |       | 19:22         | 19:56         |       | 20:26         | 20:40         |       |
| 30                  | 07:16 | 16:03 (LAR03) | 06:37         | 16:38 (LAR03) | 05:49 | 06:00         | 07:52 (LAR07) | 05:27 | 05:28         |               |       |
|                     | 17:12 | 32            | 16:35 (LAR03) |               |       | 19:23         | 19:57         |       | 20:27         | 20:40         |       |
| 31                  | 07:15 | 16:03 (LAR03) | 06:36         | 16:39 (LAR03) | 05:47 | 06:00         | 07:53 (LAR07) | 05:26 | 05:29         |               |       |
|                     | 17:13 | 32            | 16:35 (LAR03) |               |       | 19:24         | 19:58         |       | 20:28         |               |       |
| Potential sun hours | 295   |               | 296           |               | 369   |               | 400           |       | 451           |               | 455   |
| Total, worst case   | 1138  |               | 267           |               | 500   |               | 775           |       |               |               |       |
| Sun reduction       | 0,44  |               | 0,46          |               | 0,44  |               | 0,48          |       |               |               |       |
| Oper. time red.     | 0,70  |               | 0,70          |               | 0,70  |               | 0,70          |       |               |               |       |
| Wind dir. red.      | 0,63  |               | 0,56          |               | 0,62  |               | 0,62          |       |               |               |       |
| Total reduction     | 0,19  |               | 0,18          |               | 0,19  |               | 0,21          |       |               |               |       |
| Total, real         | 222   |               | 48            |               | 96    |               | 162           |       |               |               |       |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R70 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (55)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                     | July           | August         | September      | October                        | November       | December               |
|---------------------|----------------|----------------|----------------|--------------------------------|----------------|------------------------|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 07:22 (LAR07)<br>08:05 (LAR07) | 06:57<br>18:44 | 06:32<br>15:42 (LAR03) |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 07:21 (LAR07)<br>08:05 (LAR07) | 06:58<br>18:42 | 06:33<br>15:39 (LAR03) |
| 3                   | 05:30<br>20:40 | 05:55<br>20:18 | 06:27<br>19:33 | 07:20 (LAR07)<br>08:06 (LAR07) | 06:59<br>18:41 | 06:34<br>15:38 (LAR03) |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 07:19 (LAR07)<br>08:06 (LAR07) | 07:00<br>18:39 | 06:36<br>15:37 (LAR03) |
| 5                   | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:18 (LAR07)<br>08:06 (LAR07) | 07:01<br>18:37 | 06:37<br>15:36 (LAR03) |
| 6                   | 05:32<br>20:39 | 05:58<br>20:14 | 06:31<br>19:27 | 07:18 (LAR07)<br>08:06 (LAR07) | 07:02<br>18:36 | 06:38<br>15:35 (LAR03) |
| 7                   | 05:32<br>20:39 | 05:59<br>20:13 | 06:32<br>19:26 | 07:17 (LAR07)<br>08:06 (LAR07) | 07:03<br>18:34 | 06:39<br>15:35 (LAR03) |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:16 (LAR07)<br>08:06 (LAR07) | 07:04<br>18:32 | 06:41<br>15:34 (LAR03) |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:16 (LAR07)<br>08:06 (LAR07) | 07:05<br>18:31 | 06:42<br>15:34 (LAR03) |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:16 (LAR07)<br>08:06 (LAR07) | 07:06<br>18:29 | 06:43<br>15:34 (LAR03) |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:16 (LAR07)<br>08:05 (LAR07) | 07:07<br>18:27 | 06:44<br>15:34 (LAR03) |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:15 (LAR07)<br>08:05 (LAR07) | 07:09<br>18:26 | 06:45<br>15:33 (LAR03) |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:15 (LAR07)<br>08:04 (LAR07) | 07:10<br>18:24 | 06:47<br>15:34 (LAR03) |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:16 (LAR07)<br>08:03 (LAR07) | 07:11<br>18:22 | 06:48<br>15:34 (LAR03) |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:16 (LAR07)<br>08:02 (LAR07) | 07:12<br>18:21 | 06:49<br>15:34 (LAR03) |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:16 (LAR07)<br>08:01 (LAR07) | 07:13<br>18:19 | 06:50<br>15:35 (LAR03) |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 | 07:16 (LAR07)<br>08:00 (LAR07) | 07:14<br>18:18 | 06:52<br>15:36 (LAR03) |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:17 (LAR07)<br>07:59 (LAR07) | 07:15<br>18:16 | 06:53<br>15:36 (LAR03) |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:18 (LAR07)<br>07:57 (LAR07) | 07:17<br>18:15 | 06:54<br>15:36 (LAR03) |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:19 (LAR07)<br>07:56 (LAR07) | 07:18<br>18:13 | 06:55<br>15:38 (LAR03) |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:20 (LAR07)<br>07:54 (LAR07) | 07:19<br>18:12 | 06:56<br>15:38 (LAR03) |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:21 (LAR07)<br>07:52 (LAR07) | 07:20<br>18:10 | 06:58<br>15:39 (LAR03) |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:23 (LAR07)<br>07:50 (LAR07) | 07:21<br>18:09 | 06:59<br>15:40 (LAR03) |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:26 (LAR07)<br>07:45 (LAR07) | 07:22<br>18:07 | 07:00<br>15:44 (LAR03) |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:34 (LAR07)<br>07:57 (LAR07) | 06:24<br>17:06 | 07:01<br>15:44 (LAR03) |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:32 (LAR07)<br>08:00 (LAR07) | 06:25<br>17:04 | 07:02<br>15:44 (LAR03) |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:30 (LAR07)<br>08:01 (LAR07) | 06:26<br>17:03 | 07:03<br>15:44 (LAR03) |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:28 (LAR07)<br>08:02 (LAR07) | 06:27<br>17:02 | 07:05<br>15:44 (LAR03) |
| 29                  | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:27 (LAR07)<br>08:04 (LAR07) | 06:28<br>17:00 | 07:06<br>15:44 (LAR03) |
| 30                  | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:24 (LAR07)<br>08:03 (LAR07) | 06:30<br>16:59 | 07:07<br>15:44 (LAR03) |
| 31                  | 05:52<br>20:21 | 06:24<br>19:38 | 06:56<br>18:44 | 07:23 (LAR07)<br>08:04 (LAR07) | 06:31<br>16:58 | 07:08<br>15:44 (LAR03) |
| Potential sun hours | 462            | 430            | 375            | 344                            | 296            | 285                    |
| Total, worst case   |                | 257            | 1042           |                                | 963            | 1323                   |
| Sun reduction       |                | 0,67           | 0,58           |                                | 0,41           | 0,36                   |
| Oper. time red.     |                | 0,70           | 0,70           |                                | 0,70           | 0,70                   |
| Wind dir. red.      |                | 0,62           | 0,62           |                                | 0,59           | 0,68                   |
| Total reduction     |                | 0,29           | 0,25           |                                | 0,17           | 0,17                   |
| Total, real         |                | 75             | 264            |                                | 161            | 228                    |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R71 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (56)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     |       | January          |       | February |               | March |               | April |       | May   |  | June |  |
|---------------------|-------|------------------|-------|----------|---------------|-------|---------------|-------|-------|-------|--|------|--|
| 1                   | 07:28 | 15:39 (LAR03)    | 07:14 |          |               | 06:37 | 07:19 (LAR07) | 06:45 | 05:58 | 05:29 |  |      |  |
|                     | 16:40 | 27 16:06 (LAR03) | 17:15 |          |               | 17:50 | 08:09 (LAR07) | 19:25 | 19:58 | 20:29 |  |      |  |
| 2                   | 07:29 | 15:39 (LAR03)    | 07:13 |          |               | 06:36 | 07:18 (LAR07) | 06:44 | 05:57 | 05:28 |  |      |  |
|                     | 16:41 | 28 16:07 (LAR03) | 17:16 |          |               | 17:51 | 08:09 (LAR07) | 19:26 | 19:59 | 20:29 |  |      |  |
| 3                   | 07:29 | 15:40 (LAR03)    | 07:12 |          |               | 06:34 | 07:17 (LAR07) | 06:42 | 05:56 | 05:28 |  |      |  |
|                     | 16:41 | 27 16:07 (LAR03) | 17:17 |          |               | 17:52 | 08:08 (LAR07) | 19:27 | 20:00 | 20:30 |  |      |  |
| 4                   | 07:29 | 15:40 (LAR03)    | 07:11 |          |               | 06:33 | 07:17 (LAR07) | 06:40 | 05:54 | 05:27 |  |      |  |
|                     | 16:42 | 28 16:08 (LAR03) | 17:19 |          |               | 17:53 | 08:09 (LAR07) | 19:29 | 20:02 | 20:31 |  |      |  |
| 5                   | 07:29 | 15:40 (LAR03)    | 07:10 |          |               | 06:31 | 07:17 (LAR07) | 06:39 | 05:53 | 05:27 |  |      |  |
|                     | 16:43 | 29 16:09 (LAR03) | 17:20 |          |               | 17:55 | 08:08 (LAR07) | 19:30 | 20:03 | 20:32 |  |      |  |
| 6                   | 07:29 | 15:41 (LAR03)    | 07:09 |          |               | 06:29 | 07:16 (LAR07) | 06:37 | 05:52 | 05:26 |  |      |  |
|                     | 16:44 | 28 16:09 (LAR03) | 17:21 |          |               | 17:56 | 08:08 (LAR07) | 19:31 | 20:04 | 20:32 |  |      |  |
| 7                   | 07:29 | 15:41 (LAR03)    | 07:08 |          |               | 06:28 | 07:17 (LAR07) | 06:35 | 05:51 | 05:26 |  |      |  |
|                     | 16:45 | 29 16:10 (LAR03) | 17:22 |          |               | 17:57 | 08:08 (LAR07) | 19:32 | 20:05 | 20:33 |  |      |  |
| 8                   | 07:28 | 15:42 (LAR03)    | 07:07 |          |               | 06:26 | 07:16 (LAR07) | 06:34 | 05:49 | 05:26 |  |      |  |
|                     | 16:46 | 29 16:11 (LAR03) | 17:24 |          |               | 17:58 | 08:07 (LAR07) | 19:33 | 20:06 | 20:34 |  |      |  |
| 9                   | 07:28 | 15:41 (LAR03)    | 07:06 |          |               | 06:24 | 07:16 (LAR07) | 06:32 | 05:48 | 05:26 |  |      |  |
|                     | 16:47 | 29 16:10 (LAR03) | 17:25 |          |               | 17:59 | 08:06 (LAR07) | 19:34 | 20:07 | 20:34 |  |      |  |
| 10                  | 07:28 | 15:42 (LAR03)    | 07:04 |          |               | 06:23 | 07:17 (LAR07) | 06:30 | 05:47 | 05:25 |  |      |  |
|                     | 16:48 | 29 16:11 (LAR03) | 17:26 |          |               | 18:01 | 08:06 (LAR07) | 19:35 | 20:08 | 20:35 |  |      |  |
| 11                  | 07:28 | 15:43 (LAR03)    | 07:03 |          |               | 06:21 | 07:17 (LAR07) | 06:29 | 05:46 | 05:25 |  |      |  |
|                     | 16:49 | 29 16:12 (LAR03) | 17:28 |          |               | 18:02 | 08:05 (LAR07) | 19:36 | 20:09 | 20:35 |  |      |  |
| 12                  | 07:28 | 15:43 (LAR03)    | 07:02 |          |               | 06:19 | 07:17 (LAR07) | 06:27 | 05:45 | 05:25 |  |      |  |
|                     | 16:50 | 29 16:12 (LAR03) | 17:29 |          |               | 18:03 | 08:03 (LAR07) | 19:37 | 20:10 | 20:36 |  |      |  |
| 13                  | 07:27 | 15:43 (LAR03)    | 07:01 |          |               | 06:18 | 07:18 (LAR07) | 06:25 | 05:44 | 05:25 |  |      |  |
|                     | 16:52 | 29 16:12 (LAR03) | 17:30 |          |               | 18:04 | 08:03 (LAR07) | 19:38 | 20:11 | 20:36 |  |      |  |
| 14                  | 07:27 | 15:44 (LAR03)    | 06:59 |          |               | 06:16 | 07:19 (LAR07) | 06:24 | 05:43 | 05:25 |  |      |  |
|                     | 16:53 | 29 16:13 (LAR03) | 17:31 |          |               | 18:05 | 08:01 (LAR07) | 19:40 | 20:12 | 20:37 |  |      |  |
| 15                  | 07:26 | 15:44 (LAR03)    | 06:58 |          |               | 06:14 | 07:19 (LAR07) | 06:22 | 05:42 | 05:25 |  |      |  |
|                     | 16:54 | 29 16:13 (LAR03) | 17:33 |          |               | 18:06 | 08:00 (LAR07) | 19:41 | 20:13 | 20:37 |  |      |  |
| 16                  | 07:26 | 15:45 (LAR03)    | 06:57 |          | 07:42 (LAR07) | 06:13 | 07:21 (LAR07) | 06:21 | 05:41 | 05:25 |  |      |  |
|                     | 16:55 | 28 16:13 (LAR03) | 17:34 | 6        | 07:48 (LAR07) | 18:07 | 07:59 (LAR07) | 19:42 | 20:14 | 20:38 |  |      |  |
| 17                  | 07:26 | 15:46 (LAR03)    | 06:55 |          | 07:36 (LAR07) | 06:11 | 07:22 (LAR07) | 06:19 | 05:40 | 05:25 |  |      |  |
|                     | 16:56 | 27 16:13 (LAR03) | 17:35 | 18       | 07:54 (LAR07) | 18:09 | 07:56 (LAR07) | 19:43 | 20:15 | 20:38 |  |      |  |
| 18                  | 07:25 | 15:46 (LAR03)    | 06:54 |          | 07:33 (LAR07) | 06:09 | 07:23 (LAR07) | 06:17 | 05:39 | 05:25 |  |      |  |
|                     | 16:57 | 27 16:13 (LAR03) | 17:36 | 24       | 07:57 (LAR07) | 18:10 | 07:54 (LAR07) | 19:44 | 20:16 | 20:38 |  |      |  |
| 19                  | 07:25 | 15:47 (LAR03)    | 06:52 |          | 07:31 (LAR07) | 06:08 | 07:24 (LAR07) | 06:16 | 05:38 | 05:25 |  |      |  |
|                     | 16:58 | 26 16:13 (LAR03) | 17:38 | 29       | 08:00 (LAR07) | 18:11 | 07:51 (LAR07) | 19:45 | 20:17 | 20:39 |  |      |  |
| 20                  | 07:24 | 15:48 (LAR03)    | 06:51 |          | 07:28 (LAR07) | 06:06 | 07:27 (LAR07) | 06:14 | 05:37 | 05:25 |  |      |  |
|                     | 17:00 | 25 16:13 (LAR03) | 17:39 | 33       | 08:01 (LAR07) | 18:12 | 07:49 (LAR07) | 19:46 | 20:18 | 20:39 |  |      |  |
| 21                  | 07:23 | 15:48 (LAR03)    | 06:49 |          | 07:27 (LAR07) | 06:04 | 07:31 (LAR07) | 06:13 | 05:36 | 05:25 |  |      |  |
|                     | 17:01 | 24 16:12 (LAR03) | 17:40 | 36       | 08:03 (LAR07) | 18:13 | 07:44 (LAR07) | 19:47 | 20:19 | 20:39 |  |      |  |
| 22                  | 07:23 | 15:50 (LAR03)    | 06:48 |          | 07:25 (LAR07) | 06:02 |               | 06:11 | 05:35 | 05:26 |  |      |  |
|                     | 17:02 | 22 16:12 (LAR03) | 17:41 | 39       | 08:04 (LAR07) | 18:14 |               | 19:48 | 20:20 | 20:39 |  |      |  |
| 23                  | 07:22 | 15:51 (LAR03)    | 06:47 |          | 07:24 (LAR07) | 06:01 |               | 06:10 | 05:34 | 05:26 |  |      |  |
|                     | 17:03 | 21 16:12 (LAR03) | 17:43 | 41       | 08:05 (LAR07) | 18:15 |               | 19:49 | 20:21 | 20:40 |  |      |  |
| 24                  | 07:21 | 15:52 (LAR03)    | 06:45 |          | 07:22 (LAR07) | 05:59 |               | 06:08 | 05:34 | 05:26 |  |      |  |
|                     | 17:05 | 19 16:11 (LAR03) | 17:44 | 44       | 08:06 (LAR07) | 18:16 |               | 19:51 | 20:22 | 20:40 |  |      |  |
| 25                  | 07:20 | 15:54 (LAR03)    | 06:44 |          | 07:22 (LAR07) | 05:57 |               | 06:07 | 05:33 | 05:26 |  |      |  |
|                     | 17:06 | 15 16:09 (LAR03) | 17:45 | 45       | 08:07 (LAR07) | 18:17 |               | 19:52 | 20:23 | 20:40 |  |      |  |
| 26                  | 07:20 | 15:56 (LAR03)    | 06:42 |          | 07:20 (LAR07) | 05:56 |               | 06:05 | 05:32 | 05:27 |  |      |  |
|                     | 17:07 | 11 16:07 (LAR03) | 17:46 | 47       | 08:07 (LAR07) | 18:19 |               | 19:53 | 20:24 | 20:40 |  |      |  |
| 27                  | 07:19 | 16:01 (LAR03)    | 06:40 |          | 07:20 (LAR07) | 05:54 |               | 06:04 | 05:31 | 05:27 |  |      |  |
|                     | 17:08 | 4 16:05 (LAR03)  | 17:48 | 48       | 08:08 (LAR07) | 18:20 |               | 19:54 | 20:25 | 20:40 |  |      |  |
| 28                  | 07:18 |                  | 06:39 |          | 07:19 (LAR07) | 05:52 |               | 06:02 | 05:31 | 05:27 |  |      |  |
|                     | 17:10 |                  | 17:49 | 49       | 08:08 (LAR07) | 18:21 |               | 19:55 | 20:25 | 20:40 |  |      |  |
| 29                  | 07:17 |                  |       |          |               | 06:50 |               | 06:01 | 05:30 | 05:28 |  |      |  |
|                     | 17:11 |                  |       |          |               | 19:22 |               | 19:56 | 20:26 | 20:40 |  |      |  |
| 30                  | 07:16 |                  |       |          |               | 06:49 |               | 06:00 | 05:30 | 05:28 |  |      |  |
|                     | 17:12 |                  |       |          |               | 19:23 |               | 19:57 | 20:27 | 20:40 |  |      |  |
| 31                  | 07:15 |                  |       |          |               | 06:47 |               |       | 05:29 |       |  |      |  |
|                     | 17:13 |                  |       |          |               | 19:24 |               |       | 20:28 |       |  |      |  |
| Potential sun hours | 295   |                  | 296   |          |               | 369   |               | 400   | 451   | 455   |  |      |  |
| Total, worst case   |       | 677              |       | 459      |               |       | 895           |       |       |       |  |      |  |
| Sun reduction       |       | 0,44             |       | 0,46     |               |       | 0,44          |       |       |       |  |      |  |
| Oper. time red.     |       | 0,70             |       | 0,70     |               |       | 0,70          |       |       |       |  |      |  |
| Wind dir. red.      |       | 0,55             |       | 0,65     |               |       | 0,65          |       |       |       |  |      |  |
| Total reduction     |       | 0,17             |       | 0,21     |               |       | 0,20          |       |       |       |  |      |  |
| Total, real         |       | 115              |       | 95       |               |       | 178           |       |       |       |  |      |  |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|



### SHADOW - Calendar

Shadow receptor: R71 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (56)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October        | November                       | December       |                                   |
|---------------------|----------------|----------------|----------------|----------------|--------------------------------|----------------|-----------------------------------|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 07:57 (LAR07)<br>18:44 (LAR07) | 06:32<br>16:31 | 15:25 (LAR03)<br>29 15:54 (LAR03) |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 07:56 (LAR07)<br>08:43 (LAR07) | 06:33<br>16:55 | 15:25 (LAR03)<br>29 15:54 (LAR03) |
| 3                   | 05:30<br>20:40 | 05:55<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 07:55 (LAR07)<br>08:43 (LAR07) | 06:34<br>16:54 | 15:26 (LAR03)<br>28 15:54 (LAR03) |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 07:00<br>18:39 | 07:54 (LAR07)<br>08:44 (LAR07) | 06:36<br>16:53 | 15:26 (LAR03)<br>29 15:55 (LAR03) |
| 5                   | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 07:53 (LAR07)<br>08:44 (LAR07) | 06:37<br>16:51 | 15:26 (LAR03)<br>29 15:55 (LAR03) |
| 6                   | 05:32<br>20:39 | 05:58<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 07:53 (LAR07)<br>08:44 (LAR07) | 06:38<br>16:50 | 15:27 (LAR03)<br>28 15:55 (LAR03) |
| 7                   | 05:32<br>20:39 | 05:59<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 07:52 (LAR07)<br>08:43 (LAR07) | 06:39<br>16:49 | 15:27 (LAR03)<br>29 15:56 (LAR03) |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 07:53 (LAR07)<br>08:44 (LAR07) | 06:41<br>16:48 | 15:28 (LAR03)<br>28 15:56 (LAR03) |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 07:52 (LAR07)<br>08:44 (LAR07) | 06:42<br>16:47 | 15:29 (LAR03)<br>27 15:56 (LAR03) |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 07:52 (LAR07)<br>08:43 (LAR07) | 06:43<br>16:46 | 15:29 (LAR03)<br>28 15:57 (LAR03) |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 07:52 (LAR07)<br>08:43 (LAR07) | 06:44<br>16:45 | 15:30 (LAR03)<br>27 15:57 (LAR03) |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 07:52 (LAR07)<br>08:42 (LAR07) | 06:45<br>16:44 | 15:30 (LAR03)<br>27 15:57 (LAR03) |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 07:52 (LAR07)<br>08:41 (LAR07) | 06:47<br>16:43 | 15:31 (LAR03)<br>26 15:57 (LAR03) |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 07:52 (LAR07)<br>08:41 (LAR07) | 06:48<br>16:42 | 15:31 (LAR03)<br>27 15:58 (LAR03) |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 07:53 (LAR07)<br>08:41 (LAR07) | 06:49<br>16:41 | 15:32 (LAR03)<br>26 15:58 (LAR03) |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 07:53 (LAR07)<br>08:40 (LAR07) | 06:50<br>16:40 | 15:32 (LAR03)<br>11 15:41 (LAR03) |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 07:54 (LAR07)<br>08:38 (LAR07) | 06:52<br>16:39 | 15:33 (LAR03)<br>15 15:43 (LAR03) |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 07:54 (LAR07)<br>08:37 (LAR07) | 06:53<br>16:38 | 15:34 (LAR03)<br>19 15:45 (LAR03) |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:17<br>18:15 | 07:55 (LAR07)<br>08:36 (LAR07) | 06:54<br>16:38 | 15:34 (LAR03)<br>21 15:46 (LAR03) |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 07:57 (LAR07)<br>08:35 (LAR07) | 06:55<br>16:37 | 15:35 (LAR03)<br>22 15:47 (LAR03) |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 07:58 (LAR07)<br>08:33 (LAR07) | 06:56<br>16:36 | 15:35 (LAR03)<br>24 15:48 (LAR03) |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 07:59 (LAR07)<br>08:31 (LAR07) | 06:58<br>16:35 | 15:36 (LAR03)<br>25 15:49 (LAR03) |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 08:01 (LAR07)<br>08:29 (LAR07) | 06:59<br>16:35 | 15:36 (LAR03)<br>26 15:49 (LAR03) |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 08:04 (LAR07)<br>08:27 (LAR07) | 07:00<br>16:34 | 15:37 (LAR03)<br>27 15:51 (LAR03) |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 07:23<br>17:06 | 08:07 (LAR07)<br>07:23 (LAR07) | 07:01<br>16:34 | 15:37 (LAR03)<br>16 07:23 (LAR07) |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:24<br>17:04 | 08:05 (LAR07)<br>08:38 (LAR07) | 07:02<br>16:33 | 15:37 (LAR03)<br>27 15:51 (LAR03) |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:25<br>17:03 | 08:03 (LAR07)<br>08:40 (LAR07) | 07:03<br>16:33 | 15:38 (LAR03)<br>29 15:52 (LAR03) |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:26<br>17:02 | 08:01 (LAR07)<br>08:41 (LAR07) | 07:05<br>16:32 | 15:38 (LAR03)<br>29 15:52 (LAR03) |
| 29                  | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:27<br>17:00 | 07:59 (LAR07)<br>08:42 (LAR07) | 07:06<br>16:32 | 15:38 (LAR03)<br>28 15:53 (LAR03) |
| 30                  | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:28<br>16:59 | 07:58 (LAR07)<br>08:42 (LAR07) | 07:07<br>16:31 | 15:38 (LAR03)<br>29 15:54 (LAR03) |
| 31                  | 05:52<br>20:21 | 06:24<br>19:38 |                | 06:31<br>16:58 |                                |                | 15:39 (LAR03)<br>26 16:05 (LAR03) |
| Potential sun hours | 462            | 430            | 375            | 344            | 296                            | 285            |                                   |
| Total, worst case   |                |                | 281            | 1092           | 363                            | 827            |                                   |
| Sun reduction       |                |                | 0,58           | 0,44           | 0,41                           | 0,36           |                                   |
| Oper. time red.     |                |                | 0,70           | 0,70           | 0,70                           | 0,70           |                                   |
| Wind dir. red.      |                |                | 0,65           | 0,65           | 0,55                           | 0,55           |                                   |
| Total reduction     |                |                | 0,26           | 0,20           | 0,16                           | 0,14           |                                   |
| Total, real         |                |                | 74             | 215            | 56                             | 115            |                                   |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

**SHADOW - Calendar**

**Shadow receptor:** R72 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (57)

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| January             |       |                  | February |                  |       | March            |       |                  | April |       |     | May |  |  | June |  |  |
|---------------------|-------|------------------|----------|------------------|-------|------------------|-------|------------------|-------|-------|-----|-----|--|--|------|--|--|
| 1                   | 07:28 | 14:40 (LAR03)    | 07:14    | 07:49 (LAR14)    | 06:37 | 17:20 (LAR02)    | 06:45 | 07:20 (LAR07)    | 05:58 | 05:29 |     |     |  |  |      |  |  |
|                     | 16:40 | 37 15:17 (LAR03) | 17:15    | 31 08:20 (LAR14) | 17:50 | 9 17:29 (LAR02)  | 19:25 | 26 07:46 (LAR07) | 19:58 | 20:29 |     |     |  |  |      |  |  |
| 2                   | 07:29 | 14:41 (LAR03)    | 07:13    | 07:50 (LAR14)    | 06:36 | 17:19 (LAR02)    | 06:44 | 07:20 (LAR07)    | 05:57 | 05:28 |     |     |  |  |      |  |  |
|                     | 16:41 | 36 15:17 (LAR03) | 17:16    | 30 08:20 (LAR14) | 17:51 | 11 17:30 (LAR02) | 19:26 | 25 07:45 (LAR07) | 19:59 | 20:29 |     |     |  |  |      |  |  |
| 3                   | 07:29 | 14:42 (LAR03)    | 07:12    | 07:51 (LAR14)    | 06:34 | 17:18 (LAR02)    | 06:42 | 07:22 (LAR07)    | 05:56 | 05:28 |     |     |  |  |      |  |  |
|                     | 16:42 | 35 15:17 (LAR03) | 17:17    | 29 08:20 (LAR14) | 17:52 | 12 17:30 (LAR02) | 19:27 | 22 07:44 (LAR07) | 20:00 | 20:30 |     |     |  |  |      |  |  |
| 4                   | 07:29 | 14:42 (LAR03)    | 07:11    | 07:51 (LAR14)    | 06:33 | 17:18 (LAR02)    | 06:40 | 07:23 (LAR07)    | 05:54 | 05:27 |     |     |  |  |      |  |  |
|                     | 16:42 | 35 15:17 (LAR03) | 17:19    | 27 08:18 (LAR14) | 17:54 | 14 17:32 (LAR02) | 19:29 | 18 07:41 (LAR07) | 20:02 | 20:31 |     |     |  |  |      |  |  |
| 5                   | 07:29 | 14:43 (LAR03)    | 07:10    | 07:52 (LAR14)    | 06:31 | 17:18 (LAR02)    | 06:39 | 07:25 (LAR07)    | 05:53 | 05:27 |     |     |  |  |      |  |  |
|                     | 16:43 | 35 15:18 (LAR03) | 17:20    | 26 08:18 (LAR14) | 17:55 | 15 17:33 (LAR02) | 19:30 | 13 07:38 (LAR07) | 20:03 | 20:32 |     |     |  |  |      |  |  |
| 6                   | 07:29 | 14:45 (LAR03)    | 07:09    | 07:53 (LAR14)    | 06:29 | 17:18 (LAR02)    | 06:37 |                  | 05:52 | 05:27 |     |     |  |  |      |  |  |
|                     | 16:44 | 33 15:18 (LAR03) | 17:21    | 24 08:17 (LAR14) | 17:56 | 16 17:34 (LAR02) | 19:31 |                  | 20:04 | 20:32 |     |     |  |  |      |  |  |
| 7                   | 07:29 | 14:46 (LAR03)    | 07:08    | 07:54 (LAR14)    | 06:28 | 17:19 (LAR02)    | 06:35 |                  | 05:51 | 05:26 |     |     |  |  |      |  |  |
|                     | 16:45 | 32 15:18 (LAR03) | 17:23    | 22 08:16 (LAR14) | 17:57 | 17 17:36 (LAR02) | 19:32 |                  | 20:05 | 20:33 |     |     |  |  |      |  |  |
| 8                   | 07:28 | 14:47 (LAR03)    | 07:07    | 07:56 (LAR14)    | 06:26 | 17:19 (LAR02)    | 06:34 |                  | 05:49 | 05:26 |     |     |  |  |      |  |  |
|                     | 16:46 | 31 15:18 (LAR03) | 17:24    | 19 08:15 (LAR14) | 17:58 | 16 17:35 (LAR02) | 19:33 |                  | 20:06 | 20:34 |     |     |  |  |      |  |  |
| 9                   | 07:28 | 14:47 (LAR03)    | 07:06    | 07:58 (LAR14)    | 06:24 | 17:21 (LAR02)    | 06:32 |                  | 05:48 | 05:26 |     |     |  |  |      |  |  |
|                     | 16:47 | 30 15:17 (LAR03) | 17:25    | 14 08:12 (LAR14) | 17:59 | 12 17:33 (LAR02) | 19:34 |                  | 20:07 | 20:34 |     |     |  |  |      |  |  |
| 10                  | 07:28 | 14:49 (LAR03)    | 07:04    | 08:02 (LAR14)    | 06:23 | 17:24 (LAR02)    | 06:30 |                  | 05:47 | 05:25 |     |     |  |  |      |  |  |
|                     | 16:48 | 28 15:17 (LAR03) | 17:26    | 7 08:09 (LAR14)  | 18:01 | 7 17:31 (LAR02)  | 19:35 |                  | 20:08 | 20:35 |     |     |  |  |      |  |  |
| 11                  | 07:28 | 07:57 (LAR14)    | 07:03    |                  | 06:21 |                  | 06:29 |                  | 05:46 | 05:25 |     |     |  |  |      |  |  |
|                     | 16:49 | 30 15:17 (LAR03) | 17:28    |                  | 18:02 |                  | 19:36 |                  | 20:09 | 20:35 |     |     |  |  |      |  |  |
| 12                  | 07:28 | 07:53 (LAR14)    | 07:02    |                  | 06:19 |                  | 06:27 |                  | 05:45 | 05:25 |     |     |  |  |      |  |  |
|                     | 16:50 | 34 15:15 (LAR03) | 17:29    |                  | 18:03 |                  | 19:37 |                  | 20:10 | 20:36 |     |     |  |  |      |  |  |
| 13                  | 07:27 | 07:52 (LAR14)    | 07:01    |                  | 06:18 |                  | 06:25 |                  | 05:44 | 05:25 |     |     |  |  |      |  |  |
|                     | 16:52 | 35 15:15 (LAR03) | 17:30    |                  | 18:04 |                  | 19:38 |                  | 20:11 | 20:36 |     |     |  |  |      |  |  |
| 14                  | 07:27 | 07:52 (LAR14)    | 06:59    |                  | 06:16 |                  | 06:24 |                  | 05:43 | 05:25 |     |     |  |  |      |  |  |
|                     | 16:53 | 34 15:14 (LAR03) | 17:31    |                  | 18:05 |                  | 19:40 |                  | 20:12 | 20:37 |     |     |  |  |      |  |  |
| 15                  | 07:26 | 07:51 (LAR14)    | 06:58    |                  | 06:14 |                  | 06:22 |                  | 05:42 | 05:25 |     |     |  |  |      |  |  |
|                     | 16:54 | 32 15:12 (LAR03) | 17:33    |                  | 18:06 |                  | 19:41 |                  | 20:13 | 20:37 |     |     |  |  |      |  |  |
| 16                  | 07:26 | 07:50 (LAR14)    | 06:57    |                  | 06:13 |                  | 06:21 |                  | 05:41 | 05:25 |     |     |  |  |      |  |  |
|                     | 16:55 | 26 15:08 (LAR03) | 17:34    |                  | 18:07 |                  | 19:42 |                  | 20:14 | 20:38 |     |     |  |  |      |  |  |
| 17                  | 07:26 | 07:49 (LAR14)    | 06:55    |                  | 06:11 |                  | 06:19 |                  | 05:40 | 05:25 |     |     |  |  |      |  |  |
|                     | 16:56 | 23 08:12 (LAR14) | 17:35    |                  | 18:09 |                  | 19:43 |                  | 20:15 | 20:38 |     |     |  |  |      |  |  |
| 18                  | 07:25 | 07:49 (LAR14)    | 06:54    |                  | 06:09 |                  | 06:17 |                  | 05:39 | 05:25 |     |     |  |  |      |  |  |
|                     | 16:57 | 24 08:13 (LAR14) | 17:36    |                  | 18:10 | 13 06:31 (LAR07) | 19:44 |                  | 20:16 | 20:38 |     |     |  |  |      |  |  |
| 19                  | 07:25 | 07:49 (LAR14)    | 06:52    |                  | 06:08 |                  | 06:16 |                  | 05:38 | 05:25 |     |     |  |  |      |  |  |
|                     | 16:59 | 25 08:14 (LAR14) | 17:38    |                  | 18:11 | 18 06:46 (LAR07) | 19:45 |                  | 20:17 | 20:39 |     |     |  |  |      |  |  |
| 20                  | 07:24 | 07:48 (LAR14)    | 06:51    |                  | 06:06 |                  | 06:14 |                  | 05:37 | 05:25 |     |     |  |  |      |  |  |
|                     | 17:00 | 27 08:15 (LAR14) | 17:39    |                  | 18:12 | 21 06:48 (LAR07) | 19:46 |                  | 20:18 | 20:39 |     |     |  |  |      |  |  |
| 21                  | 07:23 | 07:48 (LAR14)    | 06:49    |                  | 06:04 |                  | 06:13 |                  | 05:36 | 05:25 |     |     |  |  |      |  |  |
|                     | 17:01 | 28 08:16 (LAR14) | 17:40    |                  | 18:13 | 24 06:49 (LAR07) | 19:47 |                  | 20:19 | 20:39 |     |     |  |  |      |  |  |
| 22                  | 07:23 | 07:48 (LAR14)    | 06:48    |                  | 06:02 |                  | 06:11 |                  | 05:35 | 05:26 |     |     |  |  |      |  |  |
|                     | 17:02 | 29 08:17 (LAR14) | 17:41    |                  | 18:14 | 27 06:50 (LAR07) | 19:48 |                  | 20:20 | 20:39 |     |     |  |  |      |  |  |
| 23                  | 07:22 | 07:48 (LAR14)    | 06:47    |                  | 06:01 |                  | 06:10 |                  | 05:34 | 05:26 |     |     |  |  |      |  |  |
|                     | 17:03 | 30 08:18 (LAR14) | 17:43    |                  | 18:15 | 28 06:50 (LAR07) | 19:49 |                  | 20:21 | 20:40 |     |     |  |  |      |  |  |
| 24                  | 07:21 | 07:47 (LAR14)    | 06:45    |                  | 05:59 |                  | 06:08 |                  | 05:34 | 05:26 |     |     |  |  |      |  |  |
|                     | 17:05 | 31 08:18 (LAR14) | 17:44    |                  | 18:16 | 30 06:51 (LAR07) | 19:51 |                  | 20:22 | 20:40 |     |     |  |  |      |  |  |
| 25                  | 07:21 | 07:47 (LAR14)    | 06:44    |                  | 05:57 |                  | 06:07 |                  | 05:33 | 05:26 |     |     |  |  |      |  |  |
|                     | 17:06 | 31 08:18 (LAR14) | 17:45    |                  | 18:17 | 31 06:51 (LAR07) | 19:52 |                  | 20:23 | 20:40 |     |     |  |  |      |  |  |
| 26                  | 07:20 | 07:48 (LAR14)    | 06:42    |                  | 05:56 |                  | 06:05 |                  | 05:32 | 05:27 |     |     |  |  |      |  |  |
|                     | 17:07 | 32 08:20 (LAR14) | 17:46    |                  | 18:19 | 30 06:50 (LAR07) | 19:53 |                  | 20:24 | 20:40 |     |     |  |  |      |  |  |
| 27                  | 07:19 | 07:48 (LAR14)    | 06:40    |                  | 05:54 |                  | 06:04 |                  | 05:31 | 05:27 |     |     |  |  |      |  |  |
|                     | 17:08 | 32 08:20 (LAR14) | 17:48    | 4 17:22 (LAR02)  | 18:20 | 31 06:51 (LAR07) | 19:54 |                  | 20:25 | 20:40 |     |     |  |  |      |  |  |
| 28                  | 07:18 | 07:48 (LAR14)    | 06:39    |                  | 05:52 |                  | 06:03 |                  | 05:31 | 05:28 |     |     |  |  |      |  |  |
|                     | 17:10 | 32 08:20 (LAR14) | 17:49    | 6 17:27 (LAR02)  | 18:21 | 31 06:50 (LAR07) | 19:55 |                  | 20:25 | 20:40 |     |     |  |  |      |  |  |
| 29                  | 07:17 | 07:48 (LAR14)    |          |                  | 06:50 |                  | 06:01 |                  | 05:30 | 05:28 |     |     |  |  |      |  |  |
|                     | 17:11 | 32 08:20 (LAR14) |          |                  | 19:22 | 30 07:49 (LAR07) | 19:56 |                  | 20:26 | 20:40 |     |     |  |  |      |  |  |
| 30                  | 07:16 | 07:49 (LAR14)    |          |                  | 06:49 |                  | 06:00 |                  | 05:30 | 05:28 |     |     |  |  |      |  |  |
|                     | 17:12 | 31 08:20 (LAR14) |          |                  | 19:23 | 29 07:48 (LAR07) | 19:57 |                  | 20:27 | 20:40 |     |     |  |  |      |  |  |
| 31                  | 07:15 | 07:49 (LAR14)    |          |                  | 06:47 |                  | 06:00 |                  | 05:29 |       |     |     |  |  |      |  |  |
|                     | 17:14 | 31 08:20 (LAR14) |          |                  | 19:24 | 28 07:48 (LAR07) |       |                  | 20:28 |       |     |     |  |  |      |  |  |
| Potential sun hours | 295   |                  | 296      |                  | 369   |                  | 400   |                  | 451   |       | 455 |     |  |  |      |  |  |
| Total, worst case   | 961   |                  | 239      |                  | 500   |                  | 104   |                  |       |       |     |     |  |  |      |  |  |
| Sun reduction       | 0,44  |                  | 0,46     |                  | 0,44  |                  | 0,48  |                  |       |       |     |     |  |  |      |  |  |
| Oper. time red.     | 0,70  |                  | 0,70     |                  | 0,70  |                  | 0,70  |                  |       |       |     |     |  |  |      |  |  |
| Wind dir. red.      | 0,62  |                  | 0,67     |                  | 0,61  |                  | 0,62  |                  |       |       |     |     |  |  |      |  |  |
| Total reduction     | 0,19  |                  | 0,21     |                  | 0,19  |                  | 0,21  |                  |       |       |     |     |  |  |      |  |  |
| Total, real         | 184   |                  | 51       |                  | 94    |                  | 22    |                  |       |       |     |     |  |  |      |  |  |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R72 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (57)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October        | November       | December                                   |                                |
|---------------------|----------------|----------------|----------------|----------------|----------------|--|--------------------------------|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:31 (LAR14)<br>07:08<br>16:31            | 07:38 (LAR14)<br>14:58 (LAR03) |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 8 07:39 (LAR14)<br>07:27 (LAR14)<br>16:31  | 14:32 (LAR03)<br>15:00 (LAR03) |
| 3                   | 05:30<br>20:40 | 05:55<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 15 07:42 (LAR14)<br>07:26 (LAR14)<br>16:30 | 14:32 (LAR03)<br>15:01 (LAR03) |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 19 07:45 (LAR14)<br>07:24 (LAR14)<br>16:30 | 14:31 (LAR03)<br>15:02 (LAR03) |
| 5                   | 05:31<br>20:39 | 05:57<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 22 07:46 (LAR14)<br>07:23 (LAR14)<br>16:30 | 14:31 (LAR03)<br>15:03 (LAR03) |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 24 07:47 (LAR14)<br>07:21 (LAR14)<br>16:30 | 14:31 (LAR03)<br>15:04 (LAR03) |
| 7                   | 05:32<br>20:39 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 27 07:48 (LAR14)<br>07:21 (LAR14)<br>16:30 | 14:31 (LAR03)<br>15:05 (LAR03) |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 28 07:49 (LAR14)<br>07:20 (LAR14)<br>16:30 | 14:31 (LAR03)<br>15:06 (LAR03) |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 29 07:50 (LAR14)<br>07:19 (LAR14)<br>16:30 | 14:31 (LAR03)<br>15:06 (LAR03) |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 30 07:50 (LAR14)<br>07:17 (LAR14)<br>16:30 | 14:31 (LAR03)<br>15:07 (LAR03) |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 31 07:51 (LAR14)<br>07:16 (LAR14)<br>16:30 | 14:31 (LAR03)<br>15:08 (LAR03) |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:46<br>16:44 | 32 07:51 (LAR14)<br>07:15 (LAR14)<br>16:30 | 14:30 (LAR03)<br>15:08 (LAR03) |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 31 07:52 (LAR14)<br>07:14 (LAR14)<br>16:30 | 14:31 (LAR03)<br>15:09 (LAR03) |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 30 07:52 (LAR14)<br>07:13 (LAR14)<br>16:30 | 14:31 (LAR03)<br>15:10 (LAR03) |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 29 07:52 (LAR14)<br>07:12 (LAR14)<br>16:30 | 14:32 (LAR03)<br>15:11 (LAR03) |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 32 07:52 (LAR14)<br>07:11 (LAR14)<br>16:31 | 14:31 (LAR03)<br>15:11 (LAR03) |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 31 07:53 (LAR14)<br>07:10 (LAR14)<br>16:31 | 14:32 (LAR03)<br>15:12 (LAR03) |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 30 07:53 (LAR14)<br>07:09 (LAR14)<br>16:31 | 14:33 (LAR03)<br>15:12 (LAR03) |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:17<br>18:15 | 06:54<br>16:38 | 29 07:53 (LAR14)<br>07:08 (LAR14)<br>16:32 | 14:33 (LAR03)<br>15:12 (LAR03) |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 30 07:53 (LAR14)<br>07:07 (LAR14)<br>16:32 | 14:33 (LAR03)<br>15:13 (LAR03) |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:02 | 07:19<br>18:12 | 06:56<br>16:36 | 29 07:54 (LAR14)<br>07:06 (LAR14)<br>16:32 | 14:33 (LAR03)<br>15:13 (LAR03) |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 28 07:54 (LAR14)<br>07:05 (LAR14)<br>16:33 | 14:34 (LAR03)<br>15:14 (LAR03) |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 27 07:54 (LAR14)<br>07:04 (LAR14)<br>16:33 | 14:34 (LAR03)<br>15:14 (LAR03) |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 26 07:55 (LAR14)<br>07:03 (LAR14)<br>16:34 | 14:36 (LAR03)<br>15:15 (LAR03) |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:24<br>17:06 | 07:01<br>16:34 | 25 07:55 (LAR14)<br>07:02 (LAR14)<br>16:34 | 14:36 (LAR03)<br>15:15 (LAR03) |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:25<br>17:04 | 07:02<br>16:33 | 24 07:56 (LAR14)<br>07:01 (LAR14)<br>16:35 | 14:36 (LAR03)<br>15:15 (LAR03) |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:26<br>17:03 | 07:03<br>16:33 | 23 07:56 (LAR14)<br>07:00 (LAR14)<br>16:36 | 14:37 (LAR03)<br>15:16 (LAR03) |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:27<br>17:02 | 07:05<br>16:32 | 22 07:57 (LAR14)<br>07:00 (LAR14)<br>16:36 | 14:38 (LAR03)<br>15:17 (LAR03) |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:28<br>17:00 | 07:06<br>16:32 | 21 07:57 (LAR14)<br>07:00 (LAR14)<br>16:37 | 14:38 (LAR03)<br>15:17 (LAR03) |
| 30                  | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:29<br>16:59 | 07:07<br>16:31 | 20 07:58 (LAR14)<br>07:00 (LAR14)<br>16:38 | 14:39 (LAR03)<br>15:17 (LAR03) |
| 31                  | 05:52<br>20:21 | 06:24<br>19:38 | 06:56<br>18:45 | 07:30<br>16:58 | 07:08<br>16:30 | 19 07:58 (LAR14)<br>07:00 (LAR14)<br>16:39 | 14:39 (LAR03)<br>15:17 (LAR03) |
| Potential sun hours | 462            | 430            | 375            | 344            | 296            | 285  |                                |
| Total, worst case   |                |                | 477            | 138            | 830            | 1141                                       |                                |
| Sun reduction       |                |                | 0,58           | 0,44           | 0,41           | 0,36                                       |                                |
| Oper. time red.     |                |                | 0,70           | 0,70           | 0,70           | 0,70                                       |                                |
| Wind dir. red.      |                |                | 0,62           | 0,57           | 0,66           | 0,56                                       |                                |
| Total reduction     |                |                | 0,25           | 0,17           | 0,19           | 0,14                                       |                                |
| Total, real         |                |                | 120            | 24             | 155            | 163  |                                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R73 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (58)

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     |       | January          |       | February         |       | March            |               | April |                  | May   |       | June |  |
|---------------------|-------|------------------|-------|------------------|-------|------------------|---------------|-------|------------------|-------|-------|------|--|
| 1                   | 07:28 | 14:56 (LAR03)    | 07:14 | 15:05 (LAR03)    | 06:37 | 07:33 (LAR14)    | 06:45         |       |                  | 05:58 | 05:29 |      |  |
|                     | 16:40 | 46 15:42 (LAR03) | 17:15 | 51 15:56 (LAR03) | 17:50 | 11 07:44 (LAR14) | 19:25         |       |                  | 19:58 | 20:29 |      |  |
| 2                   | 07:29 | 14:56 (LAR03)    | 07:13 | 15:06 (LAR03)    | 06:36 |                  | 06:44         |       |                  | 05:57 | 05:28 |      |  |
|                     | 16:41 | 47 15:43 (LAR03) | 17:16 | 50 15:56 (LAR03) | 17:51 |                  | 19:26         |       |                  | 19:59 | 20:29 |      |  |
| 3                   | 07:29 | 14:56 (LAR03)    | 07:12 | 15:07 (LAR03)    | 06:34 |                  | 06:42         |       |                  | 05:56 | 05:28 |      |  |
|                     | 16:42 | 47 15:43 (LAR03) | 17:17 | 48 15:55 (LAR03) | 17:52 |                  | 19:27         |       |                  | 20:00 | 20:30 |      |  |
| 4                   | 07:29 | 14:57 (LAR03)    | 07:11 | 15:07 (LAR03)    | 06:33 |                  | 06:40         |       | 07:08 (LAR07)    | 05:54 | 05:27 |      |  |
|                     | 16:42 | 47 15:44 (LAR03) | 17:19 | 47 15:54 (LAR03) | 17:54 |                  | 19:29         | 1     | 07:09 (LAR07)    | 20:02 | 20:31 |      |  |
| 5                   | 07:29 | 14:57 (LAR03)    | 07:10 | 15:08 (LAR03)    | 06:31 |                  | 06:39         |       | 07:01 (LAR07)    | 05:53 | 05:27 |      |  |
|                     | 16:43 | 48 15:45 (LAR03) | 17:20 | 46 15:54 (LAR03) | 17:55 |                  | 19:30         | 13    | 07:14 (LAR07)    | 20:03 | 20:32 |      |  |
| 6                   | 07:29 | 14:57 (LAR03)    | 07:09 | 15:09 (LAR03)    | 06:29 |                  | 06:37         |       | 06:59 (LAR07)    | 05:52 | 05:27 |      |  |
|                     | 16:44 | 49 15:46 (LAR03) | 17:21 | 44 15:53 (LAR03) | 17:56 |                  | 19:31         | 18    | 07:17 (LAR07)    | 20:04 | 20:32 |      |  |
| 7                   | 07:29 | 14:57 (LAR03)    | 07:08 | 15:11 (LAR03)    | 06:28 |                  | 06:35         |       | 06:56 (LAR07)    | 05:51 | 05:26 |      |  |
|                     | 16:45 | 50 15:47 (LAR03) | 17:23 | 41 15:52 (LAR03) | 17:57 |                  | 19:32         | 22    | 07:18 (LAR07)    | 20:05 | 20:33 |      |  |
| 8                   | 07:28 | 14:58 (LAR03)    | 07:07 | 07:34 (LAR14)    | 06:26 |                  | 06:34         |       | 06:55 (LAR07)    | 05:49 | 05:26 |      |  |
|                     | 16:46 | 50 15:48 (LAR03) | 17:24 | 52 15:52 (LAR03) | 17:58 |                  | 19:33         | 24    | 07:19 (LAR07)    | 20:06 | 20:34 |      |  |
| 9                   | 07:28 | 14:57 (LAR03)    | 07:06 | 07:30 (LAR14)    | 06:24 |                  | 06:32         |       | 06:54 (LAR07)    | 05:48 | 05:26 |      |  |
|                     | 16:47 | 50 15:47 (LAR03) | 17:25 | 55 15:50 (LAR03) | 17:59 |                  | 19:34         | 26    | 07:20 (LAR07)    | 20:07 | 20:34 |      |  |
| 10                  | 07:28 | 14:58 (LAR03)    | 07:04 | 07:29 (LAR14)    | 06:23 | 17:37 (LAR02)    | 06:30         |       | 06:52 (LAR07)    | 05:47 | 05:26 |      |  |
|                     | 16:48 | 50 15:48 (LAR03) | 17:26 | 55 15:49 (LAR03) | 18:01 | 2                | 17:39 (LAR02) | 19:35 | 28 07:20 (LAR07) | 20:08 | 20:35 |      |  |
| 11                  | 07:28 | 14:58 (LAR03)    | 07:03 | 07:28 (LAR14)    | 06:21 | 17:34 (LAR02)    | 06:29         |       | 06:51 (LAR07)    | 05:46 | 05:25 |      |  |
|                     | 16:49 | 51 15:49 (LAR03) | 17:28 | 54 15:47 (LAR03) | 18:02 | 6                | 17:40 (LAR02) | 19:36 | 29 07:20 (LAR07) | 20:09 | 20:35 |      |  |
| 12                  | 07:28 | 14:58 (LAR03)    | 07:02 | 07:27 (LAR14)    | 06:19 | 17:33 (LAR02)    | 06:27         |       | 06:51 (LAR07)    | 05:45 | 05:25 |      |  |
|                     | 16:50 | 51 15:49 (LAR03) | 17:29 | 51 15:45 (LAR03) | 18:03 | 8                | 17:41 (LAR02) | 19:37 | 30 07:21 (LAR07) | 20:10 | 20:36 |      |  |
| 13                  | 07:27 | 14:58 (LAR03)    | 07:01 | 07:26 (LAR14)    | 06:18 | 17:32 (LAR02)    | 06:25         |       | 06:50 (LAR07)    | 05:44 | 05:25 |      |  |
|                     | 16:52 | 53 15:51 (LAR03) | 17:30 | 47 15:42 (LAR03) | 18:04 | 11               | 17:43 (LAR02) | 19:38 | 30 07:20 (LAR07) | 20:11 | 20:36 |      |  |
| 14                  | 07:27 | 14:59 (LAR03)    | 06:59 | 07:25 (LAR14)    | 06:16 | 17:31 (LAR02)    | 06:24         |       | 06:51 (LAR07)    | 05:43 | 05:25 |      |  |
|                     | 16:53 | 53 15:52 (LAR03) | 17:31 | 39 15:37 (LAR03) | 18:05 | 13               | 17:44 (LAR02) | 19:40 | 30 07:21 (LAR07) | 20:12 | 20:37 |      |  |
| 15                  | 07:26 | 14:58 (LAR03)    | 06:58 | 07:25 (LAR14)    | 06:14 | 17:30 (LAR02)    | 06:22         |       | 06:50 (LAR07)    | 05:42 | 05:25 |      |  |
|                     | 16:54 | 54 15:52 (LAR03) | 17:33 | 31 07:56 (LAR14) | 18:06 | 15               | 17:45 (LAR02) | 19:41 | 30 07:20 (LAR07) | 20:13 | 20:37 |      |  |
| 16                  | 07:26 | 14:59 (LAR03)    | 06:57 | 07:24 (LAR14)    | 06:13 | 17:30 (LAR02)    | 06:21         |       | 06:49 (LAR07)    | 05:41 | 05:25 |      |  |
|                     | 16:55 | 54 15:53 (LAR03) | 17:34 | 31 07:55 (LAR14) | 18:07 | 17               | 17:47 (LAR02) | 19:42 | 30 07:19 (LAR07) | 20:14 | 20:38 |      |  |
| 17                  | 07:26 | 14:59 (LAR03)    | 06:55 | 07:24 (LAR14)    | 06:11 | 17:30 (LAR02)    | 06:19         |       | 06:50 (LAR07)    | 05:40 | 05:25 |      |  |
|                     | 16:56 | 54 15:53 (LAR03) | 17:35 | 32 07:56 (LAR14) | 18:09 | 17               | 17:47 (LAR02) | 19:43 | 29 07:19 (LAR07) | 20:15 | 20:38 |      |  |
| 18                  | 07:25 | 14:59 (LAR03)    | 06:54 | 07:23 (LAR14)    | 06:09 | 17:30 (LAR02)    | 06:17         |       | 06:50 (LAR07)    | 05:39 | 05:25 |      |  |
|                     | 16:57 | 54 15:53 (LAR03) | 17:36 | 33 07:56 (LAR14) | 18:10 | 18               | 17:48 (LAR02) | 19:44 | 28 07:18 (LAR07) | 20:16 | 20:38 |      |  |
| 19                  | 07:25 | 14:59 (LAR03)    | 06:52 | 07:24 (LAR14)    | 06:08 | 17:30 (LAR02)    | 06:16         |       | 06:51 (LAR07)    | 05:38 | 05:25 |      |  |
|                     | 16:59 | 55 15:54 (LAR03) | 17:38 | 32 07:56 (LAR14) | 18:11 | 18               | 17:48 (LAR02) | 19:45 | 26 07:17 (LAR07) | 20:17 | 20:39 |      |  |
| 20                  | 07:24 | 14:59 (LAR03)    | 06:51 | 07:23 (LAR14)    | 06:06 | 17:32 (LAR02)    | 06:14         |       | 06:51 (LAR07)    | 05:37 | 05:25 |      |  |
|                     | 17:00 | 55 15:54 (LAR03) | 17:39 | 32 07:55 (LAR14) | 18:12 | 16               | 17:48 (LAR02) | 19:46 | 24 07:15 (LAR07) | 20:18 | 20:39 |      |  |
| 21                  | 07:23 | 14:59 (LAR03)    | 06:49 | 07:24 (LAR14)    | 06:04 | 17:33 (LAR02)    | 06:13         |       | 06:52 (LAR07)    | 05:36 | 05:25 |      |  |
|                     | 17:01 | 55 15:54 (LAR03) | 17:40 | 31 07:55 (LAR14) | 18:13 | 13               | 17:46 (LAR02) | 19:47 | 23 07:15 (LAR07) | 20:19 | 20:39 |      |  |
| 22                  | 07:23 | 15:00 (LAR03)    | 06:48 | 07:23 (LAR14)    | 06:02 | 17:35 (LAR02)    | 06:11         |       | 06:53 (LAR07)    | 05:35 | 05:26 |      |  |
|                     | 17:02 | 55 15:55 (LAR03) | 17:41 | 31 07:54 (LAR14) | 18:14 | 7                | 17:42 (LAR02) | 19:48 | 19 07:12 (LAR07) | 20:20 | 20:39 |      |  |
| 23                  | 07:22 | 15:00 (LAR03)    | 06:47 | 07:24 (LAR14)    | 06:01 |                  | 06:10         |       | 06:55 (LAR07)    | 05:34 | 05:26 |      |  |
|                     | 17:03 | 55 15:55 (LAR03) | 17:43 | 30 07:54 (LAR14) | 18:15 |                  | 19:49         | 16    | 07:11 (LAR07)    | 20:21 | 20:40 |      |  |
| 24                  | 07:21 | 15:00 (LAR03)    | 06:45 | 07:24 (LAR14)    | 05:59 |                  | 06:08         |       | 06:57 (LAR07)    | 05:34 | 05:26 |      |  |
|                     | 17:05 | 55 15:55 (LAR03) | 17:44 | 29 07:53 (LAR14) | 18:16 |                  | 19:51         | 10    | 07:07 (LAR07)    | 20:22 | 20:40 |      |  |
| 25                  | 07:21 | 15:01 (LAR03)    | 06:44 | 07:26 (LAR14)    | 05:57 |                  | 06:07         |       |                  | 05:33 | 05:26 |      |  |
|                     | 17:06 | 55 15:56 (LAR03) | 17:45 | 26 07:52 (LAR14) | 18:18 |                  | 19:52         |       |                  | 20:23 | 20:40 |      |  |
| 26                  | 07:20 | 15:02 (LAR03)    | 06:42 | 07:26 (LAR14)    | 05:56 |                  | 06:05         |       |                  | 05:32 | 05:27 |      |  |
|                     | 17:07 | 55 15:57 (LAR03) | 17:46 | 25 07:51 (LAR14) | 18:19 |                  | 19:53         |       |                  | 20:24 | 20:40 |      |  |
| 27                  | 07:19 | 15:02 (LAR03)    | 06:40 | 07:28 (LAR14)    | 05:54 |                  | 06:04         |       |                  | 05:31 | 05:27 |      |  |
|                     | 17:08 | 55 15:57 (LAR03) | 17:48 | 21 07:49 (LAR14) | 18:20 |                  | 19:54         |       |                  | 20:25 | 20:40 |      |  |
| 28                  | 07:18 | 15:03 (LAR03)    | 06:39 | 07:30 (LAR14)    | 05:52 |                  | 06:03         |       |                  | 05:31 | 05:28 |      |  |
|                     | 17:10 | 54 15:57 (LAR03) | 17:49 | 17 07:47 (LAR14) | 18:21 |                  | 19:55         |       |                  | 20:25 | 20:40 |      |  |
| 29                  | 07:17 | 15:03 (LAR03)    |       |                  | 06:50 |                  | 06:01         |       |                  | 05:30 | 05:28 |      |  |
|                     | 17:11 | 53 15:56 (LAR03) |       |                  | 19:22 |                  | 19:56         |       |                  | 20:26 | 20:40 |      |  |
| 30                  | 07:16 | 15:04 (LAR03)    |       |                  | 06:49 |                  | 06:00         |       |                  | 05:30 | 05:28 |      |  |
|                     | 17:12 | 52 15:56 (LAR03) |       |                  | 19:23 |                  | 19:57         |       |                  | 20:27 | 20:40 |      |  |
| 31                  | 07:15 | 15:04 (LAR03)    |       |                  | 06:47 |                  |               |       |                  | 05:29 |       |      |  |
|                     | 17:14 | 52 15:56 (LAR03) |       |                  | 19:24 |                  |               |       |                  | 20:28 |       |      |  |
| Potential sun hours | 295   |                  | 296   |                  | 369   |                  | 400           |       |                  | 451   |       | 455  |  |
| Total, worst case   | 1614  |                  | 1081  |                  | 172   |                  | 486           |       |                  |       |       |      |  |
| Sun reduction       | 0,44  |                  | 0,46  |                  | 0,44  |                  | 0,48          |       |                  |       |       |      |  |
| Oper. time red.     | 0,70  |                  | 0,70  |                  | 0,70  |                  | 0,70          |       |                  |       |       |      |  |
| Wind dir. red.      | 0,54  |                  | 0,60  |                  | 0,60  |                  | 0,60          |       |                  |       |       |      |  |
| Total reduction     | 0,17  |                  | 0,19  |                  | 0,18  |                  | 0,20          |       |                  |       |       |      |  |
| Total, real         | 267   |                  | 206   |                  | 32    |                  | 97            |       |                  |       |       |      |  |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

**SHADOW - Calendar**

**Shadow receptor:** R73 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (58)

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September                      | October                        | November                       | December                       |
|---------------------|----------------|----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36                 | 06:50 (LAR07)<br>07:19 (LAR07) | 06:57<br>18:44                 | 18:12 (LAR02)<br>18:21 (LAR02) |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34                 | 06:50 (LAR07)<br>07:18 (LAR07) | 06:58<br>18:42                 | 18:12 (LAR02)<br>18:20 (LAR02) |
| 3                   | 05:30<br>20:40 | 05:55<br>20:18 | 06:27<br>19:33                 | 06:51 (LAR07)<br>07:17 (LAR07) | 06:59<br>18:41                 | 18:14 (LAR02)<br>18:18 (LAR02) |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31                 | 06:52 (LAR07)<br>07:16 (LAR07) | 07:00<br>18:39                 | 06:36<br>16:53                 |
| 5                   | 05:31<br>20:39 | 05:57<br>20:15 | 06:30<br>19:29                 | 06:52 (LAR07)<br>07:14 (LAR07) | 07:01<br>18:37                 | 06:37<br>16:51                 |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27                 | 06:54 (LAR07)<br>07:12 (LAR07) | 07:02<br>18:36                 | 06:38<br>16:50                 |
| 7                   | 05:32<br>20:39 | 06:00<br>20:13 | 06:32<br>19:26                 | 06:56 (LAR07)<br>07:09 (LAR07) | 07:03<br>18:34                 | 06:39<br>16:49                 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24                 | 07:00 (LAR07)<br>07:04 (LAR07) | 07:04<br>18:32                 | 06:41<br>16:48                 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22                 | 07:05<br>18:31                 | 07:05<br>16:47                 | 06:42<br>16:47                 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21                 | 07:06<br>18:29                 | 07:06<br>16:46                 | 06:43<br>16:46                 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19                 | 07:07<br>18:27                 | 07:07<br>16:45                 | 06:44<br>16:45                 |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17                 | 07:09<br>18:26                 | 07:09<br>16:44                 | 06:46<br>16:44                 |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15                 | 07:10<br>18:24                 | 07:10<br>16:43                 | 06:47<br>16:43                 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14                 | 07:11<br>18:22                 | 07:11<br>16:42                 | 06:48<br>16:42                 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12                 | 07:12<br>18:21                 | 07:12<br>16:41                 | 06:49<br>16:41                 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10                 | 07:13<br>18:19                 | 07:13<br>16:40                 | 06:50<br>16:40                 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08                 | 07:14<br>18:18                 | 07:14<br>16:39                 | 06:52<br>16:39                 |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07                 | 07:15<br>18:16                 | 07:15<br>16:38                 | 06:53<br>16:38                 |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 07:03 (LAR07)<br>07:15 (LAR07) | 06:44<br>19:05                 | 07:17<br>18:15                 | 06:54<br>16:38                 |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 07:00 (LAR07)<br>07:17 (LAR07) | 06:45<br>19:03                 | 07:18<br>18:13                 | 06:55<br>16:37                 |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:58 (LAR07)<br>07:19 (LAR07) | 06:46<br>19:02                 | 18:22 (LAR02)<br>18:26 (LAR02) | 06:56<br>16:36                 |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:57 (LAR07)<br>07:20 (LAR07) | 06:47<br>19:00                 | 18:18 (LAR02)<br>18:29 (LAR02) | 06:58<br>16:35                 |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:56 (LAR07)<br>07:20 (LAR07) | 06:48<br>18:58                 | 18:16 (LAR02)<br>18:31 (LAR02) | 06:59<br>16:35                 |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:55 (LAR07)<br>07:21 (LAR07) | 06:49<br>18:56                 | 18:15 (LAR02)<br>18:33 (LAR02) | 07:00<br>16:34                 |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:54 (LAR07)<br>07:21 (LAR07) | 06:50<br>18:55                 | 18:14 (LAR02)<br>18:32 (LAR02) | 07:01<br>16:34                 |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:53 (LAR07)<br>07:22 (LAR07) | 06:51<br>18:53                 | 18:13 (LAR02)<br>18:30 (LAR02) | 07:02<br>16:33                 |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52 (LAR07)<br>07:22 (LAR07) | 06:52<br>18:51                 | 18:12 (LAR02)<br>18:29 (LAR02) | 07:03<br>17:03                 |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:52 (LAR07)<br>07:22 (LAR07) | 06:53<br>18:49                 | 18:12 (LAR02)<br>18:27 (LAR02) | 07:05<br>17:02                 |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:51 (LAR07)<br>07:22 (LAR07) | 06:54<br>18:48                 | 18:11 (LAR02)<br>18:25 (LAR02) | 07:06<br>17:00                 |
| 30                  | 05:51<br>20:22 | 06:23<br>19:39 | 06:51 (LAR07)<br>07:21 (LAR07) | 06:56<br>18:46                 | 18:11 (LAR02)<br>18:23 (LAR02) | 07:07<br>16:59                 |
| 31                  | 05:52<br>20:21 | 06:24<br>19:38 | 06:51 (LAR07)<br>07:21 (LAR07) | 06:57<br>18:45                 | 18:11 (LAR02)<br>18:23 (LAR02) | 07:08<br>16:58                 |
| Potential sun hours | 462            | 430            | 375                            | 344                            | 296                            | 285                            |
| Total, worst case   |                | 330            | 305                            | 639                            | 1566                           | 1419                           |
| Sun reduction       |                | 0,67           | 0,58                           | 0,44                           | 0,41                           | 0,36                           |
| Oper. time red.     |                | 0,70           | 0,70                           | 0,70                           | 0,70                           | 0,70                           |
| Wind dir. red.      |                | 0,60           | 0,60                           | 0,64                           | 0,54                           | 0,54                           |
| Total reduction     |                | 0,28           | 0,24                           | 0,19                           | 0,15                           | 0,14                           |
| Total, real         |                | 92             | 73                             | 124                            | 239                            | 193                            |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

**Shadow receptor:** R74 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (59)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     |       | January       |               | February      |       | March         |               | April |               | May           |               | June          |       |       |
|---------------------|-------|---------------|---------------|---------------|-------|---------------|---------------|-------|---------------|---------------|---------------|---------------|-------|-------|
| 1                   | 07:28 | 15:00 (LAR03) | 07:14         | 15:11 (LAR03) | 06:37 | 06:45         |               | 06:45 |               | 05:58         | 05:29         |               |       |       |
|                     | 16:40 | 45            | 15:45 (LAR03) | 17:15         | 47    | 15:58 (LAR03) | 17:50         | 19:25 |               | 19:58         | 20:29         |               |       |       |
| 2                   | 07:29 | 15:01 (LAR03) | 07:13         | 15:12 (LAR03) | 06:36 | 06:44         |               | 06:44 |               | 05:57         | 05:28         |               |       |       |
|                     | 16:41 | 45            | 15:46 (LAR03) | 17:16         | 45    | 15:57 (LAR03) | 17:51         | 19:26 |               | 19:59         | 20:29         |               |       |       |
| 3                   | 07:29 | 15:01 (LAR03) | 07:12         | 07:42 (LAR14) | 06:34 | 06:42         |               | 06:42 | 07:05 (LAR07) | 05:56         | 05:28         |               |       |       |
|                     | 16:42 | 46            | 15:47 (LAR03) | 17:17         | 51    | 15:57 (LAR03) | 17:52         | 19:27 | 14            | 07:19 (LAR07) | 20:00         | 20:30         |       |       |
| 4                   | 07:29 | 15:01 (LAR03) | 07:11         | 07:37 (LAR14) | 06:33 | 06:40         |               | 06:40 |               | 07:02 (LAR07) | 05:54         | 05:27         |       |       |
|                     | 16:42 | 46            | 15:47 (LAR03) | 17:19         | 55    | 15:55 (LAR03) | 17:54         | 19:29 | 18            | 07:20 (LAR07) | 20:02         | 20:31         |       |       |
| 5                   | 07:29 | 15:01 (LAR03) | 07:10         | 07:35 (LAR14) | 06:31 | 06:39         |               | 06:39 |               | 07:00 (LAR07) | 05:53         | 05:27         |       |       |
|                     | 16:43 | 47            | 15:48 (LAR03) | 17:20         | 58    | 15:54 (LAR03) | 17:55         | 19:30 | 22            | 07:22 (LAR07) | 20:03         | 20:32         |       |       |
| 6                   | 07:29 | 15:02 (LAR03) | 07:09         | 07:34 (LAR14) | 06:29 | 06:37         |               | 06:37 |               | 06:59 (LAR07) | 05:52         | 05:27         |       |       |
|                     | 16:44 | 47            | 15:49 (LAR03) | 17:21         | 59    | 15:54 (LAR03) | 17:56         | 19:31 | 24            | 07:23 (LAR07) | 20:04         | 20:32         |       |       |
| 7                   | 07:29 | 15:02 (LAR03) | 07:08         | 07:33 (LAR14) | 06:28 | 06:35         |               | 06:35 |               | 06:57 (LAR07) | 05:51         | 05:26         |       |       |
|                     | 16:45 | 48            | 15:50 (LAR03) | 17:23         | 59    | 15:53 (LAR03) | 17:57         | 19:32 | 27            | 07:24 (LAR07) | 20:05         | 20:33         |       |       |
| 8                   | 07:28 | 15:02 (LAR03) | 07:07         | 07:32 (LAR14) | 06:26 | 06:34         |               | 06:34 |               | 06:56 (LAR07) | 05:49         | 05:26         |       |       |
|                     | 16:46 | 49            | 15:51 (LAR03) | 17:24         | 58    | 15:51 (LAR03) | 17:58         | 19:33 | 28            | 07:24 (LAR07) | 20:06         | 20:34         |       |       |
| 9                   | 07:28 | 15:02 (LAR03) | 07:06         | 07:31 (LAR14) | 06:24 |               | 17:34 (LAR02) | 06:32 |               | 06:55 (LAR07) | 05:48         | 05:26         |       |       |
|                     | 16:47 | 49            | 15:51 (LAR03) | 17:25         | 55    | 15:49 (LAR03) | 17:59         | 19:34 | 30            | 07:25 (LAR07) | 20:07         | 20:34         |       |       |
| 10                  | 07:28 | 15:02 (LAR03) | 07:04         | 07:30 (LAR14) | 06:23 |               | 17:33 (LAR02) | 06:30 |               | 06:54 (LAR07) | 05:47         | 05:25         |       |       |
|                     | 16:48 | 50            | 15:52 (LAR03) | 17:26         | 52    | 15:47 (LAR03) | 18:01         | 6     | 17:39 (LAR02) | 19:35         | 30            | 07:24 (LAR07) | 20:08 | 20:35 |
| 11                  | 07:28 | 15:03 (LAR03) | 07:03         | 07:30 (LAR14) | 06:21 |               | 17:32 (LAR02) | 06:29 |               | 06:53 (LAR07) | 05:46         | 05:25         |       |       |
|                     | 16:49 | 50            | 15:53 (LAR03) | 17:28         | 47    | 15:44 (LAR03) | 18:02         | 8     | 17:40 (LAR02) | 19:36         | 31            | 07:24 (LAR07) | 20:09 | 20:35 |
| 12                  | 07:28 | 15:02 (LAR03) | 07:02         | 07:30 (LAR14) | 06:19 |               | 17:30 (LAR02) | 06:27 |               | 06:54 (LAR07) | 05:45         | 05:25         |       |       |
|                     | 16:50 | 51            | 15:53 (LAR03) | 17:29         | 32    | 08:02 (LAR14) | 18:03         | 11    | 17:41 (LAR02) | 19:37         | 30            | 07:24 (LAR07) | 20:10 | 20:36 |
| 13                  | 07:27 | 15:03 (LAR03) | 07:01         | 07:29 (LAR14) | 06:18 |               | 17:30 (LAR02) | 06:25 |               | 06:53 (LAR07) | 05:44         | 05:25         |       |       |
|                     | 16:52 | 51            | 15:54 (LAR03) | 17:30         | 32    | 08:01 (LAR14) | 18:04         | 13    | 17:43 (LAR02) | 19:38         | 31            | 07:24 (LAR07) | 20:11 | 20:36 |
| 14                  | 07:27 | 15:04 (LAR03) | 06:59         | 07:29 (LAR14) | 06:16 |               | 17:30 (LAR02) | 06:24 |               | 06:53 (LAR07) | 05:43         | 05:25         |       |       |
|                     | 16:53 | 51            | 15:55 (LAR03) | 17:31         | 33    | 08:02 (LAR14) | 18:05         | 14    | 17:44 (LAR02) | 19:40         | 31            | 07:24 (LAR07) | 20:12 | 20:37 |
| 15                  | 07:26 | 15:03 (LAR03) | 06:58         | 07:29 (LAR14) | 06:14 |               | 17:29 (LAR02) | 06:22 |               | 06:53 (LAR07) | 05:42         | 05:25         |       |       |
|                     | 16:54 | 52            | 15:55 (LAR03) | 17:33         | 33    | 08:02 (LAR14) | 18:06         | 16    | 17:45 (LAR02) | 19:41         | 30            | 07:23 (LAR07) | 20:13 | 20:37 |
| 16                  | 07:26 | 15:04 (LAR03) | 06:57         | 07:29 (LAR14) | 06:13 |               | 17:30 (LAR02) | 06:21 |               | 06:53 (LAR07) | 05:41         | 05:25         |       |       |
|                     | 16:55 | 52            | 15:56 (LAR03) | 17:34         | 33    | 08:02 (LAR14) | 18:07         | 17    | 17:47 (LAR02) | 19:42         | 29            | 07:22 (LAR07) | 20:14 | 20:38 |
| 17                  | 07:26 | 15:04 (LAR03) | 06:55         | 07:29 (LAR14) | 06:11 |               | 17:30 (LAR02) | 06:19 |               | 06:54 (LAR07) | 05:40         | 05:25         |       |       |
|                     | 16:56 | 52            | 15:56 (LAR03) | 17:35         | 33    | 08:02 (LAR14) | 18:09         | 17    | 17:47 (LAR02) | 19:43         | 27            | 07:21 (LAR07) | 20:15 | 20:38 |
| 18                  | 07:25 | 15:04 (LAR03) | 06:54         | 07:29 (LAR14) | 06:09 |               | 17:30 (LAR02) | 06:17 |               | 06:54 (LAR07) | 05:39         | 05:25         |       |       |
|                     | 16:57 | 52            | 15:56 (LAR03) | 17:36         | 32    | 08:01 (LAR14) | 18:10         | 17    | 17:47 (LAR02) | 19:44         | 26            | 07:20 (LAR07) | 20:16 | 20:38 |
| 19                  | 07:25 | 15:05 (LAR03) | 06:52         | 07:30 (LAR14) | 06:08 |               | 17:31 (LAR02) | 06:16 |               | 06:55 (LAR07) | 05:38         | 05:25         |       |       |
|                     | 16:59 | 52            | 15:57 (LAR03) | 17:38         | 31    | 08:01 (LAR14) | 18:11         | 14    | 17:45 (LAR02) | 19:45         | 24            | 07:19 (LAR07) | 20:17 | 20:39 |
| 20                  | 07:24 | 15:05 (LAR03) | 06:51         | 07:30 (LAR14) | 06:06 |               | 17:34 (LAR02) | 06:14 |               | 06:56 (LAR07) | 05:37         | 05:25         |       |       |
|                     | 17:00 | 52            | 15:57 (LAR03) | 17:39         | 30    | 08:00 (LAR14) | 18:12         | 9     | 17:43 (LAR02) | 19:46         | 21            | 07:17 (LAR07) | 20:18 | 20:39 |
| 21                  | 07:23 | 15:05 (LAR03) | 06:49         | 07:31 (LAR14) | 06:04 |               | 17:33 (LAR02) | 06:13 |               | 06:57 (LAR07) | 05:36         | 05:25         |       |       |
|                     | 17:01 | 52            | 15:57 (LAR03) | 17:40         | 28    | 07:59 (LAR14) | 18:13         |       | 19:47         | 18            | 07:15 (LAR07) | 20:19         | 20:39 |       |
| 22                  | 07:23 | 15:06 (LAR03) | 06:48         | 07:31 (LAR14) | 06:02 |               | 17:34 (LAR02) | 06:12 |               | 06:59 (LAR07) | 05:35         | 05:26         |       |       |
|                     | 17:02 | 52            | 15:58 (LAR03) | 17:41         | 27    | 07:58 (LAR14) | 18:14         |       | 19:48         | 13            | 07:12 (LAR07) | 20:20         | 20:39 |       |
| 23                  | 07:22 | 15:06 (LAR03) | 06:47         | 07:33 (LAR14) | 06:01 |               | 17:35 (LAR02) | 06:11 |               | 07:03 (LAR07) | 05:34         | 05:26         |       |       |
|                     | 17:03 | 52            | 15:58 (LAR03) | 17:43         | 24    | 07:57 (LAR14) | 18:15         |       | 19:49         | 5             | 07:08 (LAR07) | 20:21         | 20:40 |       |
| 24                  | 07:21 | 15:06 (LAR03) | 06:45         | 07:34 (LAR14) | 05:59 |               | 17:36 (LAR02) | 06:10 |               | 06:08         |               | 05:34         | 05:26 |       |
|                     | 17:05 | 52            | 15:58 (LAR03) | 17:44         | 21    | 07:55 (LAR14) | 18:16         |       | 19:51         |               | 20:22         | 20:40         |       |       |
| 25                  | 07:21 | 15:06 (LAR03) | 06:44         | 07:36 (LAR14) | 05:57 |               | 17:37 (LAR02) | 06:09 |               | 06:07         |               | 05:33         | 05:26 |       |
|                     | 17:06 | 52            | 15:58 (LAR03) | 17:45         | 17    | 07:53 (LAR14) | 18:17         |       | 19:52         |               | 20:23         | 20:40         |       |       |
| 26                  | 07:20 | 15:08 (LAR03) | 06:42         | 07:39 (LAR14) | 05:56 |               | 17:38 (LAR02) | 06:08 |               | 06:05         |               | 05:32         | 05:27 |       |
|                     | 17:07 | 51            | 15:59 (LAR03) | 17:46         | 10    | 07:49 (LAR14) | 18:19         |       | 19:53         |               | 20:24         | 20:40         |       |       |
| 27                  | 07:19 | 15:08 (LAR03) | 06:40         |               | 05:54 |               | 17:39 (LAR02) | 06:07 |               | 06:04         |               | 05:31         | 05:27 |       |
|                     | 17:08 | 51            | 15:59 (LAR03) | 17:48         |       | 18:20         |               |       | 19:54         |               | 20:25         | 20:40         |       |       |
| 28                  | 07:18 | 15:09 (LAR03) | 06:39         |               | 05:52 |               | 17:40 (LAR02) | 06:06 |               | 06:03         |               | 05:31         | 05:28 |       |
|                     | 17:10 | 49            | 15:58 (LAR03) | 17:49         |       | 18:21         |               |       | 19:55         |               | 20:25         | 20:40         |       |       |
| 29                  | 07:17 | 15:09 (LAR03) |               |               | 06:50 |               | 17:41 (LAR02) | 06:05 |               | 06:01         |               | 05:30         | 05:28 |       |
|                     | 17:11 | 49            | 15:58 (LAR03) |               |       | 19:22         |               |       | 19:56         |               | 20:26         | 20:40         |       |       |
| 30                  | 07:16 | 15:10 (LAR03) |               |               | 06:49 |               | 17:42 (LAR02) | 06:04 |               | 06:00         |               | 05:30         | 05:28 |       |
|                     | 17:12 | 48            | 15:58 (LAR03) |               |       | 19:23         |               |       | 19:57         |               | 20:27         | 20:40         |       |       |
| 31                  | 07:15 | 15:11 (LAR03) |               |               | 06:47 |               |               |       |               |               |               | 05:29         |       |       |
|                     | 17:14 | 47            | 15:58 (LAR03) |               |       | 19:24         |               |       |               |               | 20:28         |               |       |       |
| Potential sun hours |       | 295           |               | 296           |       | 369           |               | 400   |               |               | 451           |               | 455   |       |
| Total, worst case   |       | 1542          |               | 1002          |       | 146           |               |       |               | 509           |               |               |       |       |
| Sun reduction       |       | 0,44          |               | 0,46          |       | 0,44          |               |       |               | 0,48          |               |               |       |       |
| Oper. time red.     |       | 0,70          |               | 0,70          |       | 0,70          |               |       |               | 0,70          |               |               |       |       |
| Wind dir. red.      |       | 0,54          |               | 0,61          |       | 0,60          |               |       |               | 0,60          |               |               |       |       |
| Total reduction     |       | 0,17          |               | 0,20          |       | 0,18          |               |       |               | 0,20          |               |               |       |       |
| Total, real         |       | 256           |               | 196           |       | 27            |               |       |               | 102           |               |               |       |       |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

Shadow receptor: R74 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (59)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October                        | November       | December                       |                        |                                |                |                     |                                |
|---------------------|----------------|----------------|----------------|--------------------------------|----------------|--------------------------------|------------------------|--------------------------------|----------------|---------------------|--------------------------------|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:52 (LAR07)<br>07:23 (LAR07) | 06:57<br>18:44 | 18:10 (LAR02)<br>18:21 (LAR02) | 06:32<br>16:56         | 07:00 (LAR14)<br>15:17 (LAR03) | 07:08<br>16:31 | 50<br>15:35 (LAR03) | 14:45 (LAR03)<br>15:35 (LAR03) |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:52 (LAR07)<br>07:22 (LAR07) | 06:58<br>18:42 | 18:10 (LAR02)<br>18:20 (LAR02) | 06:33<br>16:55         | 07:00 (LAR14)<br>15:19 (LAR03) | 07:09<br>16:31 | 50<br>15:35 (LAR03) | 14:45 (LAR03)<br>15:35 (LAR03) |
| 3                   | 05:30<br>20:40 | 05:55<br>20:18 | 06:27<br>19:33 | 06:52 (LAR07)<br>07:22 (LAR07) | 06:59<br>18:41 | 18:10 (LAR02)<br>18:18 (LAR02) | 06:34<br>16:54         | 07:02 (LAR14)<br>15:21 (LAR03) | 07:10<br>16:30 | 49<br>15:35 (LAR03) | 14:46 (LAR03)<br>15:35 (LAR03) |
| 4                   | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 06:53 (LAR07)<br>07:21 (LAR07) | 07:00<br>18:39 | 18:11 (LAR02)<br>18:16 (LAR02) | 06:36<br>16:53         | 07:03 (LAR14)<br>15:23 (LAR03) | 07:11<br>16:30 | 49<br>15:35 (LAR03) | 14:46 (LAR03)<br>15:35 (LAR03) |
| 5                   | 05:31<br>20:39 | 05:57<br>20:15 | 06:30<br>19:29 | 06:53 (LAR07)<br>07:20 (LAR07) | 07:01<br>18:37 | 18:13 (LAR02)<br>18:14 (LAR02) | 06:37<br>16:51         | 07:04 (LAR14)<br>15:24 (LAR03) | 07:12<br>16:30 | 48<br>15:35 (LAR03) | 14:47 (LAR03)<br>15:35 (LAR03) |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:27 | 06:54 (LAR07)<br>07:18 (LAR07) | 07:02<br>18:36 | 18:14 (LAR02)                  | 06:38<br>16:50         | 07:05 (LAR14)<br>15:24 (LAR03) | 07:13<br>16:30 | 47<br>15:35 (LAR03) | 14:48 (LAR03)<br>15:35 (LAR03) |
| 7                   | 05:32<br>20:39 | 06:00<br>20:13 | 06:32<br>19:26 | 06:55 (LAR07)<br>07:17 (LAR07) | 07:03<br>18:34 |                                | 06:39<br>16:49         | 07:08 (LAR14)<br>15:26 (LAR03) | 07:14<br>16:30 | 47<br>15:35 (LAR03) | 14:48 (LAR03)<br>15:35 (LAR03) |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 06:56 (LAR07)<br>07:15 (LAR07) | 07:04<br>18:32 |                                | 06:41<br>16:48         | 07:12 (LAR14)<br>15:27 (LAR03) | 07:15<br>16:30 | 47<br>15:36 (LAR03) | 14:49 (LAR03)<br>15:36 (LAR03) |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22 | 06:58 (LAR07)<br>07:12 (LAR07) | 07:05<br>18:31 |                                | 06:42<br>16:47         | 14:42 (LAR03)<br>15:27 (LAR03) | 07:16<br>16:30 | 46<br>15:36 (LAR03) | 14:50 (LAR03)<br>15:36 (LAR03) |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:03 (LAR07)<br>07:07 (LAR07) | 07:06<br>18:29 |                                | 06:43<br>16:46         | 14:42 (LAR03)<br>15:28 (LAR03) | 07:17<br>16:30 | 45<br>15:36 (LAR03) | 14:51 (LAR03)<br>15:36 (LAR03) |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 |                                | 07:07<br>18:27 |                                | 06:44<br>16:45         | 14:41 (LAR03)<br>15:29 (LAR03) | 07:17<br>16:30 | 45<br>15:36 (LAR03) | 14:51 (LAR03)<br>15:36 (LAR03) |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 |                                | 07:09<br>18:26 |                                | 06:46<br>16:44         | 14:41 (LAR03)<br>15:29 (LAR03) | 07:18<br>16:30 | 45<br>15:36 (LAR03) | 14:51 (LAR03)<br>15:36 (LAR03) |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 |                                | 07:10<br>18:24 |                                | 06:47<br>16:43         | 14:41 (LAR03)<br>15:30 (LAR03) | 07:19<br>16:30 | 44<br>15:36 (LAR03) | 14:52 (LAR03)<br>15:36 (LAR03) |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 |                                | 07:11<br>18:22 |                                | 06:48<br>16:42         | 14:40 (LAR03)<br>15:30 (LAR03) | 07:20<br>16:30 | 44<br>15:37 (LAR03) | 14:53 (LAR03)<br>15:37 (LAR03) |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 |                                | 07:12<br>18:21 |                                | 06:49<br>16:41         | 14:40 (LAR03)<br>15:31 (LAR03) | 07:21<br>16:30 | 43<br>15:37 (LAR03) | 14:54 (LAR03)<br>15:37 (LAR03) |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 |                                | 07:13<br>18:19 | 08:10 (LAR14)                  | 06:50<br>16:40         | 14:41 (LAR03)<br>15:32 (LAR03) | 07:21<br>16:31 | 43<br>15:37 (LAR03) | 14:54 (LAR03)<br>15:37 (LAR03) |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 |                                | 07:14<br>18:18 | 08:07 (LAR14)                  | 06:52<br>16:39         | 14:40 (LAR03)<br>15:32 (LAR03) | 07:22<br>16:31 | 43<br>15:38 (LAR03) | 14:55 (LAR03)<br>15:38 (LAR03) |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 |                                | 07:15<br>18:16 | 08:04 (LAR14)                  | 06:53<br>16:38         | 14:40 (LAR03)<br>15:32 (LAR03) | 07:23<br>16:31 | 42<br>15:38 (LAR03) | 14:56 (LAR03)<br>15:38 (LAR03) |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 |                                | 07:16<br>18:15 | 08:27 (LAR14)                  | 06:54<br>16:38         | 14:40 (LAR03)<br>15:32 (LAR03) | 07:23<br>16:32 | 42<br>15:38 (LAR03) | 14:56 (LAR03)<br>15:38 (LAR03) |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:08 (LAR07)                  | 07:18<br>18:13 | 08:23 (LAR14)                  | 06:55<br>16:37         | 14:41 (LAR03)<br>15:33 (LAR03) | 07:24<br>16:32 | 42<br>15:39 (LAR03) | 14:57 (LAR03)<br>15:39 (LAR03) |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:02 | 07:04 (LAR07)                  | 07:19<br>18:12 | 08:25 (LAR14)                  | 06:56<br>16:36         | 14:41 (LAR03)<br>15:33 (LAR03) | 07:25<br>16:32 | 42<br>15:39 (LAR03) | 14:57 (LAR03)<br>15:39 (LAR03) |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:19 (LAR07)                  | 07:20<br>18:10 | 08:30 (LAR14)                  | 06:58<br>16:35         | 14:41 (LAR03)<br>15:33 (LAR03) | 07:25<br>16:33 | 42<br>15:40 (LAR03) | 14:58 (LAR03)<br>15:40 (LAR03) |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:00 (LAR07)                  | 07:21<br>18:09 | 08:31 (LAR14)                  | 06:59<br>16:35         | 14:41 (LAR03)<br>15:33 (LAR03) | 07:26<br>16:33 | 42<br>15:40 (LAR03) | 14:58 (LAR03)<br>15:40 (LAR03) |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 06:59 (LAR07)                  | 07:22<br>18:07 | 08:32 (LAR14)                  | 07:00<br>16:34         | 14:42 (LAR03)<br>15:34 (LAR03) | 07:26<br>16:34 | 42<br>15:41 (LAR03) | 14:59 (LAR03)<br>15:41 (LAR03) |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 07:23 (LAR07)                  | 07:23<br>18:06 | 08:33 (LAR14)                  | 07:01<br>16:34         | 14:42 (LAR03)<br>15:34 (LAR03) | 07:26<br>16:35 | 42<br>15:41 (LAR03) | 14:59 (LAR03)<br>15:41 (LAR03) |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:24 (LAR07)                  | 07:24<br>18:05 | 08:34 (LAR14)                  | 07:02<br>16:33         | 14:42 (LAR03)<br>15:34 (LAR03) | 07:27<br>16:35 | 43<br>15:42 (LAR03) | 14:59 (LAR03)<br>15:42 (LAR03) |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:56 (LAR07)                  | 07:25<br>18:04 | 08:35 (LAR14)                  | 07:03<br>16:33         | 14:42 (LAR03)<br>15:34 (LAR03) | 07:27<br>16:36 | 43<br>15:43 (LAR03) | 15:00 (LAR03)<br>15:43 (LAR03) |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:24 (LAR07)                  | 07:26<br>18:03 | 08:36 (LAR14)                  | 07:04<br>16:32         | 14:43 (LAR03)<br>15:34 (LAR03) | 07:28<br>16:36 | 43<br>15:43 (LAR03) | 15:00 (LAR03)<br>15:43 (LAR03) |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:25 (LAR07)                  | 07:27<br>18:02 | 08:37 (LAR14)                  | 07:05<br>16:32         | 14:44 (LAR03)<br>15:35 (LAR03) | 07:28<br>16:37 | 44<br>15:44 (LAR03) | 15:00 (LAR03)<br>15:44 (LAR03) |
| 30                  | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:25 (LAR07)                  | 07:28<br>18:01 | 08:38 (LAR14)                  | 07:06<br>16:31         | 14:44 (LAR03)<br>15:35 (LAR03) | 07:28<br>16:38 | 44<br>15:44 (LAR03) | 15:00 (LAR03)<br>15:44 (LAR03) |
| 31                  | 05:52<br>20:21 | 06:24<br>19:38 | 06:53 (LAR07)  | 07:24 (LAR07)                  | 06:31<br>16:58 | 08:39 (LAR14)                  | 07:07<br>15:15 (LAR03) | 14:44 (LAR03)<br>15:35 (LAR03) | 07:28<br>16:39 | 45<br>15:45 (LAR03) | 15:00 (LAR03)<br>15:45 (LAR03) |
| Potential sun hours | 462            | 430            | 375            |                                | 344            |                                | 296                    |                                | 285            |                     |                                |
| Total, worst case   |                | 293            | 345            |                                | 516            |                                | 1562                   |                                | 1383           |                     |                                |
| Sun reduction       |                | 0,67           | 0,58           |                                | 0,44           |                                | 0,41                   |                                | 0,36           |                     |                                |
| Oper. time red.     |                | 0,70           | 0,70           |                                | 0,70           |                                | 0,70                   |                                | 0,70           |                     |                                |
| Wind dir. red.      |                | 0,60           | 0,60           |                                | 0,65           |                                | 0,55                   |                                | 0,54           |                     |                                |
| Total reduction     |                | 0,28           | 0,24           |                                | 0,20           |                                | 0,16                   |                                | 0,14           |                     |                                |
| Total, real         |                | 82             | 83             |                                | 102            |                                | 243                    |                                | 189            |                     |                                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R76 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (60)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March                                    | April                          | May            | June           |
|---------------------|----------------|----------------|--|--------------------------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50                           | 07:08 (LAR07)<br>17:45 (LAR07) | 06:45<br>19:25 | 05:58<br>20:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51                           | 07:07 (LAR07)<br>17:45 (LAR07) | 06:44<br>19:26 | 05:57<br>20:29 |
| 3                   | 07:29<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52                           | 07:06 (LAR07)<br>17:44 (LAR07) | 06:42<br>19:27 | 05:56<br>20:30 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54                           | 07:06 (LAR07)<br>17:45 (LAR07) | 06:40<br>19:29 | 05:54<br>20:31 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55                           | 07:06 (LAR07)<br>17:44 (LAR07) | 06:39<br>19:30 | 05:53<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56                           | 07:06 (LAR07)<br>17:43 (LAR07) | 06:37<br>19:31 | 05:52<br>20:32 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57                           | 07:06 (LAR07)<br>17:43 (LAR07) | 06:35<br>19:32 | 05:51<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58                           | 07:06 (LAR07)<br>17:42 (LAR07) | 06:34<br>19:33 | 05:49<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59                           | 07:07 (LAR07)<br>17:40 (LAR07) | 06:32<br>19:34 | 05:48<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01                           | 07:08 (LAR07)<br>17:40 (LAR07) | 06:30<br>19:35 | 05:47<br>20:35 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02                           | 07:08 (LAR07)<br>17:38 (LAR07) | 06:29<br>19:36 | 05:46<br>20:35 |
| 12                  | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03                           | 07:09 (LAR07)<br>17:36 (LAR07) | 06:27<br>19:37 | 05:45<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04                           | 07:11 (LAR07)<br>17:35 (LAR07) | 06:25<br>19:38 | 05:44<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05                           | 07:13 (LAR07)<br>17:32 (LAR07) | 06:24<br>19:40 | 05:43<br>20:37 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06                           | 07:15 (LAR07)<br>17:28 (LAR07) | 06:22<br>19:41 | 05:42<br>20:37 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07                           | 06:21<br>19:42                 | 05:41<br>20:14 | 05:25<br>20:38 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09                           | 06:19<br>19:43                 | 05:40<br>20:15 | 05:25<br>20:38 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10                           | 06:17<br>19:44                 | 05:39<br>20:16 | 05:25<br>20:38 |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 07:24 (LAR07)<br>06:08<br>18:11          | 06:16<br>19:45                 | 05:38<br>20:17 | 05:25<br>20:39 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 07:30 (LAR07)<br>06:06<br>18:12          | 06:14<br>19:46                 | 05:37<br>20:18 | 05:25<br>20:39 |
| 21                  | 07:23<br>17:01 | 06:49<br>17:40 | 07:17 (LAR07)<br>18:13                   | 06:13<br>19:47                 | 05:36<br>20:19 | 05:25<br>20:39 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 07:14 (LAR07)<br>18:14                   | 06:11<br>19:48                 | 05:35<br>20:20 | 05:26<br>20:39 |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 07:13 (LAR07)<br>18:15                   | 06:10<br>19:49                 | 05:34<br>20:21 | 05:26<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 07:11 (LAR07)<br>18:16                   | 06:08<br>19:51                 | 05:34<br>20:22 | 05:26<br>20:40 |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 07:10 (LAR07)<br>18:17                   | 06:07<br>19:52                 | 05:33<br>20:23 | 05:26<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 07:09 (LAR07)<br>18:19                   | 06:05<br>19:53                 | 05:32<br>20:24 | 05:27<br>20:40 |
| 27                  | 07:19<br>17:08 | 06:40<br>17:48 | 07:09 (LAR07)<br>18:20                   | 06:04<br>19:54                 | 05:31<br>20:25 | 05:27<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 07:08 (LAR07)<br>18:21                   | 06:02<br>19:55                 | 05:31<br>20:25 | 05:27<br>20:40 |
| 29                  | 07:17<br>17:11 |                | 07:44 (LAR07)<br>18:21<br>06:50<br>19:22 | 19:55<br>19:56                 | 20:25<br>20:26 | 20:40<br>20:40 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23                           | 06:00<br>19:57                 | 05:30<br>20:27 | 05:28<br>20:40 |
| 31                  | 07:15<br>17:13 |                | 06:47<br>19:24                           |                                | 05:29<br>20:28 |                |
| Potential sun hours | 295            | 296            | 369                                      | 400                            | 451            | 455            |
| Total, worst case   |                | 262            | 478                                      |                                |                |                |
| Sun reduction       |                | 0,46           | 0,44                                     |                                |                |                |
| Oper. time red.     |                | 0,70           | 0,70                                     |                                |                |                |
| Wind dir. red.      |                | 0,64           | 0,64                                     |                                |                |                |
| Total reduction     |                | 0,20           | 0,20                                     |                                |                |                |
| Total, real         |                | 54             | 94                                       |                                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R76 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (60)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  | August | September | October | November      | December      |               |               |    |               |  |
|---------------------|-------|--------|-----------|---------|---------------|---------------|---------------|---------------|----|---------------|--|
| 1                   | 05:29 | 05:53  | 06:25     | 06:57   | 07:49 (LAR07) | 06:32         | 07:08         |               |    |               |  |
|                     | 20:40 | 20:20  | 19:36     | 18:44   | 26            | 08:15 (LAR07) | 16:56         | 16:31         |    |               |  |
| 2                   | 05:29 | 05:54  | 06:26     | 06:58   | 07:47 (LAR07) | 06:33         | 07:09         |               |    |               |  |
|                     | 20:40 | 20:19  | 19:34     | 18:42   | 29            | 08:16 (LAR07) | 16:55         | 16:31         |    |               |  |
| 3                   | 05:30 | 05:55  | 06:27     | 06:59   | 07:46 (LAR07) | 06:34         | 07:10         |               |    |               |  |
|                     | 20:40 | 20:18  | 19:33     | 18:41   | 31            | 08:17 (LAR07) | 16:54         | 16:30         |    |               |  |
| 4                   | 05:30 | 05:56  | 06:28     | 07:00   | 07:45 (LAR07) | 06:36         | 07:11         |               |    |               |  |
|                     | 20:39 | 20:17  | 19:31     | 18:39   | 33            | 08:18 (LAR07) | 16:53         | 16:30         |    |               |  |
| 5                   | 05:31 | 05:57  | 06:30     | 07:01   | 07:43 (LAR07) | 06:37         | 07:12         |               |    |               |  |
|                     | 20:39 | 20:15  | 19:29     | 18:37   | 35            | 08:18 (LAR07) | 16:51         | 16:30         |    |               |  |
| 6                   | 05:32 | 05:58  | 06:31     | 07:02   | 07:42 (LAR07) | 06:38         | 07:13         |               |    |               |  |
|                     | 20:39 | 20:14  | 19:27     | 18:36   | 36            | 08:18 (LAR07) | 16:50         | 16:30         |    |               |  |
| 7                   | 05:32 | 06:00  | 06:32     | 07:03   | 07:42 (LAR07) | 06:39         | 07:14         |               |    |               |  |
|                     | 20:39 | 20:13  | 19:26     | 18:34   | 36            | 08:18 (LAR07) | 16:49         | 16:30         |    |               |  |
| 8                   | 05:33 | 06:01  | 06:33     | 07:04   | 07:42 (LAR07) | 06:41         | 07:15         |               |    |               |  |
|                     | 20:38 | 20:12  | 19:24     | 18:32   | 37            | 08:19 (LAR07) | 16:48         | 16:30         |    |               |  |
| 9                   | 05:34 | 06:02  | 06:34     | 07:05   | 07:41 (LAR07) | 06:42         | 07:16         |               |    |               |  |
|                     | 20:38 | 20:10  | 19:22     | 18:31   | 38            | 08:19 (LAR07) | 16:47         | 16:30         |    |               |  |
| 10                  | 05:34 | 06:03  | 06:35     | 07:06   | 07:41 (LAR07) | 06:43         | 07:17         |               |    |               |  |
|                     | 20:37 | 20:09  | 19:21     | 18:29   | 38            | 08:19 (LAR07) | 16:46         | 16:30         |    |               |  |
| 11                  | 05:35 | 06:04  | 06:36     | 07:07   | 07:40 (LAR07) | 06:44         | 07:17         |               |    |               |  |
|                     | 20:37 | 20:08  | 19:19     | 18:27   | 38            | 08:18 (LAR07) | 16:45         | 16:30         |    |               |  |
| 12                  | 05:36 | 06:05  | 06:37     | 07:09   | 07:40 (LAR07) | 06:45         | 07:18         | 15:07 (LAR03) |    |               |  |
|                     | 20:36 | 20:06  | 19:17     | 18:26   | 38            | 08:18 (LAR07) | 16:44         | 16:30         | 4  | 15:11 (LAR03) |  |
| 13                  | 05:36 | 06:06  | 06:38     | 07:10   | 07:40 (LAR07) | 06:47         | 07:19         | 15:06 (LAR03) |    |               |  |
|                     | 20:36 | 20:05  | 19:15     | 18:24   | 37            | 08:17 (LAR07) | 16:43         | 16:30         | 7  | 15:13 (LAR03) |  |
| 14                  | 05:37 | 06:07  | 06:39     | 07:11   | 07:41 (LAR07) | 06:48         | 07:20         | 15:05 (LAR03) |    |               |  |
|                     | 20:35 | 20:04  | 19:14     | 18:22   | 36            | 08:17 (LAR07) | 16:42         | 16:30         | 10 | 15:15 (LAR03) |  |
| 15                  | 05:38 | 06:08  | 06:40     | 07:12   | 07:41 (LAR07) | 06:49         | 07:21         | 15:05 (LAR03) |    |               |  |
|                     | 20:35 | 20:02  | 19:12     | 18:21   | 35            | 08:16 (LAR07) | 16:41         | 16:30         | 11 | 15:16 (LAR03) |  |
| 16                  | 05:39 | 06:09  | 06:41     | 07:13   | 07:42 (LAR07) | 06:50         | 07:21         | 15:04 (LAR03) |    |               |  |
|                     | 20:34 | 20:01  | 19:10     | 18:19   | 33            | 08:15 (LAR07) | 16:40         | 16:31         | 13 | 15:17 (LAR03) |  |
| 17                  | 05:40 | 06:10  | 06:42     | 07:14   | 07:42 (LAR07) | 06:52         | 07:22         | 15:05 (LAR03) |    |               |  |
|                     | 20:34 | 19:59  | 19:08     | 18:18   | 32            | 08:14 (LAR07) | 16:39         | 16:31         | 13 | 15:18 (LAR03) |  |
| 18                  | 05:40 | 06:11  | 06:43     | 07:15   | 07:43 (LAR07) | 06:53         | 07:23         | 15:05 (LAR03) |    |               |  |
|                     | 20:33 | 19:58  | 19:07     | 18:16   | 30            | 08:13 (LAR07) | 16:38         | 16:31         | 14 | 15:19 (LAR03) |  |
| 19                  | 05:41 | 06:12  | 06:44     | 07:17   | 07:44 (LAR07) | 06:54         | 07:23         | 15:05 (LAR03) |    |               |  |
|                     | 20:32 | 19:56  | 19:05     | 18:15   | 27            | 08:11 (LAR07) | 16:38         | 16:31         | 14 | 15:19 (LAR03) |  |
| 20                  | 05:42 | 06:13  | 06:45     | 07:18   | 07:46 (LAR07) | 06:55         | 07:24         | 15:06 (LAR03) |    |               |  |
|                     | 20:31 | 19:55  | 19:03     | 18:13   | 24            | 08:10 (LAR07) | 16:37         | 16:32         | 14 | 15:20 (LAR03) |  |
| 21                  | 05:43 | 06:14  | 06:46     | 07:19   | 07:48 (LAR07) | 06:56         | 07:25         | 15:06 (LAR03) |    |               |  |
|                     | 20:31 | 19:53  | 19:01     | 18:12   | 19            | 08:07 (LAR07) | 16:36         | 16:32         | 14 | 15:20 (LAR03) |  |
| 22                  | 05:44 | 06:15  | 06:47     | 07:20   | 07:50 (LAR07) | 06:58         | 07:25         | 15:06 (LAR03) |    |               |  |
|                     | 20:30 | 19:52  | 19:00     | 18:10   | 14            | 08:04 (LAR07) | 16:35         | 16:33         | 15 | 15:21 (LAR03) |  |
| 23                  | 05:45 | 06:16  | 06:48     | 07:21   | 06:59         | 07:26         | 15:07 (LAR03) |               |    |               |  |
|                     | 20:29 | 19:50  | 18:58     | 18:09   | 16:35         | 16:33         | 14            | 15:21 (LAR03) |    |               |  |
| 24                  | 05:46 | 06:17  | 06:49     | 07:22   | 07:00         | 07:26         | 15:08 (LAR03) |               |    |               |  |
|                     | 20:28 | 19:49  | 18:56     | 18:07   | 16:34         | 16:34         | 14            | 15:22 (LAR03) |    |               |  |
| 25                  | 05:47 | 06:18  | 06:50     | 06:24   | 07:01         | 07:26         | 15:08 (LAR03) |               |    |               |  |
|                     | 20:27 | 19:47  | 18:55     | 17:06   | 16:34         | 16:34         | 14            | 15:22 (LAR03) |    |               |  |
| 26                  | 05:48 | 06:19  | 06:51     | 06:25   | 07:02         | 07:27         | 15:09 (LAR03) |               |    |               |  |
|                     | 20:26 | 19:46  | 18:53     | 17:04   | 16:33         | 16:35         | 13            | 15:22 (LAR03) |    |               |  |
| 27                  | 05:49 | 06:20  | 06:52     | 06:26   | 07:03         | 07:27         | 15:10 (LAR03) |               |    |               |  |
|                     | 20:25 | 19:44  | 18:51     | 17:03   | 16:33         | 16:36         | 13            | 15:23 (LAR03) |    |               |  |
| 28                  | 05:50 | 06:21  | 06:53     | 06:27   | 07:05         | 07:28         | 15:11 (LAR03) |               |    |               |  |
|                     | 20:24 | 19:42  | 18:49     | 9       | 08:08 (LAR07) | 17:02         | 16:32         | 16:36         | 12 | 15:23 (LAR03) |  |
| 29                  | 05:50 | 06:22  | 06:54     | 06:28   | 07:06         | 07:28         | 15:12 (LAR03) |               |    |               |  |
|                     | 20:23 | 19:41  | 18:48     | 18      | 08:12 (LAR07) | 17:00         | 16:32         | 16:37         | 10 | 15:22 (LAR03) |  |
| 30                  | 05:51 | 06:23  | 06:55     | 06:30   | 07:07         | 07:28         | 15:13 (LAR03) |               |    |               |  |
|                     | 20:22 | 19:39  | 18:46     | 22      | 08:14 (LAR07) | 16:59         | 16:31         | 16:38         | 9  | 15:22 (LAR03) |  |
| 31                  | 05:52 | 06:24  | 06:56     | 06:31   | 07:08         | 07:28         | 15:14 (LAR03) |               |    |               |  |
|                     | 20:21 | 19:38  | 18:45     | 16:58   | 16:39         | 16:39         | 5             | 15:20 (LAR03) |    |               |  |
| Potential sun hours | 462   | 430    | 375       | 344     | 296           | 285           |               |               |    |               |  |
| Total, worst case   |       |        | 49        | 702     |               | 233           |               |               |    |               |  |
| Sun reduction       |       |        | 0,58      | 0,44    |               | 0,36          |               |               |    |               |  |
| Oper. time red.     |       |        | 0,70      | 0,70    |               | 0,70          |               |               |    |               |  |
| Wind dir. red.      |       |        | 0,64      | 0,64    |               | 0,54          |               |               |    |               |  |
| Total reduction     |       |        | 0,26      | 0,19    |               | 0,14          |               |               |    |               |  |
| Total, real         |       |        | 13        | 137     |               | 32            |               |               |    |               |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R77 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (61)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January |                  | February |    | March         |                  | April            |       | May   |    | June          |                        |
|---------------------|---------|------------------|----------|----|---------------|------------------|------------------|-------|-------|----|---------------|------------------------|
| 1                   | 07:28   | 08:07 (LAR14)    | 07:14    |    | 06:37         | 07:00 (LAR07)    | 06:45            |       | 05:58 |    | 05:29         | 05:50 (LAR06)          |
|                     | 16:40   | 30 08:37 (LAR14) | 17:15    |    | 17:50         | 22 07:22 (LAR07) | 19:25            |       | 19:58 |    | 20:29         | 26 06:16 (LAR06)       |
| 2                   | 07:29   | 08:08 (LAR14)    | 07:13    |    | 06:36         | 06:58 (LAR07)    | 06:44            |       | 05:57 |    | 05:28         | 05:50 (LAR06)          |
|                     | 16:41   | 29 08:37 (LAR14) | 17:16    |    | 17:51         | 25 07:23 (LAR07) | 19:26            |       | 19:59 |    | 20:29         | 27 06:17 (LAR06)       |
| 3                   | 07:29   | 08:08 (LAR14)    | 07:12    |    | 06:34         | 06:56 (LAR07)    | 06:42            |       | 05:56 |    | 05:28         | 05:51 (LAR06)          |
|                     | 16:41   | 29 08:37 (LAR14) | 17:17    |    | 17:52         | 27 07:23 (LAR07) | 19:27            |       | 20:00 |    | 20:30         | 27 06:18 (LAR06)       |
| 4                   | 07:29   | 08:09 (LAR14)    | 07:11    |    | 06:33         | 06:56 (LAR07)    | 06:40            |       | 05:54 |    | 05:27         | 05:50 (LAR06)          |
|                     | 16:42   | 29 08:38 (LAR14) | 17:19    |    | 17:54         | 28 07:24 (LAR07) | 19:29            |       | 20:02 |    | 20:31         | 28 06:18 (LAR06)       |
| 5                   | 07:29   | 08:10 (LAR14)    | 07:10    |    | 06:31         | 06:55 (LAR07)    | 06:39            |       | 05:53 |    | 05:27         | 05:50 (LAR06)          |
|                     | 16:43   | 28 08:38 (LAR14) | 17:20    |    | 17:55         | 29 07:24 (LAR07) | 19:30            |       | 20:03 |    | 20:32         | 28 06:18 (LAR06)       |
| 6                   | 07:29   | 08:10 (LAR14)    | 07:09    |    | 06:29         | 06:54 (LAR07)    | 06:37            |       | 05:52 |    | 05:27         | 05:51 (LAR06)          |
|                     | 16:44   | 28 08:38 (LAR14) | 17:21    |    | 17:56         | 30 07:24 (LAR07) | 19:31            |       | 20:04 |    | 20:32         | 28 06:19 (LAR06)       |
| 7                   | 07:29   | 08:11 (LAR14)    | 07:08    |    | 06:28         | 06:54 (LAR07)    | 06:35            |       | 05:51 |    | 05:26         | 05:50 (LAR06)          |
|                     | 16:45   | 28 08:39 (LAR14) | 17:22    |    | 17:57         | 31 07:25 (LAR07) | 19:32            |       | 20:05 |    | 20:33         | 29 06:19 (LAR06)       |
| 8                   | 07:28   | 08:12 (LAR14)    | 07:07    |    | 06:26         | 06:53 (LAR07)    | 06:34            |       | 05:49 |    | 05:26         | 05:50 (LAR06)          |
|                     | 16:46   | 27 08:39 (LAR14) | 17:24    |    | 17:58         | 31 07:24 (LAR07) | 19:33            |       | 20:06 |    | 20:34         | 29 06:19 (LAR06)       |
| 9                   | 07:28   | 08:12 (LAR14)    | 07:06    |    | 06:24         | 06:53 (LAR07)    | 06:32            |       | 05:48 |    | 05:26         | 05:50 (LAR06)          |
|                     | 16:47   | 26 08:38 (LAR14) | 17:25    |    | 17:59         | 31 07:24 (LAR07) | 19:34            |       | 20:07 |    | 20:34         | 30 06:20 (LAR06)       |
| 10                  | 07:28   | 08:13 (LAR14)    | 07:04    |    | 06:23         | 06:53 (LAR07)    | 06:30            |       | 05:47 |    | 05:25         | 05:51 (LAR06)          |
|                     | 16:48   | 25 08:38 (LAR14) | 17:26    |    | 18:01         | 31 07:24 (LAR07) | 19:35            |       | 20:08 |    | 20:35         | 29 06:20 (LAR06)       |
| 11                  | 07:28   | 08:14 (LAR14)    | 07:03    |    | 06:21         | 06:53 (LAR07)    | 06:29            |       | 05:46 |    | 05:25         | 05:51 (LAR06)          |
|                     | 16:49   | 25 08:39 (LAR14) | 17:28    |    | 18:02         | 30 07:23 (LAR07) | 19:36            |       | 20:09 |    | 20:35         | 30 06:21 (LAR06)       |
| 12                  | 07:28   | 08:15 (LAR14)    | 07:02    |    | 06:19         | 06:53 (LAR07)    | 06:27            |       | 05:45 |    | 05:25         | 05:51 (LAR06)          |
|                     | 16:50   | 23 08:38 (LAR14) | 17:29    |    | 18:03         | 29 07:22 (LAR07) | 19:37            |       | 20:10 |    | 20:36         | 30 06:21 (LAR06)       |
| 13                  | 07:27   | 08:16 (LAR14)    | 07:01    |    | 06:18         | 06:55 (LAR07)    | 06:25            |       | 05:44 |    | 05:25         | 05:51 (LAR06)          |
|                     | 16:52   | 22 08:38 (LAR14) | 17:30    |    | 18:04         | 26 07:21 (LAR07) | 19:38            |       | 20:11 |    | 20:36         | 30 06:21 (LAR06)       |
| 14                  | 07:27   | 08:18 (LAR14)    | 06:59    |    | 06:16         | 06:55 (LAR07)    | 06:24            |       | 05:43 |    | 05:25         | 05:51 (LAR06)          |
|                     | 16:53   | 20 08:38 (LAR14) | 17:31    |    | 18:05         | 24 07:19 (LAR07) | 19:40            |       | 20:12 |    | 20:37         | 30 06:21 (LAR06)       |
| 15                  | 07:26   | 08:19 (LAR14)    | 06:58    |    | 06:14         | 06:56 (LAR07)    | 06:22            |       | 05:42 |    | 05:25         | 05:52 (LAR06)          |
|                     | 16:54   | 18 08:37 (LAR14) | 17:33    | 2  | 17:10 (LAR02) | 18:06            | 21 07:17 (LAR07) | 19:41 | 20:13 |    | 20:37         | 30 06:22 (LAR06)       |
| 16                  | 07:26   | 08:21 (LAR14)    | 06:57    |    | 17:06 (LAR02) | 06:13            | 18 06:58 (LAR07) | 06:21 | 05:41 |    | 05:25         | 05:52 (LAR06)          |
|                     | 16:55   | 15 08:36 (LAR14) | 17:34    | 5  | 17:11 (LAR02) | 18:07            | 18 07:16 (LAR07) | 19:42 | 20:14 |    | 20:38         | 30 06:22 (LAR06)       |
| 17                  | 07:26   | 08:22 (LAR14)    | 06:55    |    | 17:05 (LAR02) | 06:11            | 13 07:00 (LAR07) | 06:19 | 05:40 |    | 05:25         | 05:52 (LAR06)          |
|                     | 16:56   | 13 08:35 (LAR14) | 17:35    | 8  | 17:13 (LAR02) | 18:09            | 13 07:13 (LAR07) | 19:43 | 20:15 |    | 20:38         | 30 06:22 (LAR06)       |
| 18                  | 07:25   | 08:24 (LAR14)    | 06:54    |    | 17:04 (LAR02) | 06:09            |                  | 06:17 | 05:39 |    | 05:25         | 05:52 (LAR06)          |
|                     | 16:57   | 8 08:32 (LAR14)  | 17:36    | 10 | 17:14 (LAR02) | 18:10            |                  | 19:44 | 20:16 |    | 20:38         | 30 06:22 (LAR06)       |
| 19                  | 07:25   |                  | 06:52    |    | 17:04 (LAR02) | 06:08            |                  | 06:16 | 05:38 |    | 05:25         | 05:52 (LAR06)          |
|                     | 16:59   |                  | 17:38    | 11 | 17:15 (LAR02) | 18:11            |                  | 19:45 | 20:17 |    | 20:39         | 30 06:22 (LAR06)       |
| 20                  | 07:24   |                  | 06:51    |    | 17:03 (LAR02) | 06:06            |                  | 06:14 | 05:37 |    | 05:25         | 05:52 (LAR06)          |
|                     | 17:00   |                  | 17:39    | 13 | 17:16 (LAR02) | 18:12            |                  | 19:46 | 20:18 |    | 20:39         | 30 06:22 (LAR06)       |
| 21                  | 07:23   |                  | 06:49    |    | 17:04 (LAR02) | 06:04            |                  | 06:13 | 05:36 |    | 05:25         | 05:52 (LAR06)          |
|                     | 17:01   |                  | 17:40    | 14 | 17:18 (LAR02) | 18:13            |                  | 19:47 | 20:19 |    | 20:39         | 30 06:22 (LAR06)       |
| 22                  | 07:23   |                  | 06:48    |    | 17:04 (LAR02) | 06:02            |                  | 06:11 | 05:35 |    | 05:26         | 05:53 (LAR06)          |
|                     | 17:02   |                  | 17:41    | 15 | 17:19 (LAR02) | 18:14            |                  | 19:48 | 20:20 | 5  | 06:05 (LAR06) | 20:39 30 06:23 (LAR06) |
| 23                  | 07:22   |                  | 06:47    |    | 17:05 (LAR02) | 06:01            |                  | 06:10 | 05:34 |    | 05:26         | 05:53 (LAR06)          |
|                     | 17:03   |                  | 17:43    | 16 | 17:21 (LAR02) | 18:15            |                  | 19:49 | 20:21 | 11 | 06:09 (LAR06) | 20:40 30 06:23 (LAR06) |
| 24                  | 07:21   |                  | 06:45    |    | 17:05 (LAR02) | 05:59            |                  | 06:08 | 05:34 |    | 05:26         | 05:53 (LAR06)          |
|                     | 17:05   |                  | 17:44    | 16 | 17:21 (LAR02) | 18:16            |                  | 19:51 | 20:22 | 14 | 06:10 (LAR06) | 20:40 30 06:23 (LAR06) |
| 25                  | 07:21   |                  | 06:44    |    | 17:07 (LAR02) | 05:57            |                  | 06:07 | 05:33 |    | 05:26         | 05:53 (LAR06)          |
|                     | 17:06   |                  | 17:45    | 13 | 17:20 (LAR02) | 18:17            |                  | 19:52 | 20:23 | 17 | 06:11 (LAR06) | 20:40 30 06:23 (LAR06) |
| 26                  | 07:20   |                  | 06:42    |    | 07:09 (LAR07) | 05:56            |                  | 06:05 | 05:32 |    | 05:27         | 05:54 (LAR06)          |
|                     | 17:07   |                  | 17:46    | 12 | 17:17 (LAR02) | 18:19            |                  | 19:53 | 20:24 | 19 | 06:13 (LAR06) | 20:40 30 06:24 (LAR06) |
| 27                  | 07:19   |                  | 06:40    |    | 07:04 (LAR07) | 05:54            |                  | 06:04 | 05:31 |    | 05:27         | 05:54 (LAR06)          |
|                     | 17:08   |                  | 17:48    | 14 | 07:18 (LAR07) | 18:20            |                  | 19:54 | 20:25 | 20 | 06:13 (LAR06) | 20:40 30 06:24 (LAR06) |
| 28                  | 07:18   |                  | 06:39    |    | 07:01 (LAR07) | 05:52            |                  | 06:03 | 05:31 |    | 05:28         | 05:54 (LAR06)          |
|                     | 17:10   |                  | 17:49    | 19 | 07:20 (LAR07) | 18:21            |                  | 19:55 | 20:25 | 22 | 06:14 (LAR06) | 20:40 31 06:25 (LAR06) |
| 29                  | 07:17   |                  |          |    | 06:50         |                  |                  | 06:01 | 05:30 |    | 05:28         | 05:54 (LAR06)          |
|                     | 17:11   |                  |          |    | 19:22         |                  |                  | 19:56 | 20:26 | 23 | 06:15 (LAR06) | 20:40 30 06:24 (LAR06) |
| 30                  | 07:16   |                  |          |    | 06:49         |                  |                  | 06:00 | 05:30 |    | 05:28         | 05:54 (LAR06)          |
|                     | 17:12   |                  |          |    | 19:23         |                  |                  | 19:57 | 20:27 | 24 | 06:15 (LAR06) | 20:40 30 06:24 (LAR06) |
| 31                  | 07:15   |                  |          |    | 06:47         |                  |                  |       | 05:29 |    | 05:51 (LAR06) |                        |
|                     | 17:13   |                  |          |    | 19:24         |                  |                  |       | 20:28 | 25 | 06:16 (LAR06) |                        |
| Potential sun hours | 295     |                  | 296      |    | 369           |                  | 400              |       | 451   |    | 455           |                        |
| Total, worst case   | 423     |                  | 168      |    | 446           |                  |                  |       | 180   |    | 882           |                        |
| Sun reduction       | 0,44    |                  | 0,46     |    | 0,44          |                  |                  |       | 0,47  |    | 0,54          |                        |
| Oper. time red.     | 0,70    |                  | 0,70     |    | 0,70          |                  |                  |       | 0,70  |    | 0,70          |                        |
| Wind dir. red.      | 0,67    |                  | 0,58     |    | 0,63          |                  |                  |       | 0,57  |    | 0,57          |                        |
| Total reduction     | 0,21    |                  | 0,19     |    | 0,20          |                  |                  |       | 0,19  |    | 0,22          |                        |
| Total, real         | 88      |                  | 31       |    | 88            |                  |                  |       | 33    |    | 190           |                        |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R77 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (61)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  |                  | August |       | September        |                  | October |               | November         |                  | December         |                  |
|---------------------|-------|------------------|--------|-------|------------------|------------------|---------|---------------|------------------|------------------|------------------|------------------|
| 1                   | 05:29 | 05:55 (LAR06)    | 05:53  | 06:25 | 06:57            | 07:33 (LAR07)    | 06:32   |               | 07:08            | 07:57 (LAR14)    |                  |                  |
|                     | 20:40 | 30 06:25 (LAR06) | 20:20  | 19:36 | 18:44            | 28 08:01 (LAR07) | 16:56   |               | 16:31            | 24 08:21 (LAR14) |                  |                  |
| 2                   | 05:29 | 05:55 (LAR06)    | 05:54  | 06:26 | 06:58            | 07:32 (LAR07)    | 06:33   |               | 07:09            | 07:56 (LAR14)    |                  |                  |
|                     | 20:40 | 29 06:24 (LAR06) | 20:19  | 19:34 | 18:42            | 29 08:01 (LAR07) | 16:55   |               | 16:31            | 25 08:21 (LAR14) |                  |                  |
| 3                   | 05:30 | 05:55 (LAR06)    | 05:55  | 06:27 | 06:59            | 07:31 (LAR07)    | 06:34   |               | 07:10            | 07:56 (LAR14)    |                  |                  |
|                     | 20:40 | 30 06:25 (LAR06) | 20:18  | 19:33 | 18:41            | 30 08:01 (LAR07) | 16:54   |               | 16:30            | 26 08:22 (LAR14) |                  |                  |
| 4                   | 05:30 | 05:55 (LAR06)    | 05:56  | 06:28 | 07:00            | 07:31 (LAR07)    | 06:36   |               | 07:11            | 07:56 (LAR14)    |                  |                  |
|                     | 20:39 | 29 06:24 (LAR06) | 20:17  | 19:31 | 18:39            | 30 08:01 (LAR07) | 16:53   |               | 16:30            | 27 08:23 (LAR14) |                  |                  |
| 5                   | 05:31 | 05:56 (LAR06)    | 05:57  | 06:30 | 07:01            | 07:30 (LAR07)    | 06:37   |               | 07:12            | 07:56 (LAR14)    |                  |                  |
|                     | 20:39 | 29 06:25 (LAR06) | 20:16  | 19:29 | 18:37            | 31 08:01 (LAR07) | 16:51   |               | 16:30            | 28 08:24 (LAR14) |                  |                  |
| 6                   | 05:32 | 05:57 (LAR06)    | 05:58  | 06:31 | 07:02            | 07:30 (LAR07)    | 06:38   |               | 07:13            | 07:56 (LAR14)    |                  |                  |
|                     | 20:39 | 28 06:25 (LAR06) | 20:14  | 19:27 | 18:36            | 31 08:01 (LAR07) | 16:50   |               | 16:30            | 28 08:24 (LAR14) |                  |                  |
| 7                   | 05:32 | 05:56 (LAR06)    | 06:00  | 06:32 | 07:03            | 07:29 (LAR07)    | 06:39   |               | 07:14            | 07:57 (LAR14)    |                  |                  |
|                     | 20:39 | 29 06:25 (LAR06) | 20:13  | 19:26 | 18:34            | 31 08:00 (LAR07) | 16:49   |               | 16:30            | 28 08:25 (LAR14) |                  |                  |
| 8                   | 05:33 | 05:57 (LAR06)    | 06:01  | 06:33 | 07:04            | 07:30 (LAR07)    | 06:41   |               | 07:15            | 07:57 (LAR14)    |                  |                  |
|                     | 20:38 | 28 06:25 (LAR06) | 20:12  | 19:24 | 18:32            | 30 08:00 (LAR07) | 16:48   |               | 16:30            | 29 08:26 (LAR14) |                  |                  |
| 9                   | 05:34 | 05:58 (LAR06)    | 06:02  | 06:34 | 07:05            | 07:30 (LAR07)    | 06:42   |               | 07:16            | 07:57 (LAR14)    |                  |                  |
|                     | 20:38 | 27 06:25 (LAR06) | 20:10  | 19:22 | 18:31            | 29 07:59 (LAR07) | 16:47   |               | 16:30            | 29 08:26 (LAR14) |                  |                  |
| 10                  | 05:34 | 05:58 (LAR06)    | 06:03  | 06:35 | 07:06            | 07:31 (LAR07)    | 06:43   |               | 07:17            | 07:58 (LAR14)    |                  |                  |
|                     | 20:37 | 27 06:25 (LAR06) | 20:09  | 19:21 | 18:29            | 27 07:58 (LAR07) | 16:46   |               | 16:30            | 29 08:27 (LAR14) |                  |                  |
| 11                  | 05:35 | 05:58 (LAR06)    | 06:04  | 06:36 | 07:07            | 07:31 (LAR07)    | 06:44   |               | 07:18            | 07:58 (LAR14)    |                  |                  |
|                     | 20:37 | 27 06:25 (LAR06) | 20:08  | 19:19 | 18:27            | 26 07:57 (LAR07) | 16:45   |               | 16:30            | 30 08:28 (LAR14) |                  |                  |
| 12                  | 05:36 | 05:59 (LAR06)    | 06:05  | 06:37 | 07:09            | 07:32 (LAR07)    | 06:46   |               | 07:18            | 07:58 (LAR14)    |                  |                  |
|                     | 20:36 | 26 06:25 (LAR06) | 20:06  | 19:17 | 18:26            | 24 07:56 (LAR07) | 16:44   |               | 16:30            | 29 08:27 (LAR14) |                  |                  |
| 13                  | 05:36 | 05:59 (LAR06)    | 06:06  | 06:38 | 07:10            | 07:33 (LAR07)    | 06:47   |               | 07:19            | 07:58 (LAR14)    |                  |                  |
|                     | 20:36 | 25 06:24 (LAR06) | 20:05  | 19:15 | 18:24            | 21 07:54 (LAR07) | 16:43   |               | 16:30            | 30 08:28 (LAR14) |                  |                  |
| 14                  | 05:37 | 06:00 (LAR06)    | 06:07  | 06:39 | 07:11            | 07:35 (LAR07)    | 06:48   |               | 07:20            | 07:59 (LAR14)    |                  |                  |
|                     | 20:35 | 24 06:24 (LAR06) | 20:04  | 19:14 | 18:22            | 17 07:52 (LAR07) | 16:42   |               | 16:30            | 30 08:29 (LAR14) |                  |                  |
| 15                  | 05:38 | 06:01 (LAR06)    | 06:08  | 06:40 | 07:12            | 07:38 (LAR07)    | 06:49   |               | 07:21            | 07:59 (LAR14)    |                  |                  |
|                     | 20:35 | 23 06:24 (LAR06) | 20:02  | 19:12 | 18:21            | 14 17:47 (LAR02) | 16:41   |               | 16:30            | 31 08:30 (LAR14) |                  |                  |
| 16                  | 05:39 | 06:02 (LAR06)    | 06:09  | 06:41 | 07:13            | 17:40 (LAR02)    | 06:50   |               | 07:21            | 07:59 (LAR14)    |                  |                  |
|                     | 20:34 | 21 06:23 (LAR06) | 20:01  | 19:10 | 18:19            | 10 17:50 (LAR02) | 16:40   |               | 16:31            | 30 08:29 (LAR14) |                  |                  |
| 17                  | 05:40 | 06:03 (LAR06)    | 06:10  | 06:42 | 07:14            | 17:38 (LAR02)    | 06:52   |               | 07:22            | 08:00 (LAR14)    |                  |                  |
|                     | 20:34 | 20 06:23 (LAR06) | 19:59  | 19:08 | 18:18            | 14 17:52 (LAR02) | 16:39   |               | 16:31            | 30 08:30 (LAR14) |                  |                  |
| 18                  | 05:40 | 06:03 (LAR06)    | 06:11  | 06:43 | 07:15            | 17:36 (LAR02)    | 06:53   |               | 07:23            | 08:01 (LAR14)    |                  |                  |
|                     | 20:33 | 18 06:21 (LAR06) | 19:58  | 19:07 | 18:16            | 16 17:52 (LAR02) | 16:38   |               | 16:31            | 30 08:31 (LAR14) |                  |                  |
| 19                  | 05:41 | 06:04 (LAR06)    | 06:12  | 06:44 | 07:17            | 17:35 (LAR02)    | 06:54   |               | 07:23            | 08:01 (LAR14)    |                  |                  |
|                     | 20:32 | 16 06:20 (LAR06) | 19:56  | 19:05 | 18:15            | 16 17:51 (LAR02) | 16:38   |               | 16:32            | 30 08:31 (LAR14) |                  |                  |
| 20                  | 05:42 | 06:06 (LAR06)    | 06:13  | 06:45 | 07:18            | 17:35 (LAR02)    | 06:55   |               | 07:24            | 08:02 (LAR14)    |                  |                  |
|                     | 20:31 | 13 06:19 (LAR06) | 19:55  | 19:03 | 18:13            | 15 17:50 (LAR02) | 16:37   |               | 16:32            | 30 08:32 (LAR14) |                  |                  |
| 21                  | 05:43 | 06:08 (LAR06)    | 06:14  | 06:46 | 07:19            | 17:34 (LAR02)    | 06:56   |               | 07:25            | 08:01 (LAR14)    |                  |                  |
|                     | 20:31 | 9 06:17 (LAR06)  | 19:53  | 19:02 | 18:12            | 14 17:48 (LAR02) | 16:36   |               | 16:32            | 31 08:32 (LAR14) |                  |                  |
| 22                  | 05:44 |                  | 06:15  | 06:47 | 07:20            | 17:34 (LAR02)    | 06:58   |               | 07:25            | 08:02 (LAR14)    |                  |                  |
|                     | 20:30 |                  | 19:52  | 19:00 | 18:10            | 12 17:46 (LAR02) | 16:35   |               | 16:33            | 31 08:33 (LAR14) |                  |                  |
| 23                  | 05:45 |                  | 06:16  | 06:48 | 07:21            | 17:34 (LAR02)    | 06:59   |               | 07:26            | 08:03 (LAR14)    |                  |                  |
|                     | 20:29 |                  | 19:50  | 18:58 | 18:09            | 11 17:45 (LAR02) | 16:35   |               | 16:33            | 30 08:33 (LAR14) |                  |                  |
| 24                  | 05:46 |                  | 06:17  | 06:49 | 07:22            | 17:35 (LAR02)    | 07:00   |               | 07:26            | 08:04 (LAR14)    |                  |                  |
|                     | 20:28 |                  | 19:49  | 18:56 | 18:07            | 9 17:44 (LAR02)  | 16:34   | 7             | 08:03 (LAR14)    | 07:26            | 30 08:34 (LAR14) |                  |
| 25                  | 05:47 |                  | 06:18  | 06:50 | 06:24            | 16:35 (LAR02)    | 07:01   |               | 08:00 (LAR14)    | 07:26            | 30 08:04 (LAR14) |                  |
|                     | 20:27 |                  | 19:47  | 18:55 | 17:06            | 7 16:42 (LAR02)  | 16:34   | 13            | 08:13 (LAR14)    | 07:27            | 30 08:34 (LAR14) |                  |
| 26                  | 05:48 |                  | 06:19  | 06:51 | 06:25            | 16:36 (LAR02)    | 07:02   |               | 07:59 (LAR14)    | 07:27            | 30 08:04 (LAR14) |                  |
|                     | 20:26 |                  | 19:46  | 18:53 | 10 07:44 (LAR07) | 17:04            | 4       | 16:40 (LAR02) | 16:33            | 15 08:14 (LAR14) | 16:35            | 30 08:34 (LAR14) |
| 27                  | 05:49 |                  | 06:20  | 06:52 | 07:41 (LAR07)    | 06:26            |         | 16:37 (LAR02) | 07:03            | 07:58 (LAR14)    | 07:27            | 30 08:05 (LAR14) |
|                     | 20:25 |                  | 19:44  | 18:51 | 16 07:57 (LAR07) | 17:03            | 2       | 16:39 (LAR02) | 16:33            | 18 08:16 (LAR14) | 16:36            | 30 08:35 (LAR14) |
| 28                  | 05:50 |                  | 06:21  | 06:53 | 07:38 (LAR07)    | 06:27            |         | 07:05         | 07:57 (LAR14)    | 07:28            | 30 08:05 (LAR14) |                  |
|                     | 20:24 |                  | 19:42  | 18:49 | 20 07:58 (LAR07) | 17:02            |         | 16:32         | 20 08:17 (LAR14) | 16:36            | 31 08:36 (LAR14) |                  |
| 29                  | 05:51 |                  | 06:22  | 06:54 | 07:36 (LAR07)    | 06:28            |         | 07:06         | 07:57 (LAR14)    | 07:28            | 30 08:06 (LAR14) |                  |
|                     | 20:23 |                  | 19:41  | 18:48 | 23 07:59 (LAR07) | 17:00            |         | 16:32         | 22 08:19 (LAR14) | 16:37            | 30 08:36 (LAR14) |                  |
| 30                  | 05:51 |                  | 06:23  | 06:55 | 07:35 (LAR07)    | 06:30            |         | 07:07         | 07:57 (LAR14)    | 07:28            | 30 08:06 (LAR14) |                  |
|                     | 20:22 |                  | 19:39  | 18:46 | 25 08:00 (LAR07) | 16:59            |         | 16:31         | 23 08:20 (LAR14) | 16:38            | 30 08:36 (LAR14) |                  |
| 31                  | 05:52 |                  | 06:24  |       |                  | 06:31            |         |               |                  | 07:28            | 30 08:06 (LAR14) |                  |
|                     | 20:21 |                  | 19:38  |       |                  | 16:58            |         |               |                  | 16:39            | 30 08:36 (LAR14) |                  |
| Potential sun hours | 462   |                  | 430    | 375   |                  | 344              |         | 296           |                  | 285              |                  |                  |
| Total, worst case   | 508   |                  |        | 94    |                  | 528              |         | 118           |                  | 906              |                  |                  |
| Sun reduction       | 0,61  |                  |        | 0,58  |                  | 0,44             |         | 0,41          |                  | 0,36             |                  |                  |
| Oper. time red.     | 0,70  |                  |        | 0,70  |                  | 0,70             |         | 0,70          |                  | 0,70             |                  |                  |
| Wind dir. red.      | 0,57  |                  |        | 0,63  |                  | 0,62             |         | 0,67          |                  | 0,67             |                  |                  |
| Total reduction     | 0,24  |                  |        | 0,26  |                  | 0,19             |         | 0,19          |                  | 0,17             |                  |                  |
| Total, real         | 123   |                  |        | 24    |                  | 100              |         | 23            |                  | 156              |                  |                  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R78 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (62)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January |                  | February |       | March            |       | April |    | May           |                  | June |               |
|---------------------|---------|------------------|----------|-------|------------------|-------|-------|----|---------------|------------------|------|---------------|
| 1                   | 07:28   | 08:20 (LAR14)    | 07:14    | 06:37 | 07:05 (LAR07)    | 06:45 | 05:58 |    | 05:29         | 05:58 (LAR06)    |      |               |
|                     | 16:40   | 19 08:39 (LAR14) | 17:15    | 17:50 | 31 07:36 (LAR07) | 19:25 | 19:58 |    | 20:29         | 30 06:28 (LAR06) |      |               |
| 2                   | 07:29   | 08:21 (LAR14)    | 07:13    | 06:36 | 07:05 (LAR07)    | 06:44 | 05:57 |    | 05:28         | 05:59 (LAR06)    |      |               |
|                     | 16:41   | 18 08:39 (LAR14) | 17:16    | 17:51 | 30 07:35 (LAR07) | 19:26 | 19:59 |    | 20:29         | 30 06:29 (LAR06) |      |               |
| 3                   | 07:29   | 08:22 (LAR14)    | 07:12    | 06:34 | 07:04 (LAR07)    | 06:42 | 05:56 |    | 05:28         | 05:59 (LAR06)    |      |               |
|                     | 16:41   | 17 08:39 (LAR14) | 17:17    | 17:52 | 30 07:34 (LAR07) | 19:27 | 20:00 |    | 20:30         | 30 06:29 (LAR06) |      |               |
| 4                   | 07:29   | 08:23 (LAR14)    | 07:11    | 06:33 | 07:05 (LAR07)    | 06:40 | 05:54 |    | 05:27         | 05:59 (LAR06)    |      |               |
|                     | 16:42   | 16 08:39 (LAR14) | 17:19    | 17:54 | 29 07:34 (LAR07) | 19:29 | 20:02 |    | 20:31         | 30 06:29 (LAR06) |      |               |
| 5                   | 07:29   | 08:24 (LAR14)    | 07:10    | 06:31 | 07:05 (LAR07)    | 06:39 | 05:53 |    | 05:27         | 05:59 (LAR06)    |      |               |
|                     | 16:43   | 15 08:39 (LAR14) | 17:20    | 17:55 | 28 07:33 (LAR07) | 19:30 | 20:03 |    | 20:32         | 30 06:29 (LAR06) |      |               |
| 6                   | 07:29   | 08:26 (LAR14)    | 07:09    | 06:29 | 07:05 (LAR07)    | 06:37 | 05:52 |    | 05:27         | 06:00 (LAR06)    |      |               |
|                     | 16:44   | 12 08:38 (LAR14) | 17:21    | 17:56 | 27 07:32 (LAR07) | 19:31 | 20:04 |    | 20:32         | 30 06:30 (LAR06) |      |               |
| 7                   | 07:29   | 08:28 (LAR14)    | 07:08    | 06:28 | 07:07 (LAR07)    | 06:35 | 05:51 |    | 05:26         | 06:00 (LAR06)    |      |               |
|                     | 16:45   | 9 08:37 (LAR14)  | 17:22    | 17:57 | 24 07:31 (LAR07) | 19:32 | 20:05 |    | 20:33         | 29 06:29 (LAR06) |      |               |
| 8                   | 07:28   | 08:31 (LAR14)    | 07:07    | 06:26 | 07:07 (LAR07)    | 06:34 | 05:49 |    | 05:26         | 06:00 (LAR06)    |      |               |
|                     | 16:46   | 5 08:36 (LAR14)  | 17:24    | 17:58 | 22 07:29 (LAR07) | 19:33 | 20:06 |    | 20:34         | 29 06:29 (LAR06) |      |               |
| 9                   | 07:28   |                  | 07:06    | 06:24 | 07:09 (LAR07)    | 06:32 | 05:48 |    | 05:26         | 06:01 (LAR06)    |      |               |
|                     | 16:47   |                  | 17:25    | 17:59 | 18 07:27 (LAR07) | 19:34 | 20:07 |    | 20:34         | 28 06:29 (LAR06) |      |               |
| 10                  | 07:28   |                  | 07:04    | 06:23 | 07:11 (LAR07)    | 06:30 | 05:47 |    | 05:25         | 06:01 (LAR06)    |      |               |
|                     | 16:48   |                  | 17:26    | 18:01 | 14 07:25 (LAR07) | 19:35 | 20:08 |    | 20:35         | 28 06:29 (LAR06) |      |               |
| 11                  | 07:28   |                  | 07:03    | 06:21 | 07:17 (LAR07)    | 06:29 | 05:46 |    | 05:25         | 06:02 (LAR06)    |      |               |
|                     | 16:49   |                  | 17:28    | 18:02 | 2 07:19 (LAR07)  | 19:36 | 20:09 |    | 20:35         | 28 06:30 (LAR06) |      |               |
| 12                  | 07:28   |                  | 07:02    | 06:19 |                  | 06:27 | 05:45 |    | 05:25         | 06:02 (LAR06)    |      |               |
|                     | 16:50   |                  | 17:29    | 18:03 |                  | 19:37 | 20:10 | 5  | 06:15 (LAR06) | 20:36            | 28   | 06:30 (LAR06) |
| 13                  | 07:27   |                  | 07:01    | 06:18 |                  | 06:25 | 05:44 |    | 05:25         | 06:02 (LAR06)    |      |               |
|                     | 16:52   |                  | 17:30    | 18:04 |                  | 19:38 | 20:11 | 12 | 06:18 (LAR06) | 20:36            | 28   | 06:30 (LAR06) |
| 14                  | 07:27   |                  | 06:59    | 06:16 |                  | 06:24 | 05:43 |    | 05:25         | 06:03 (LAR06)    |      |               |
|                     | 16:53   |                  | 17:31    | 18:05 |                  | 19:40 | 20:12 | 16 | 06:20 (LAR06) | 20:37            | 27   | 06:30 (LAR06) |
| 15                  | 07:26   |                  | 06:58    | 06:14 |                  | 06:22 | 05:42 |    | 05:25         | 06:03 (LAR06)    |      |               |
|                     | 16:54   |                  | 17:33    | 18:06 |                  | 19:41 | 20:13 | 19 | 06:22 (LAR06) | 20:37            | 27   | 06:30 (LAR06) |
| 16                  | 07:26   |                  | 06:57    | 06:13 |                  | 06:21 | 05:41 |    | 05:25         | 06:03 (LAR06)    |      |               |
|                     | 16:55   |                  | 17:34    | 18:07 |                  | 19:42 | 20:14 | 21 | 06:23 (LAR06) | 20:38            | 27   | 06:30 (LAR06) |
| 17                  | 07:26   |                  | 06:55    | 06:11 |                  | 06:19 | 05:40 |    | 05:25         | 06:03 (LAR06)    |      |               |
|                     | 16:56   |                  | 17:35    | 18:09 |                  | 19:43 | 20:15 | 23 | 06:24 (LAR06) | 20:38            | 27   | 06:30 (LAR06) |
| 18                  | 07:25   |                  | 06:54    | 06:09 |                  | 06:17 | 05:39 |    | 05:25         | 06:04 (LAR06)    |      |               |
|                     | 16:57   |                  | 17:36    | 18:10 |                  | 19:44 | 20:16 | 24 | 06:24 (LAR06) | 20:38            | 26   | 06:30 (LAR06) |
| 19                  | 07:25   |                  | 06:52    | 06:08 | 07:20 (LAR07)    | 06:16 | 05:38 |    | 05:25         | 06:04 (LAR06)    |      |               |
|                     | 16:59   |                  | 17:38    | 18:11 | 2 07:22 (LAR07)  | 19:45 | 20:17 | 26 | 06:26 (LAR06) | 20:39            | 26   | 06:30 (LAR06) |
| 20                  | 07:24   |                  | 06:51    | 06:06 | 07:14 (LAR07)    | 06:14 | 05:37 |    | 05:25         | 06:04 (LAR06)    |      |               |
|                     | 17:00   |                  | 17:39    | 18:12 | 13 07:27 (LAR07) | 19:46 | 20:18 | 27 | 06:26 (LAR06) | 20:39            | 26   | 06:30 (LAR06) |
| 21                  | 07:23   |                  | 06:49    | 06:04 | 07:12 (LAR07)    | 06:13 | 05:36 |    | 05:25         | 06:04 (LAR06)    |      |               |
|                     | 17:01   |                  | 17:40    | 18:13 | 18 07:30 (LAR07) | 19:47 | 20:19 | 27 | 06:26 (LAR06) | 20:39            | 26   | 06:30 (LAR06) |
| 22                  | 07:23   |                  | 06:48    | 06:02 | 07:10 (LAR07)    | 06:11 | 05:35 |    | 05:26         | 06:05 (LAR06)    |      |               |
|                     | 17:02   |                  | 17:41    | 18:14 | 21 07:31 (LAR07) | 19:48 | 20:20 | 29 | 06:27 (LAR06) | 20:39            | 26   | 06:31 (LAR06) |
| 23                  | 07:22   |                  | 06:47    | 06:01 | 07:09 (LAR07)    | 06:10 | 05:34 |    | 05:26         | 06:05 (LAR06)    |      |               |
|                     | 17:03   |                  | 17:43    | 18:15 | 24 07:33 (LAR07) | 19:49 | 20:21 | 29 | 06:28 (LAR06) | 20:40            | 26   | 06:31 (LAR06) |
| 24                  | 07:21   |                  | 06:45    | 05:59 | 07:07 (LAR07)    | 06:08 | 05:34 |    | 05:26         | 06:05 (LAR06)    |      |               |
|                     | 17:05   |                  | 17:44    | 18:16 | 27 07:34 (LAR07) | 19:51 | 20:22 | 30 | 06:28 (LAR06) | 20:40            | 26   | 06:31 (LAR06) |
| 25                  | 07:21   |                  | 06:44    | 05:57 | 07:07 (LAR07)    | 06:07 | 05:33 |    | 05:26         | 06:05 (LAR06)    |      |               |
|                     | 17:06   |                  | 17:45    | 18:17 | 28 07:35 (LAR07) | 19:52 | 20:23 | 30 | 06:28 (LAR06) | 20:40            | 26   | 06:31 (LAR06) |
| 26                  | 07:20   |                  | 06:42    | 05:56 | 07:06 (LAR07)    | 06:05 | 05:32 |    | 05:27         | 06:05 (LAR06)    |      |               |
|                     | 17:07   |                  | 17:46    | 18:19 | 29 07:35 (LAR07) | 19:53 | 20:24 | 31 | 06:29 (LAR06) | 20:40            | 27   | 06:32 (LAR06) |
| 27                  | 07:19   |                  | 06:40    | 05:54 | 07:06 (LAR07)    | 06:04 | 05:31 |    | 05:27         | 06:05 (LAR06)    |      |               |
|                     | 17:08   |                  | 17:48    | 18:20 | 30 07:36 (LAR07) | 19:54 | 20:25 | 30 | 06:28 (LAR06) | 20:40            | 27   | 06:32 (LAR06) |
| 28                  | 07:18   |                  | 06:39    | 05:52 | 07:05 (LAR07)    | 06:03 | 05:31 |    | 05:28         | 06:06 (LAR06)    |      |               |
|                     | 17:10   |                  | 17:49    | 18:21 | 30 07:35 (LAR07) | 19:55 | 20:25 | 31 | 06:28 (LAR06) | 20:40            | 27   | 06:33 (LAR06) |
| 29                  | 07:17   |                  |          | 06:50 |                  | 06:01 | 05:30 |    | 05:28         | 06:05 (LAR06)    |      |               |
|                     | 17:11   |                  |          | 19:22 |                  | 19:56 | 20:26 | 31 | 06:29 (LAR06) | 20:40            | 28   | 06:33 (LAR06) |
| 30                  | 07:16   |                  |          | 06:49 |                  | 06:00 | 05:30 |    | 05:28         | 06:05 (LAR06)    |      |               |
|                     | 17:12   |                  |          | 19:23 |                  | 19:57 | 20:27 | 30 | 06:28 (LAR06) | 20:40            | 28   | 06:33 (LAR06) |
| 31                  | 07:15   |                  |          | 06:47 |                  |       | 05:29 |    | 05:58 (LAR06) |                  |      |               |
|                     | 17:13   |                  |          | 19:24 |                  |       | 20:28 | 31 | 06:29 (LAR06) |                  |      |               |
| Potential sun hours | 295     |                  | 296      | 369   |                  | 400   | 451   |    | 455           |                  |      |               |
| Total, worst case   | 111     |                  | 222      | 255   |                  |       | 502   |    | 831           |                  |      |               |
| Sun reduction       | 0,44    |                  | 0,46     | 0,44  |                  |       | 0,47  |    | 0,54          |                  |      |               |
| Oper. time red.     | 0,70    |                  | 0,70     | 0,70  |                  |       | 0,70  |    | 0,70          |                  |      |               |
| Wind dir. red.      | 0,66    |                  | 0,64     | 0,64  |                  |       | 0,57  |    | 0,57          |                  |      |               |
| Total reduction     | 0,21    |                  | 0,21     | 0,20  |                  |       | 0,19  |    | 0,22          |                  |      |               |
| Total, real         | 23      |                  | 46       | 51    |                  |       | 93    |    | 179           |                  |      |               |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

**Shadow receptor:** R78 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (62)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August        |       | September |       | October |               | November |       | December |               |      |
|---------------------|-------|---------------|-------|-----------|-------|---------|---------------|----------|-------|----------|---------------|------|
| 1                   | 05:29 | 06:06 (LAR06) | 05:53 | 06:25     | 06:57 |         |               | 06:32    | 07:08 |          |               |      |
|                     | 20:40 | 06:34 (LAR06) | 20:20 | 19:36     | 18:44 |         |               | 16:56    | 16:31 |          |               |      |
| 2                   | 05:29 | 06:05 (LAR06) | 05:54 | 06:26     | 06:58 |         |               | 06:33    | 07:09 |          |               |      |
|                     | 20:40 | 06:34 (LAR06) | 20:19 | 19:34     | 18:42 |         |               | 16:55    | 16:31 |          |               |      |
| 3                   | 05:30 | 06:06 (LAR06) | 05:55 | 06:27     | 06:59 |         | 07:51 (LAR07) | 06:34    | 07:10 |          |               |      |
|                     | 20:40 | 06:34 (LAR06) | 20:18 | 19:33     | 18:41 | 10      | 08:01 (LAR07) | 16:54    | 16:30 |          |               |      |
| 4                   | 05:30 | 06:05 (LAR06) | 05:56 | 06:28     | 07:00 |         | 07:47 (LAR07) | 06:36    | 07:11 |          | 08:15 (LAR14) |      |
|                     | 20:39 | 06:34 (LAR06) | 20:17 | 19:31     | 18:39 | 17      | 08:04 (LAR07) | 16:53    | 16:30 | 5        | 08:20 (LAR14) |      |
| 5                   | 05:31 | 06:06 (LAR06) | 05:57 | 06:30     | 07:01 |         | 07:45 (LAR07) | 06:37    | 07:12 |          | 08:13 (LAR14) |      |
|                     | 20:39 | 06:35 (LAR06) | 20:16 | 19:29     | 18:37 | 20      | 08:05 (LAR07) | 16:51    | 16:30 | 9        | 08:22 (LAR14) |      |
| 6                   | 05:32 | 06:06 (LAR06) | 05:58 | 06:31     | 07:02 |         | 07:43 (LAR07) | 06:38    | 07:13 |          | 08:12 (LAR14) |      |
|                     | 20:39 | 06:36 (LAR06) | 20:14 | 19:27     | 18:36 | 23      | 08:06 (LAR07) | 16:50    | 16:30 | 12       | 08:24 (LAR14) |      |
| 7                   | 05:32 | 06:06 (LAR06) | 06:00 | 06:32     | 07:03 |         | 07:41 (LAR07) | 06:39    | 07:14 |          | 08:11 (LAR14) |      |
|                     | 20:39 | 06:35 (LAR06) | 20:13 | 19:26     | 18:34 | 26      | 08:07 (LAR07) | 16:49    | 16:30 | 15       | 08:26 (LAR14) |      |
| 8                   | 05:33 | 06:06 (LAR06) | 06:01 | 06:33     | 07:04 |         | 07:41 (LAR07) | 06:41    | 07:15 |          | 08:11 (LAR14) |      |
|                     | 20:38 | 06:36 (LAR06) | 20:12 | 19:24     | 18:32 | 28      | 08:09 (LAR07) | 16:48    | 16:30 | 16       | 08:27 (LAR14) |      |
| 9                   | 05:34 | 06:07 (LAR06) | 06:02 | 06:34     | 07:05 |         | 07:40 (LAR07) | 06:42    | 07:16 |          | 08:11 (LAR14) |      |
|                     | 20:38 | 06:37 (LAR06) | 20:10 | 19:22     | 18:31 | 29      | 08:09 (LAR07) | 16:47    | 16:30 | 17       | 08:28 (LAR14) |      |
| 10                  | 05:34 | 06:06 (LAR06) | 06:03 | 06:35     | 07:06 |         | 07:39 (LAR07) | 06:43    | 07:17 |          | 08:11 (LAR14) |      |
|                     | 20:37 | 06:36 (LAR06) | 20:09 | 19:21     | 18:29 | 30      | 08:09 (LAR07) | 16:46    | 16:30 | 18       | 08:29 (LAR14) |      |
| 11                  | 05:35 | 06:06 (LAR06) | 06:04 | 06:36     | 07:07 |         | 07:39 (LAR07) | 06:44    | 07:18 |          | 08:11 (LAR14) |      |
|                     | 20:37 | 06:37 (LAR06) | 20:08 | 19:19     | 18:27 | 30      | 08:09 (LAR07) | 16:45    | 16:30 | 19       | 08:30 (LAR14) |      |
| 12                  | 05:36 | 06:07 (LAR06) | 06:05 | 06:37     | 07:09 |         | 07:38 (LAR07) | 06:46    | 07:18 |          | 08:10 (LAR14) |      |
|                     | 20:36 | 06:37 (LAR06) | 20:06 | 19:17     | 18:26 | 31      | 08:09 (LAR07) | 16:44    | 16:30 | 20       | 08:30 (LAR14) |      |
| 13                  | 05:36 | 06:06 (LAR06) | 06:06 | 06:38     | 07:10 |         | 07:38 (LAR07) | 06:47    | 07:19 |          | 08:11 (LAR14) |      |
|                     | 20:36 | 06:37 (LAR06) | 20:05 | 19:15     | 18:24 | 30      | 08:08 (LAR07) | 16:43    | 16:30 | 20       | 08:31 (LAR14) |      |
| 14                  | 05:37 | 06:06 (LAR06) | 06:07 | 06:39     | 07:11 |         | 07:38 (LAR07) | 06:48    | 07:20 |          | 08:11 (LAR14) |      |
|                     | 20:35 | 06:37 (LAR06) | 20:04 | 19:14     | 18:22 | 31      | 08:09 (LAR07) | 16:42    | 16:30 | 21       | 08:32 (LAR14) |      |
| 15                  | 05:38 | 06:07 (LAR06) | 06:08 | 06:40     | 07:12 |         | 07:38 (LAR07) | 06:49    | 07:21 |          | 08:11 (LAR14) |      |
|                     | 20:35 | 06:37 (LAR06) | 20:02 | 19:12     | 18:21 | 30      | 08:08 (LAR07) | 16:41    | 16:30 | 22       | 08:33 (LAR14) |      |
| 16                  | 05:39 | 06:07 (LAR06) | 06:09 | 06:41     | 07:13 |         | 07:38 (LAR07) | 06:50    | 07:21 |          | 08:11 (LAR14) |      |
|                     | 20:34 | 06:38 (LAR06) | 20:01 | 19:10     | 18:19 | 29      | 08:07 (LAR07) | 16:40    | 16:31 | 22       | 08:33 (LAR14) |      |
| 17                  | 05:40 | 06:07 (LAR06) | 06:10 | 06:42     | 07:14 |         | 07:39 (LAR07) | 06:52    | 07:22 |          | 08:12 (LAR14) |      |
|                     | 20:34 | 06:37 (LAR06) | 19:59 | 19:08     | 18:18 | 27      | 08:06 (LAR07) | 16:39    | 16:31 | 22       | 08:34 (LAR14) |      |
| 18                  | 05:40 | 06:07 (LAR06) | 06:11 | 06:43     | 07:15 |         | 07:39 (LAR07) | 06:53    | 07:23 |          | 08:12 (LAR14) |      |
|                     | 20:33 | 06:37 (LAR06) | 19:58 | 19:07     | 18:16 | 26      | 08:05 (LAR07) | 16:38    | 16:31 | 23       | 08:35 (LAR14) |      |
| 19                  | 05:41 | 06:07 (LAR06) | 06:12 | 06:44     | 07:17 |         | 07:40 (LAR07) | 06:54    | 07:23 |          | 08:12 (LAR14) |      |
|                     | 20:32 | 06:37 (LAR06) | 19:56 | 19:05     | 18:15 | 23      | 08:03 (LAR07) | 16:38    | 16:32 | 23       | 08:35 (LAR14) |      |
| 20                  | 05:42 | 06:08 (LAR06) | 06:13 | 06:45     | 07:18 |         | 07:42 (LAR07) | 06:55    | 07:24 |          | 08:13 (LAR14) |      |
|                     | 20:31 | 06:37 (LAR06) | 19:55 | 19:03     | 18:13 | 20      | 08:02 (LAR07) | 16:37    | 16:32 | 23       | 08:36 (LAR14) |      |
| 21                  | 05:43 | 06:08 (LAR06) | 06:14 | 06:46     | 07:19 |         | 07:43 (LAR07) | 06:56    | 07:25 |          | 08:13 (LAR14) |      |
|                     | 20:31 | 06:37 (LAR06) | 19:53 | 19:02     | 18:12 | 17      | 08:00 (LAR07) | 16:36    | 16:32 | 23       | 08:36 (LAR14) |      |
| 22                  | 05:44 | 06:09 (LAR06) | 06:15 | 06:47     | 07:20 |         | 07:46 (LAR07) | 06:58    | 07:25 |          | 08:14 (LAR14) |      |
|                     | 20:30 | 06:37 (LAR06) | 19:52 | 19:00     | 18:10 | 11      | 07:57 (LAR07) | 16:35    | 16:33 | 23       | 08:37 (LAR14) |      |
| 23                  | 05:45 | 06:09 (LAR06) | 06:16 | 06:48     | 07:21 |         |               | 06:59    | 07:26 |          | 08:14 (LAR14) |      |
|                     | 20:29 | 06:37 (LAR06) | 19:50 | 18:58     | 18:09 |         |               | 16:35    | 16:33 | 23       | 08:37 (LAR14) |      |
| 24                  | 05:46 | 06:09 (LAR06) | 06:17 | 06:49     | 07:22 |         |               | 07:00    | 07:26 |          | 08:15 (LAR14) |      |
|                     | 20:28 | 06:36 (LAR06) | 19:49 | 18:56     | 18:07 |         |               | 16:34    | 16:34 | 23       | 08:38 (LAR14) |      |
| 25                  | 05:47 | 06:10 (LAR06) | 06:18 | 06:50     | 06:24 |         |               | 07:01    | 07:26 |          | 08:15 (LAR14) |      |
|                     | 20:27 | 06:35 (LAR06) | 19:47 | 18:55     | 17:06 |         |               | 16:34    | 16:34 | 23       | 08:38 (LAR14) |      |
| 26                  | 05:48 | 06:11 (LAR06) | 06:19 | 06:51     | 06:25 |         |               | 07:02    | 07:27 |          | 08:16 (LAR14) |      |
|                     | 20:26 | 06:35 (LAR06) | 19:46 | 18:53     | 17:04 |         |               | 16:33    | 16:35 | 22       | 08:38 (LAR14) |      |
| 27                  | 05:49 | 06:12 (LAR06) | 06:20 | 06:52     | 06:26 |         |               | 07:03    | 07:27 |          | 08:17 (LAR14) |      |
|                     | 20:25 | 06:34 (LAR06) | 19:44 | 18:51     | 17:03 |         |               | 16:33    | 16:36 | 22       | 08:39 (LAR14) |      |
| 28                  | 05:50 | 06:13 (LAR06) | 06:21 | 06:53     | 06:27 |         |               | 07:05    | 07:28 |          | 08:17 (LAR14) |      |
|                     | 20:24 | 06:33 (LAR06) | 19:42 | 18:49     | 17:02 |         |               | 16:32    | 16:36 | 22       | 08:39 (LAR14) |      |
| 29                  | 05:51 | 06:14 (LAR06) | 06:22 | 06:54     | 06:28 |         |               | 07:06    | 07:28 |          | 08:18 (LAR14) |      |
|                     | 20:23 | 06:32 (LAR06) | 19:41 | 18:48     | 17:00 |         |               | 16:32    | 16:37 | 21       | 08:39 (LAR14) |      |
| 30                  | 05:51 | 06:16 (LAR06) | 06:23 | 06:55     | 06:30 |         |               | 07:07    | 07:28 |          | 08:18 (LAR14) |      |
|                     | 20:22 | 06:30 (LAR06) | 19:39 | 18:46     | 16:59 |         |               | 16:31    | 16:38 | 21       | 08:39 (LAR14) |      |
| 31                  | 05:52 | 06:18 (LAR06) | 06:24 |           | 06:31 |         |               |          | 07:28 |          | 08:19 (LAR14) |      |
|                     | 20:21 | 06:28 (LAR06) | 19:38 |           | 16:58 |         |               |          | 16:39 | 20       | 08:39 (LAR14) |      |
| Potential sun hours | 462   |               | 430   |           | 375   |         |               | 296      |       | 285      |               |      |
| Total, worst case   | 840   |               |       |           |       |         | 488           |          |       |          |               | 550  |
| Sun reduction       | 0,61  |               |       |           |       |         | 0,44          |          |       |          |               | 0,36 |
| Oper. time red.     | 0,70  |               |       |           |       |         | 0,70          |          |       |          |               | 0,70 |
| Wind dir. red.      | 0,57  |               |       |           |       |         | 0,64          |          |       |          |               | 0,66 |
| Total reduction     | 0,24  |               |       |           |       |         | 0,20          |          |       |          |               | 0,17 |
| Total, real         | 203   |               |       |           |       |         | 96            |          |       |          |               | 94   |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R79 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (63)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January |                  | February |                  | March |       | April |               | May           |       | June          |               |
|---------------------|---------|------------------|----------|------------------|-------|-------|-------|---------------|---------------|-------|---------------|---------------|
| 1                   | 07:28   | 15:09 (LAR01)    | 07:14    | 15:22 (LAR01)    | 06:37 | 06:45 | 05:58 |               | 05:29         |       | 19:54 (LAR13) |               |
|                     | 16:40   | 50 15:59 (LAR01) | 17:15    | 47 16:09 (LAR01) | 17:50 | 19:25 | 19:58 |               | 20:29         | 9     | 20:03 (LAR13) |               |
| 2                   | 07:29   | 15:09 (LAR01)    | 07:13    | 15:23 (LAR01)    | 06:36 | 06:44 | 05:57 |               | 05:28         |       | 19:54 (LAR13) |               |
|                     | 16:41   | 51 16:00 (LAR01) | 17:16    | 46 16:09 (LAR01) | 17:51 | 19:26 | 19:59 |               | 20:29         | 10    | 20:04 (LAR13) |               |
| 3                   | 07:29   | 15:09 (LAR01)    | 07:12    | 15:24 (LAR01)    | 06:34 | 06:42 | 05:56 |               | 05:28         |       | 19:55 (LAR13) |               |
|                     | 16:42   | 51 16:00 (LAR01) | 17:17    | 44 16:08 (LAR01) | 17:52 | 19:27 | 20:00 |               | 20:30         | 10    | 20:05 (LAR13) |               |
| 4                   | 07:29   | 15:09 (LAR01)    | 07:11    | 15:24 (LAR01)    | 06:33 | 06:40 | 05:55 |               | 05:27         |       | 19:54 (LAR13) |               |
|                     | 16:43   | 52 16:01 (LAR01) | 17:19    | 42 16:06 (LAR01) | 17:54 | 19:29 | 20:02 |               | 20:31         | 11    | 20:05 (LAR13) |               |
| 5                   | 07:29   | 15:10 (LAR01)    | 07:10    | 15:26 (LAR01)    | 06:31 | 06:39 | 05:53 |               | 05:27         |       | 19:55 (LAR13) |               |
|                     | 16:43   | 52 16:02 (LAR01) | 17:20    | 40 16:06 (LAR01) | 17:55 | 19:30 | 20:03 |               | 20:32         | 11    | 20:06 (LAR13) |               |
| 6                   | 07:29   | 15:10 (LAR01)    | 07:09    | 15:27 (LAR01)    | 06:29 | 06:37 | 05:52 |               | 05:27         |       | 19:55 (LAR13) |               |
|                     | 16:44   | 53 16:03 (LAR01) | 17:21    | 38 16:05 (LAR01) | 17:56 | 19:31 | 20:04 |               | 20:32         | 12    | 20:07 (LAR13) |               |
| 7                   | 07:29   | 15:11 (LAR01)    | 07:08    | 15:29 (LAR01)    | 06:28 | 06:35 | 05:51 |               | 05:26         |       | 19:56 (LAR13) |               |
|                     | 16:45   | 52 16:03 (LAR01) | 17:23    | 35 16:04 (LAR01) | 17:57 | 19:32 | 20:05 |               | 20:33         | 12    | 20:08 (LAR13) |               |
| 8                   | 07:28   | 15:11 (LAR01)    | 07:07    | 15:31 (LAR01)    | 06:26 | 06:34 | 05:50 |               | 05:26         |       | 19:55 (LAR13) |               |
|                     | 16:46   | 53 16:04 (LAR01) | 17:24    | 31 16:02 (LAR01) | 17:58 | 19:33 | 20:06 |               | 20:34         | 13    | 20:08 (LAR13) |               |
| 9                   | 07:28   | 15:11 (LAR01)    | 07:06    | 15:33 (LAR01)    | 06:24 | 06:32 | 05:48 |               | 05:26         |       | 19:56 (LAR13) |               |
|                     | 16:47   | 53 16:04 (LAR01) | 17:25    | 27 16:00 (LAR01) | 17:59 | 19:34 | 20:07 |               | 20:34         | 12    | 20:08 (LAR13) |               |
| 10                  | 07:28   | 15:11 (LAR01)    | 07:04    | 15:36 (LAR01)    | 06:23 | 06:30 | 05:47 |               | 05:26         |       | 19:56 (LAR13) |               |
|                     | 16:48   | 54 16:05 (LAR01) | 17:26    | 21 15:57 (LAR01) | 18:01 | 19:35 | 20:08 |               | 20:35         | 13    | 20:09 (LAR13) |               |
| 11                  | 07:28   | 15:12 (LAR01)    | 07:03    | 15:40 (LAR01)    | 06:21 | 06:29 | 05:46 |               | 05:25         |       | 19:56 (LAR13) |               |
|                     | 16:50   | 54 16:06 (LAR01) | 17:28    | 14 15:54 (LAR01) | 18:02 | 19:36 | 20:09 |               | 20:35         | 14    | 20:10 (LAR13) |               |
| 12                  | 07:28   | 15:11 (LAR01)    | 07:02    |                  | 06:19 | 06:27 | 05:45 |               | 05:25         |       | 19:57 (LAR13) |               |
|                     | 16:51   | 55 16:06 (LAR01) | 17:29    |                  | 18:03 | 19:37 | 20:10 |               | 20:36         | 13    | 20:10 (LAR13) |               |
| 13                  | 07:27   | 15:12 (LAR01)    | 07:01    |                  | 06:18 | 06:25 | 05:44 |               | 05:25         |       | 19:57 (LAR13) |               |
|                     | 16:52   | 55 16:07 (LAR01) | 17:30    |                  | 18:04 | 19:39 | 20:11 |               | 20:36         | 14    | 20:11 (LAR13) |               |
| 14                  | 07:27   | 15:13 (LAR01)    | 06:59    |                  | 06:16 | 06:24 | 05:43 |               | 05:25         |       | 19:57 (LAR13) |               |
|                     | 16:53   | 54 16:07 (LAR01) | 17:32    |                  | 18:05 | 19:40 | 20:12 |               | 20:37         | 14    | 20:11 (LAR13) |               |
| 15                  | 07:26   | 15:12 (LAR01)    | 06:58    |                  | 06:14 | 06:22 | 05:42 |               | 05:25         |       | 19:58 (LAR13) |               |
|                     | 16:54   | 55 16:07 (LAR01) | 17:33    |                  | 18:06 | 19:41 | 20:13 |               | 20:37         | 14    | 20:12 (LAR13) |               |
| 16                  | 07:26   | 15:13 (LAR01)    | 06:57    |                  | 06:13 | 06:21 | 05:41 |               | 05:25         |       | 19:58 (LAR13) |               |
|                     | 16:55   | 55 16:08 (LAR01) | 17:34    |                  | 18:07 | 19:42 | 20:14 |               | 20:38         | 14    | 20:12 (LAR13) |               |
| 17                  | 07:26   | 15:13 (LAR01)    | 06:55    |                  | 06:11 | 06:19 | 05:40 |               | 05:25         |       | 19:58 (LAR13) |               |
|                     | 16:56   | 55 16:08 (LAR01) | 17:35    |                  | 18:09 | 19:43 | 20:15 |               | 20:38         | 14    | 20:12 (LAR13) |               |
| 18                  | 07:25   | 15:13 (LAR01)    | 06:54    |                  | 06:09 | 06:17 | 05:39 |               | 05:25         |       | 19:58 (LAR13) |               |
|                     | 16:57   | 55 16:08 (LAR01) | 17:37    |                  | 18:10 | 19:44 | 20:16 |               | 20:38         | 15    | 20:13 (LAR13) |               |
| 19                  | 07:25   | 15:14 (LAR01)    | 06:52    |                  | 06:08 | 06:16 | 05:38 |               | 05:25         |       | 19:58 (LAR13) |               |
|                     | 16:59   | 55 16:09 (LAR01) | 17:38    |                  | 18:11 | 19:45 | 20:17 |               | 20:39         | 15    | 20:13 (LAR13) |               |
| 20                  | 07:24   | 15:14 (LAR01)    | 06:51    |                  | 06:06 | 06:14 | 05:37 |               | 05:25         |       | 19:58 (LAR13) |               |
|                     | 17:00   | 55 16:09 (LAR01) | 17:39    |                  | 18:12 | 19:46 | 20:18 |               | 20:39         | 15    | 20:13 (LAR13) |               |
| 21                  | 07:23   | 15:14 (LAR01)    | 06:50    |                  | 06:04 | 06:13 | 05:36 |               | 05:26         |       | 19:58 (LAR13) |               |
|                     | 17:01   | 55 16:09 (LAR01) | 17:40    |                  | 18:13 | 19:47 | 20:19 |               | 20:39         | 15    | 20:13 (LAR13) |               |
| 22                  | 07:23   | 15:15 (LAR01)    | 06:48    |                  | 06:03 | 06:11 | 05:35 |               | 05:26         |       | 19:59 (LAR13) |               |
|                     | 17:02   | 55 16:10 (LAR01) | 17:42    |                  | 18:14 | 19:48 | 20:20 |               | 20:39         | 15    | 20:14 (LAR13) |               |
| 23                  | 07:22   | 15:15 (LAR01)    | 06:47    |                  | 06:01 | 06:10 | 05:35 |               | 05:26         |       | 19:59 (LAR13) |               |
|                     | 17:04   | 55 16:10 (LAR01) | 17:43    |                  | 18:15 | 19:50 | 20:21 |               | 20:40         | 15    | 20:14 (LAR13) |               |
| 24                  | 07:21   | 15:16 (LAR01)    | 06:45    |                  | 05:59 | 06:08 | 05:34 | 19:56 (LAR13) | 05:26         |       | 19:59 (LAR13) |               |
|                     | 17:05   | 54 16:10 (LAR01) | 17:44    |                  | 18:16 | 19:51 | 20:22 | 1             | 19:57 (LAR13) | 20:40 | 15            | 20:14 (LAR13) |
| 25                  | 07:21   | 15:16 (LAR01)    | 06:44    |                  | 05:57 | 06:07 | 05:33 |               | 05:27         |       | 20:00 (LAR13) |               |
|                     | 17:06   | 54 16:10 (LAR01) | 17:45    |                  | 18:18 | 19:52 | 20:23 | 2             | 19:58 (LAR13) | 20:40 | 14            | 20:14 (LAR13) |
| 26                  | 07:20   | 15:17 (LAR01)    | 06:42    |                  | 05:56 | 06:05 | 05:32 |               | 05:27         |       | 20:00 (LAR13) |               |
|                     | 17:07   | 54 16:11 (LAR01) | 17:46    |                  | 18:19 | 19:53 | 20:24 | 3             | 19:59 (LAR13) | 20:40 | 14            | 20:14 (LAR13) |
| 27                  | 07:19   | 15:18 (LAR01)    | 06:41    |                  | 05:54 | 06:04 | 05:32 |               | 05:27         |       | 20:00 (LAR13) |               |
|                     | 17:09   | 53 16:11 (LAR01) | 17:48    |                  | 18:20 | 19:54 | 20:25 | 5             | 20:00 (LAR13) | 20:40 | 14            | 20:14 (LAR13) |
| 28                  | 07:18   | 15:18 (LAR01)    | 06:39    |                  | 05:52 | 06:03 | 05:31 |               | 05:28         |       | 20:01 (LAR13) |               |
|                     | 17:10   | 52 16:10 (LAR01) | 17:49    |                  | 18:21 | 19:55 | 20:25 | 6             | 20:00 (LAR13) | 20:40 | 13            | 20:14 (LAR13) |
| 29                  | 07:17   | 15:19 (LAR01)    |          |                  | 06:51 | 06:01 | 05:30 |               | 05:28         |       | 20:00 (LAR13) |               |
|                     | 17:11   | 51 16:10 (LAR01) |          |                  | 19:22 | 19:56 | 20:26 | 6             | 20:01 (LAR13) | 20:40 | 14            | 20:14 (LAR13) |
| 30                  | 07:16   | 15:20 (LAR01)    |          |                  | 06:49 | 06:00 | 05:30 |               | 05:29         |       | 20:01 (LAR13) |               |
|                     | 17:12   | 50 16:10 (LAR01) |          |                  | 19:23 | 19:57 | 20:27 | 8             | 20:02 (LAR13) | 20:40 | 14            | 20:15 (LAR13) |
| 31                  | 07:15   | 15:21 (LAR01)    |          |                  | 06:47 |       | 05:29 |               | 19:54 (LAR13) |       |               |               |
|                     | 17:14   | 49 16:10 (LAR01) |          |                  | 19:24 |       | 20:28 | 9             | 20:03 (LAR13) |       |               |               |
| Potential sun hours | 295     |                  | 296      |                  | 369   |       | 400   |               | 450           |       | 455           |               |
| Total, worst case   | 1651    |                  | 385      |                  |       |       | 40    |               |               |       | 398           |               |
| Sun reduction       | 0,44    |                  | 0,46     |                  |       |       | 0,47  |               |               |       | 0,54          |               |
| Oper. time red.     | 0,70    |                  | 0,70     |                  |       |       | 0,70  |               |               |       | 0,70          |               |
| Wind dir. red.      | 0,54    |                  | 0,54     |                  |       |       | 0,67  |               |               |       | 0,67          |               |
| Total reduction     | 0,17    |                  | 0,17     |                  |       |       | 0,22  |               |               |       | 0,25          |               |
| Total, real         | 276     |                  | 66       |                  |       |       | 9     |               |               |       | 99            |               |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|

### SHADOW - Calendar

**Shadow receptor:** R79 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (63)

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     |       | July          |               | August |               | September     |               | October       |               | November      |    | December      |  |
|---------------------|-------|---------------|---------------|--------|---------------|---------------|---------------|---------------|---------------|---------------|----|---------------|--|
| 1                   | 05:29 | 20:01 (LAR13) | 05:54         | 06:25  | 06:57         | 06:32         | 15:05 (LAR01) | 07:08         | 14:54 (LAR01) |               |    |               |  |
|                     | 20:40 | 13            | 20:14 (LAR13) | 20:20  | 19:36         | 18:44         | 16:56         | 23            | 15:28 (LAR01) | 16:31         | 54 | 15:48 (LAR01) |  |
| 2                   | 05:29 | 20:00 (LAR13) | 05:55         | 06:27  | 06:58         | 06:33         | 15:02 (LAR01) | 07:09         | 14:54 (LAR01) |               |    |               |  |
|                     | 20:40 | 13            | 20:13 (LAR13) | 20:19  | 19:34         | 18:43         | 16:55         | 28            | 15:30 (LAR01) | 16:31         | 54 | 15:48 (LAR01) |  |
| 3                   | 05:30 | 20:01 (LAR13) | 05:56         | 06:28  | 06:59         | 06:34         | 15:01 (LAR01) | 07:10         | 14:55 (LAR01) |               |    |               |  |
|                     | 20:40 | 13            | 20:14 (LAR13) | 20:18  | 19:33         | 18:41         | 16:54         | 31            | 15:32 (LAR01) | 16:31         | 53 | 15:48 (LAR01) |  |
| 4                   | 05:31 | 20:01 (LAR13) | 05:57         | 06:29  | 07:00         | 06:36         | 14:59 (LAR01) | 07:11         | 14:55 (LAR01) |               |    |               |  |
|                     | 20:39 | 13            | 20:14 (LAR13) | 20:17  | 19:31         | 18:39         | 16:53         | 35            | 15:34 (LAR01) | 16:30         | 53 | 15:48 (LAR01) |  |
| 5                   | 05:31 | 20:01 (LAR13) | 05:58         | 06:30  | 07:01         | 06:37         | 14:57 (LAR01) | 07:12         | 14:56 (LAR01) |               |    |               |  |
|                     | 20:39 | 12            | 20:13 (LAR13) | 20:16  | 19:29         | 18:37         | 16:51         | 38            | 15:35 (LAR01) | 16:30         | 52 | 15:48 (LAR01) |  |
| 6                   | 05:32 | 20:01 (LAR13) | 05:59         | 06:31  | 07:02         | 06:38         | 14:55 (LAR01) | 07:13         | 14:56 (LAR01) |               |    |               |  |
|                     | 20:39 | 12            | 20:13 (LAR13) | 20:14  | 19:28         | 18:36         | 16:50         | 41            | 15:36 (LAR01) | 16:30         | 53 | 15:49 (LAR01) |  |
| 7                   | 05:32 | 20:01 (LAR13) | 06:00         | 06:32  | 07:03         | 06:39         | 14:55 (LAR01) | 07:14         | 14:57 (LAR01) |               |    |               |  |
|                     | 20:39 | 12            | 20:13 (LAR13) | 20:13  | 19:26         | 18:34         | 16:49         | 42            | 15:37 (LAR01) | 16:30         | 52 | 15:49 (LAR01) |  |
| 8                   | 05:33 | 20:02 (LAR13) | 06:01         | 06:33  | 07:04         | 06:41         | 14:54 (LAR01) | 07:15         | 14:58 (LAR01) |               |    |               |  |
|                     | 20:38 | 11            | 20:13 (LAR13) | 20:12  | 19:24         | 18:32         | 16:48         | 44            | 15:38 (LAR01) | 16:30         | 51 | 15:49 (LAR01) |  |
| 9                   | 05:34 | 20:02 (LAR13) | 06:02         | 06:34  | 07:05         | 06:42         | 14:52 (LAR01) | 07:16         | 14:58 (LAR01) |               |    |               |  |
|                     | 20:38 | 11            | 20:13 (LAR13) | 20:10  | 19:22         | 18:31         | 16:47         | 47            | 15:39 (LAR01) | 16:30         | 51 | 15:49 (LAR01) |  |
| 10                  | 05:34 | 20:02 (LAR13) | 06:03         | 06:35  | 07:06         | 06:43         | 14:52 (LAR01) | 07:17         | 14:59 (LAR01) |               |    |               |  |
|                     | 20:37 | 10            | 20:12 (LAR13) | 20:09  | 19:21         | 18:29         | 16:46         | 48            | 15:40 (LAR01) | 16:30         | 51 | 15:50 (LAR01) |  |
| 11                  | 05:35 | 20:02 (LAR13) | 06:04         | 06:36  | 07:08         | 06:44         | 14:52 (LAR01) | 07:17         | 15:00 (LAR01) |               |    |               |  |
|                     | 20:37 | 9             | 20:11 (LAR13) | 20:08  | 19:19         | 18:27         | 16:45         | 49            | 15:41 (LAR01) | 16:30         | 50 | 15:50 (LAR01) |  |
| 12                  | 05:36 | 20:03 (LAR13) | 06:05         | 06:37  | 07:09         | 06:46         | 14:51 (LAR01) | 07:18         | 14:59 (LAR01) |               |    |               |  |
|                     | 20:36 | 8             | 20:11 (LAR13) | 20:06  | 19:17         | 18:26         | 16:44         | 50            | 15:41 (LAR01) | 16:30         | 51 | 15:50 (LAR01) |  |
| 13                  | 05:37 | 20:03 (LAR13) | 06:06         | 06:38  | 07:10         | 06:47         | 14:51 (LAR01) | 07:19         | 15:00 (LAR01) |               |    |               |  |
|                     | 20:36 | 8             | 20:11 (LAR13) | 20:05  | 19:16         | 18:24         | 16:43         | 51            | 15:42 (LAR01) | 16:30         | 50 | 15:50 (LAR01) |  |
| 14                  | 05:37 | 20:03 (LAR13) | 06:07         | 06:39  | 07:11         | 06:48         | 14:50 (LAR01) | 07:20         | 15:01 (LAR01) |               |    |               |  |
|                     | 20:35 | 7             | 20:10 (LAR13) | 20:04  | 19:14         | 18:23         | 16:42         | 52            | 15:42 (LAR01) | 16:30         | 50 | 15:51 (LAR01) |  |
| 15                  | 05:38 | 20:03 (LAR13) | 06:08         | 06:40  | 07:12         | 06:49         | 14:50 (LAR01) | 07:21         | 15:02 (LAR01) |               |    |               |  |
|                     | 20:35 | 7             | 20:10 (LAR13) | 20:02  | 19:12         | 18:21         | 16:41         | 53            | 15:43 (LAR01) | 16:30         | 49 | 15:51 (LAR01) |  |
| 16                  | 05:39 | 20:04 (LAR13) | 06:09         | 06:41  | 07:13         | 06:50         | 14:50 (LAR01) | 07:21         | 15:02 (LAR01) |               |    |               |  |
|                     | 20:34 | 5             | 20:09 (LAR13) | 20:01  | 19:10         | 18:19         | 16:40         | 54            | 15:44 (LAR01) | 16:31         | 49 | 15:51 (LAR01) |  |
| 17                  | 05:40 | 20:05 (LAR13) | 06:10         | 06:42  | 07:14         | 06:52         | 14:50 (LAR01) | 07:22         | 15:03 (LAR01) |               |    |               |  |
|                     | 20:34 | 4             | 20:09 (LAR13) | 19:59  | 19:09         | 18:18         | 16:39         | 54            | 15:44 (LAR01) | 16:31         | 49 | 15:52 (LAR01) |  |
| 18                  | 05:41 | 20:05 (LAR13) | 06:11         | 06:43  | 07:15         | 06:53         | 14:50 (LAR01) | 07:23         | 15:04 (LAR01) |               |    |               |  |
|                     | 20:33 | 2             | 20:07 (LAR13) | 19:58  | 19:07         | 18:16         | 16:38         | 54            | 15:44 (LAR01) | 16:31         | 48 | 15:52 (LAR01) |  |
| 19                  | 05:41 | 20:05 (LAR13) | 06:12         | 06:44  | 07:17         | 06:54         | 14:49 (LAR01) | 07:23         | 15:04 (LAR01) |               |    |               |  |
|                     | 20:32 | 2             | 20:07 (LAR13) | 19:56  | 19:05         | 18:15         | 16:38         | 55            | 15:44 (LAR01) | 16:32         | 48 | 15:52 (LAR01) |  |
| 20                  | 05:42 | 06:13         | 06:45         | 07:18  | 06:55         | 14:50 (LAR01) | 07:24         | 15:04 (LAR01) |               |               |    |               |  |
|                     | 20:31 | 19:55         | 19:03         | 18:13  | 16:37         | 55            | 15:45 (LAR01) | 16:32         | 49            | 15:53 (LAR01) |    |               |  |
| 21                  | 05:43 | 06:14         | 06:46         | 07:19  | 06:56         | 14:50 (LAR01) | 07:25         | 15:04 (LAR01) |               |               |    |               |  |
|                     | 20:31 | 19:53         | 19:02         | 18:12  | 16:36         | 55            | 15:45 (LAR01) | 16:32         | 49            | 15:53 (LAR01) |    |               |  |
| 22                  | 05:44 | 06:15         | 06:47         | 07:20  | 06:58         | 14:50 (LAR01) | 07:25         | 15:05 (LAR01) |               |               |    |               |  |
|                     | 20:30 | 19:52         | 19:00         | 18:10  | 16:36         | 55            | 15:45 (LAR01) | 16:33         | 49            | 15:54 (LAR01) |    |               |  |
| 23                  | 05:45 | 06:16         | 06:48         | 07:21  | 06:59         | 14:50 (LAR01) | 07:26         | 15:05 (LAR01) |               |               |    |               |  |
|                     | 20:29 | 19:50         | 18:58         | 18:09  | 16:35         | 55            | 15:45 (LAR01) | 16:33         | 49            | 15:54 (LAR01) |    |               |  |
| 24                  | 05:46 | 06:17         | 06:49         | 07:22  | 07:00         | 14:51 (LAR01) | 07:26         | 15:06 (LAR01) |               |               |    |               |  |
|                     | 20:28 | 19:49         | 18:56         | 18:07  | 16:34         | 55            | 15:46 (LAR01) | 16:34         | 49            | 15:55 (LAR01) |    |               |  |
| 25                  | 05:47 | 06:18         | 06:50         | 06:24  | 07:01         | 14:51 (LAR01) | 07:26         | 15:07 (LAR01) |               |               |    |               |  |
|                     | 20:27 | 19:47         | 18:55         | 17:06  | 16:34         | 55            | 15:46 (LAR01) | 16:35         | 48            | 15:55 (LAR01) |    |               |  |
| 26                  | 05:48 | 06:19         | 06:51         | 06:25  | 07:02         | 14:51 (LAR01) | 07:27         | 15:07 (LAR01) |               |               |    |               |  |
|                     | 20:26 | 19:46         | 18:53         | 17:04  | 16:33         | 55            | 15:46 (LAR01) | 16:35         | 49            | 15:56 (LAR01) |    |               |  |
| 27                  | 05:49 | 06:20         | 06:52         | 06:26  | 07:03         | 14:51 (LAR01) | 07:27         | 15:08 (LAR01) |               |               |    |               |  |
|                     | 20:25 | 19:44         | 18:51         | 17:03  | 16:33         | 55            | 15:46 (LAR01) | 16:36         | 49            | 15:57 (LAR01) |    |               |  |
| 28                  | 05:50 | 06:21         | 06:53         | 06:27  | 07:05         | 14:52 (LAR01) | 07:28         | 15:08 (LAR01) |               |               |    |               |  |
|                     | 20:24 | 19:42         | 18:49         | 17:02  | 16:32         | 55            | 15:47 (LAR01) | 16:37         | 49            | 15:57 (LAR01) |    |               |  |
| 29                  | 05:51 | 06:22         | 06:54         | 06:28  | 07:06         | 14:53 (LAR01) | 07:28         | 15:08 (LAR01) |               |               |    |               |  |
|                     | 20:23 | 19:41         | 18:48         | 17:00  | 16:32         | 55            | 15:48 (LAR01) | 16:37         | 50            | 15:58 (LAR01) |    |               |  |
| 30                  | 05:52 | 06:23         | 06:56         | 06:30  | 07:07         | 14:53 (LAR01) | 07:28         | 15:08 (LAR01) |               |               |    |               |  |
|                     | 20:22 | 19:39         | 18:46         | 16:59  | 16:31         | 55            | 15:48 (LAR01) | 16:38         | 50            | 15:58 (LAR01) |    |               |  |
| 31                  | 05:53 | 06:24         | 06:57         | 06:31  | 15:09 (LAR01) |               |               | 07:28         | 15:08 (LAR01) |               |    |               |  |
|                     | 20:21 | 19:38         | 16:58         | 16     | 15:25 (LAR01) |               |               | 16:39         | 50            | 15:58 (LAR01) |    |               |  |
| Potential sun hours | 462   | 429           | 375           | 344    | 296           | 285           |               |               |               |               |    |               |  |
| Total, worst case   | 172   |               |               | 16     | 1454          |               |               | 1558          |               |               |    |               |  |
| Sun reduction       | 0,61  |               |               | 0,44   | 0,41          |               |               | 0,36          |               |               |    |               |  |
| Oper. time red.     | 0,70  |               |               | 0,70   | 0,70          |               |               | 0,70          |               |               |    |               |  |
| Wind dir. red.      | 0,67  |               |               | 0,54   | 0,54          |               |               | 0,54          |               |               |    |               |  |
| Total reduction     | 0,28  |               |               | 0,16   | 0,15          |               |               | 0,14          |               |               |    |               |  |
| Total, real         | 48    |               |               | 3      | 223           |               |               | 214           |               |               |    |               |  |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R8 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February                       | March                          | April          | May            | June           |                     |
|---------------------|----------------|--------------------------------|--------------------------------|----------------|----------------|----------------|---------------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15                 | 07:42 (LAR04)<br>08:06 (LAR04) | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 |                     |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16                 | 07:42 (LAR04)<br>08:06 (LAR04) | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 15<br>19:55 (LAR01) |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17                 | 07:43 (LAR04)<br>08:06 (LAR04) | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 20<br>19:57 (LAR01) |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19                 | 07:43 (LAR04)<br>08:05 (LAR04) | 06:33<br>17:54 | 06:40<br>19:29 | 05:55<br>20:02 | 23<br>19:58 (LAR01) |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20                 | 07:44 (LAR04)<br>08:04 (LAR04) | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 26<br>19:31 (LAR01) |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21                 | 07:45 (LAR04)<br>08:04 (LAR04) | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 29<br>19:30 (LAR01) |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23                 | 07:46 (LAR04)<br>08:03 (LAR04) | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 31<br>20:02 (LAR01) |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24                 | 07:48 (LAR04)<br>08:02 (LAR04) | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 32<br>20:03 (LAR01) |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25                 | 07:50 (LAR04)<br>07:58 (LAR04) | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 34<br>19:28 (LAR01) |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26                 |                                | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 36<br>19:28 (LAR01) |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28                 |                                | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 37<br>20:05 (LAR01) |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29                 |                                | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 38<br>20:06 (LAR01) |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30                 |                                | 06:18<br>18:04 | 06:25<br>19:39 | 05:44<br>20:11 | 39<br>19:28 (LAR01) |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32                 |                                | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 40<br>19:27 (LAR01) |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33                 |                                | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 41<br>20:08 (LAR01) |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34                 |                                | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 42<br>20:08 (LAR01) |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35                 |                                | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 42<br>20:09 (LAR01) |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37                 |                                | 06:09<br>18:10 | 06:18<br>19:44 | 05:39<br>20:16 | 42<br>20:09 (LAR01) |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38                 |                                | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 42<br>20:09 (LAR01) |
| 20                  | 07:24<br>17:00 | 07:47 (LAR04)<br>07:55 (LAR04) | 06:51<br>17:39                 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 42<br>20:09 (LAR01) |
| 21                  | 07:23<br>17:01 | 07:45 (LAR04)<br>07:57 (LAR04) | 06:50<br>17:40                 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 42<br>20:09 (LAR01) |
| 22                  | 07:23<br>17:02 | 07:44 (LAR04)<br>07:59 (LAR04) | 06:48<br>17:42                 | 06:03<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 42<br>20:10 (LAR01) |
| 23                  | 07:22<br>17:04 | 07:43 (LAR04)<br>08:00 (LAR04) | 06:47<br>17:43                 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 42<br>20:10 (LAR01) |
| 24                  | 07:21<br>17:05 | 07:42 (LAR04)<br>08:01 (LAR04) | 06:45<br>17:44                 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 42<br>20:10 (LAR01) |
| 25                  | 07:21<br>17:06 | 07:42 (LAR04)<br>08:02 (LAR04) | 06:44<br>17:45                 | 05:57<br>18:18 | 06:07<br>19:52 | 05:33<br>20:23 | 42<br>20:11 (LAR01) |
| 26                  | 07:20<br>17:07 | 07:41 (LAR04)<br>08:03 (LAR04) | 06:42<br>17:46                 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 41<br>19:29 (LAR01) |
| 27                  | 07:19<br>17:09 | 07:42 (LAR04)<br>08:05 (LAR04) | 06:41<br>17:48                 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:25 | 41<br>20:10 (LAR01) |
| 28                  | 07:18<br>17:10 | 07:42 (LAR04)<br>08:05 (LAR04) | 06:39<br>17:49                 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 41<br>20:10 (LAR01) |
| 29                  | 07:17<br>17:11 | 07:42 (LAR04)<br>08:05 (LAR04) |                                | 06:51<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 41<br>20:10 (LAR01) |
| 30                  | 07:16<br>17:12 | 07:42 (LAR04)<br>08:06 (LAR04) |                                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 38<br>20:10 (LAR01) |
| 31                  | 07:15<br>17:14 | 07:42 (LAR04)<br>08:06 (LAR04) |                                | 06:47<br>19:24 |                | 05:29<br>20:28 | 38<br>19:49 (LAR01) |
| Potential sun hours | 295            | 296                            | 369                            | 400            | 450            | 455            |                     |
| Total, worst case   | 230            | 171                            |                                |                | 9              |                | 1097                |
| Sun reduction       | 0,44           | 0,46                           |                                |                | 0,47           |                | 0,54                |
| Oper. time red.     | 0,70           | 0,70                           |                                |                | 0,70           |                | 0,70                |
| Wind dir. red.      | 0,67           | 0,67                           |                                |                | 0,67           |                | 0,67                |
| Total reduction     | 0,21           | 0,21                           |                                |                | 0,22           |                | 0,25                |
| Total, real         | 48             | 37                             |                                |                | 2              |                | 277                 |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R8 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August           |       | September |       | October |    | November |               | December |  |
|---------------------|-------|------------------|-------|-----------|-------|---------|----|----------|---------------|----------|--|
| 1                   | 05:29 | 19:32 (LAR01)    | 05:54 | 06:25     | 06:57 | 06:32   |    |          |               | 07:08    |  |
|                     | 20:40 | 38 20:10 (LAR01) | 20:20 | 19:36     | 18:44 | 16:56   |    |          |               | 16:31    |  |
| 2                   | 05:30 | 19:33 (LAR01)    | 05:55 | 06:27     | 06:58 | 06:33   |    |          | 07:19 (LAR04) | 07:09    |  |
|                     | 20:40 | 37 20:10 (LAR01) | 20:19 | 19:34     | 18:43 | 16:55   | 10 |          | 07:29 (LAR04) | 16:31    |  |
| 3                   | 05:30 | 19:33 (LAR01)    | 05:56 | 06:28     | 06:59 | 06:34   |    |          | 07:18 (LAR04) | 07:10    |  |
|                     | 20:39 | 36 20:09 (LAR01) | 20:18 | 19:33     | 18:41 | 16:54   | 14 |          | 07:32 (LAR04) | 16:31    |  |
| 4                   | 05:31 | 19:35 (LAR01)    | 05:57 | 06:29     | 07:00 | 06:36   |    |          | 07:16 (LAR04) | 07:11    |  |
|                     | 20:39 | 34 20:09 (LAR01) | 20:17 | 19:31     | 18:39 | 16:53   | 17 |          | 07:33 (LAR04) | 16:30    |  |
| 5                   | 05:31 | 19:35 (LAR01)    | 05:58 | 06:30     | 07:01 | 06:37   |    |          | 07:14 (LAR04) | 07:12    |  |
|                     | 20:39 | 33 20:08 (LAR01) | 20:15 | 19:29     | 18:37 | 16:51   | 20 |          | 07:34 (LAR04) | 16:30    |  |
| 6                   | 05:32 | 19:36 (LAR01)    | 05:59 | 06:31     | 07:02 | 06:38   |    |          | 07:13 (LAR04) | 07:13    |  |
|                     | 20:39 | 32 20:08 (LAR01) | 20:14 | 19:28     | 18:36 | 16:50   | 21 |          | 07:34 (LAR04) | 16:30    |  |
| 7                   | 05:32 | 19:37 (LAR01)    | 06:00 | 06:32     | 07:03 | 06:39   |    |          | 07:13 (LAR04) | 07:14    |  |
|                     | 20:38 | 29 20:06 (LAR01) | 20:13 | 19:26     | 18:34 | 16:49   | 23 |          | 07:36 (LAR04) | 16:30    |  |
| 8                   | 05:33 | 19:38 (LAR01)    | 06:01 | 06:33     | 07:04 | 06:41   |    |          | 07:13 (LAR04) | 07:15    |  |
|                     | 20:38 | 28 20:06 (LAR01) | 20:12 | 19:24     | 18:32 | 16:48   | 23 |          | 07:36 (LAR04) | 16:30    |  |
| 9                   | 05:34 | 19:40 (LAR01)    | 06:02 | 06:34     | 07:05 | 06:42   |    |          | 07:12 (LAR04) | 07:16    |  |
|                     | 20:38 | 25 20:05 (LAR01) | 20:10 | 19:22     | 18:31 | 16:47   | 24 |          | 07:36 (LAR04) | 16:30    |  |
| 10                  | 05:34 | 19:41 (LAR01)    | 06:03 | 06:35     | 07:06 | 06:43   |    |          | 07:13 (LAR04) | 07:17    |  |
|                     | 20:37 | 22 20:03 (LAR01) | 20:09 | 19:21     | 18:29 | 16:46   | 24 |          | 07:37 (LAR04) | 16:30    |  |
| 11                  | 05:35 | 19:44 (LAR01)    | 06:04 | 06:36     | 07:08 | 06:44   |    |          | 07:13 (LAR04) | 07:17    |  |
|                     | 20:37 | 17 20:01 (LAR01) | 20:08 | 19:19     | 18:27 | 16:45   | 24 |          | 07:37 (LAR04) | 16:30    |  |
| 12                  | 05:36 | 19:47 (LAR01)    | 06:05 | 06:37     | 07:09 | 06:45   |    |          | 07:12 (LAR04) | 07:18    |  |
|                     | 20:36 | 12 19:59 (LAR01) | 20:06 | 19:17     | 18:26 | 16:44   | 25 |          | 07:37 (LAR04) | 16:30    |  |
| 13                  | 05:37 |                  | 06:06 | 06:38     | 07:10 | 06:47   |    |          | 07:13 (LAR04) | 07:19    |  |
|                     | 20:36 |                  | 20:05 | 19:16     | 18:24 | 16:43   | 24 |          | 07:37 (LAR04) | 16:30    |  |
| 14                  | 05:37 |                  | 06:07 | 06:39     | 07:11 | 06:48   |    |          | 07:14 (LAR04) | 07:20    |  |
|                     | 20:35 |                  | 20:04 | 19:14     | 18:23 | 16:42   | 23 |          | 07:37 (LAR04) | 16:30    |  |
| 15                  | 05:38 |                  | 06:08 | 06:40     | 07:12 | 06:49   |    |          | 07:14 (LAR04) | 07:21    |  |
|                     | 20:35 |                  | 20:02 | 19:12     | 18:21 | 16:41   | 23 |          | 07:37 (LAR04) | 16:30    |  |
| 16                  | 05:39 |                  | 06:09 | 06:41     | 07:13 | 06:50   |    |          | 07:15 (LAR04) | 07:21    |  |
|                     | 20:34 |                  | 20:01 | 19:10     | 18:19 | 16:40   | 22 |          | 07:37 (LAR04) | 16:31    |  |
| 17                  | 05:40 |                  | 06:10 | 06:42     | 07:14 | 06:52   |    |          | 07:16 (LAR04) | 07:22    |  |
|                     | 20:34 |                  | 19:59 | 19:09     | 18:18 | 16:39   | 20 |          | 07:36 (LAR04) | 16:31    |  |
| 18                  | 05:41 |                  | 06:11 | 06:43     | 07:15 | 06:53   |    |          | 07:16 (LAR04) | 07:23    |  |
|                     | 20:33 |                  | 19:58 | 19:07     | 18:16 | 16:38   | 19 |          | 07:35 (LAR04) | 16:31    |  |
| 19                  | 05:41 |                  | 06:12 | 06:44     | 07:17 | 06:54   |    |          | 07:17 (LAR04) | 07:23    |  |
|                     | 20:32 |                  | 19:56 | 19:05     | 18:15 | 16:38   | 17 |          | 07:34 (LAR04) | 16:32    |  |
| 20                  | 05:42 |                  | 06:13 | 06:45     | 07:18 | 06:55   |    |          | 07:19 (LAR04) | 07:24    |  |
|                     | 20:31 |                  | 19:55 | 19:03     | 18:13 | 16:37   | 15 |          | 07:34 (LAR04) | 16:32    |  |
| 21                  | 05:43 |                  | 06:14 | 06:46     | 07:19 | 06:56   |    |          | 07:21 (LAR04) | 07:25    |  |
|                     | 20:31 |                  | 19:53 | 19:02     | 18:12 | 16:36   | 12 |          | 07:33 (LAR04) | 16:33    |  |
| 22                  | 05:44 |                  | 06:15 | 06:47     | 07:20 | 06:58   |    |          | 07:23 (LAR04) | 07:25    |  |
|                     | 20:30 |                  | 19:52 | 19:00     | 18:10 | 16:36   | 8  |          | 07:31 (LAR04) | 16:33    |  |
| 23                  | 05:45 |                  | 06:16 | 06:48     | 07:21 | 06:59   |    |          |               | 07:26    |  |
|                     | 20:29 |                  | 19:50 | 18:58     | 18:09 | 16:35   |    |          |               | 16:34    |  |
| 24                  | 05:46 |                  | 06:17 | 06:49     | 07:22 | 07:00   |    |          |               | 07:26    |  |
|                     | 20:28 |                  | 19:49 | 18:56     | 18:07 | 16:34   |    |          |               | 16:34    |  |
| 25                  | 05:47 |                  | 06:18 | 06:50     | 06:24 | 07:01   |    |          |               | 07:26    |  |
|                     | 20:27 |                  | 19:47 | 18:55     | 17:06 | 16:34   |    |          |               | 16:35    |  |
| 26                  | 05:48 |                  | 06:19 | 06:51     | 06:25 | 07:02   |    |          |               | 07:27    |  |
|                     | 20:26 |                  | 19:46 | 18:53     | 17:04 | 16:33   |    |          |               | 16:35    |  |
| 27                  | 05:49 |                  | 06:20 | 06:52     | 06:26 | 07:03   |    |          |               | 07:27    |  |
|                     | 20:25 |                  | 19:44 | 18:51     | 17:03 | 16:33   |    |          |               | 16:36    |  |
| 28                  | 05:50 |                  | 06:21 | 06:53     | 06:27 | 07:05   |    |          |               | 07:27    |  |
|                     | 20:24 |                  | 19:42 | 18:49     | 17:02 | 16:32   |    |          |               | 16:37    |  |
| 29                  | 05:51 |                  | 06:22 | 06:54     | 06:28 | 07:06   |    |          |               | 07:28    |  |
|                     | 20:23 |                  | 19:41 | 18:48     | 17:00 | 16:32   |    |          |               | 16:37    |  |
| 30                  | 05:52 |                  | 06:23 | 06:56     | 06:30 | 07:07   |    |          |               | 07:28    |  |
|                     | 20:22 |                  | 19:39 | 18:46     | 16:59 | 16:31   |    |          |               | 16:38    |  |
| 31                  | 05:53 |                  | 06:24 |           | 06:31 |         |    |          |               | 07:28    |  |
|                     | 20:21 |                  | 19:38 |           | 16:58 |         |    |          |               | 16:39    |  |
| Potential sun hours | 462   |                  | 429   | 375       | 344   | 296     |    |          |               | 285      |  |
| Total, worst case   | 343   |                  |       |           |       | 408     |    |          |               |          |  |
| Sun reduction       | 0,61  |                  |       |           |       | 0,41    |    |          |               |          |  |
| Oper. time red.     | 0,70  |                  |       |           |       | 0,70    |    |          |               |          |  |
| Wind dir. red.      | 0,67  |                  |       |           |       | 0,67    |    |          |               |          |  |
| Total reduction     | 0,28  |                  |       |           |       | 0,19    |    |          |               |          |  |
| Total, real         | 97    |                  |       |           |       | 77      |    |          |               |          |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R80 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (64)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| January             |       | February      |               | March |       | April |  | May |               | June  |       |
|---------------------|-------|---------------|---------------|-------|-------|-------|--|-----|---------------|-------|-------|
| 1                   | 07:28 | 14:51 (LAR01) | 07:14         | 06:37 | 06:45 | 05:58 |  |     |               | 05:29 |       |
|                     | 16:40 | 28            | 15:19 (LAR01) | 17:15 | 17:50 | 19:25 |  |     |               | 19:58 | 20:29 |
| 2                   | 07:29 | 14:52 (LAR01) | 07:13         | 06:36 | 06:44 | 05:57 |  |     |               | 19:58 | 20:29 |
|                     | 16:41 | 27            | 15:19 (LAR01) | 17:16 | 17:51 | 19:26 |  |     |               | 19:59 | 20:29 |
| 3                   | 07:29 | 14:53 (LAR01) | 07:12         | 06:34 | 06:42 | 05:56 |  |     |               | 19:58 | 20:28 |
|                     | 16:42 | 26            | 15:19 (LAR01) | 17:17 | 17:52 | 19:27 |  |     |               | 19:59 | 20:30 |
| 4                   | 07:29 | 14:54 (LAR01) | 07:11         | 06:33 | 06:40 | 05:55 |  |     |               | 19:58 | 20:30 |
|                     | 16:43 | 25            | 15:19 (LAR01) | 17:19 | 17:54 | 19:29 |  |     |               | 19:59 | 20:31 |
| 5                   | 07:29 | 14:56 (LAR01) | 07:10         | 06:31 | 06:39 | 05:53 |  |     |               | 19:58 | 20:32 |
|                     | 16:43 | 22            | 15:18 (LAR01) | 17:20 | 17:55 | 19:30 |  |     |               | 19:59 | 20:32 |
| 6                   | 07:29 | 14:57 (LAR01) | 07:09         | 06:29 | 06:37 | 05:52 |  |     | 19:39 (LAR13) | 19:58 | 20:32 |
|                     | 16:44 | 21            | 15:18 (LAR01) | 17:21 | 17:56 | 19:31 |  | 1   | 19:40 (LAR13) | 19:59 | 20:32 |
| 7                   | 07:29 | 14:59 (LAR01) | 07:08         | 06:28 | 06:35 | 05:51 |  |     | 19:38 (LAR13) | 19:58 | 20:32 |
|                     | 16:45 | 18            | 15:17 (LAR01) | 17:23 | 17:57 | 19:32 |  | 3   | 19:41 (LAR13) | 19:59 | 20:33 |
| 8                   | 07:28 | 15:01 (LAR01) | 07:07         | 06:26 | 06:34 | 05:50 |  |     | 19:37 (LAR13) | 19:57 | 20:33 |
|                     | 16:46 | 16            | 15:17 (LAR01) | 17:24 | 17:58 | 19:33 |  | 6   | 19:43 (LAR13) | 19:58 | 20:34 |
| 9                   | 07:28 | 15:03 (LAR01) | 07:06         | 06:24 | 06:32 | 05:48 |  |     | 19:36 (LAR13) | 19:56 | 20:34 |
|                     | 16:47 | 11            | 15:14 (LAR01) | 17:25 | 17:59 | 19:34 |  | 7   | 19:43 (LAR13) | 19:58 | 20:34 |
| 10                  | 07:28 | 15:07 (LAR01) | 07:04         | 06:23 | 06:30 | 05:47 |  |     | 19:35 (LAR13) | 19:56 | 20:34 |
|                     | 16:48 | 4             | 15:11 (LAR01) | 17:26 | 18:01 | 19:35 |  | 9   | 19:44 (LAR13) | 19:57 | 20:35 |
| 11                  | 07:28 |               | 07:03         | 06:21 | 06:29 | 05:46 |  |     | 19:35 (LAR13) | 19:56 | 20:35 |
|                     | 16:50 |               | 17:28         | 18:02 | 19:36 | 20:09 |  | 10  | 19:45 (LAR13) | 19:57 | 20:35 |
| 12                  | 07:28 |               | 07:02         | 06:19 | 06:27 | 05:45 |  |     | 19:35 (LAR13) | 19:55 | 20:35 |
|                     | 16:51 |               | 17:29         | 18:03 | 19:37 | 20:10 |  | 11  | 19:46 (LAR13) | 19:57 | 20:36 |
| 13                  | 07:27 |               | 07:01         | 06:18 | 06:25 | 05:44 |  |     | 19:35 (LAR13) | 19:55 | 20:36 |
|                     | 16:52 |               | 17:30         | 18:04 | 19:39 | 20:11 |  | 12  | 19:47 (LAR13) | 19:57 | 20:36 |
| 14                  | 07:27 |               | 06:59         | 06:16 | 06:24 | 05:43 |  |     | 19:35 (LAR13) | 19:55 | 20:36 |
|                     | 16:53 |               | 17:32         | 18:05 | 19:40 | 20:12 |  | 13  | 19:48 (LAR13) | 19:57 | 20:37 |
| 15                  | 07:26 |               | 06:58         | 06:14 | 06:22 | 05:42 |  |     | 19:35 (LAR13) | 19:55 | 20:37 |
|                     | 16:54 |               | 17:33         | 18:06 | 19:41 | 20:13 |  | 14  | 19:49 (LAR13) | 19:57 | 20:37 |
| 16                  | 07:26 |               | 06:57         | 06:13 | 06:21 | 05:41 |  |     | 19:35 (LAR13) | 19:55 | 20:37 |
|                     | 16:55 |               | 17:34         | 18:07 | 19:42 | 20:14 |  | 15  | 19:50 (LAR13) | 19:57 | 20:38 |
| 17                  | 07:26 |               | 06:55         | 06:11 | 06:19 | 05:40 |  |     | 19:35 (LAR13) | 19:55 | 20:38 |
|                     | 16:56 |               | 17:35         | 18:09 | 19:43 | 20:15 |  | 15  | 19:50 (LAR13) | 19:57 | 20:38 |
| 18                  | 07:25 |               | 06:54         | 06:09 | 06:17 | 05:39 |  |     | 19:37 (LAR13) | 19:55 | 20:38 |
|                     | 16:57 |               | 17:37         | 18:10 | 19:44 | 20:16 |  | 15  | 19:52 (LAR13) | 19:57 | 20:38 |
| 19                  | 07:25 |               | 06:52         | 06:08 | 06:16 | 05:38 |  |     | 19:37 (LAR13) | 19:55 | 20:38 |
|                     | 16:59 |               | 17:38         | 18:11 | 19:45 | 20:17 |  | 16  | 19:53 (LAR13) | 19:57 | 20:39 |
| 20                  | 07:24 |               | 06:51         | 06:06 | 06:14 | 05:37 |  |     | 19:38 (LAR13) | 19:55 | 20:39 |
|                     | 17:00 |               | 17:39         | 18:12 | 19:46 | 20:18 |  | 16  | 19:54 (LAR13) | 19:57 | 20:39 |
| 21                  | 07:23 |               | 06:50         | 06:04 | 06:13 | 05:36 |  |     | 19:38 (LAR13) | 19:55 | 20:39 |
|                     | 17:01 |               | 17:40         | 18:13 | 19:47 | 20:19 |  | 16  | 19:54 (LAR13) | 19:57 | 20:39 |
| 22                  | 07:23 |               | 06:48         | 06:03 | 06:11 | 05:35 |  |     | 19:39 (LAR13) | 19:55 | 20:39 |
|                     | 17:02 |               | 17:42         | 18:14 | 19:48 | 20:20 |  | 14  | 19:53 (LAR13) | 19:57 | 20:39 |
| 23                  | 07:22 |               | 06:47         | 06:01 | 06:10 | 05:35 |  |     | 19:41 (LAR13) | 19:55 | 20:39 |
|                     | 17:04 |               | 17:43         | 18:15 | 19:50 | 20:21 |  | 11  | 19:52 (LAR13) | 19:57 | 20:40 |
| 24                  | 07:21 |               | 06:45         | 05:59 | 06:08 | 05:34 |  |     | 19:42 (LAR13) | 19:55 | 20:40 |
|                     | 17:05 |               | 17:44         | 18:16 | 19:51 | 20:22 |  | 8   | 19:50 (LAR13) | 19:57 | 20:40 |
| 25                  | 07:21 |               | 06:44         | 05:57 | 06:07 | 05:33 |  |     |               | 19:55 | 20:40 |
|                     | 17:06 |               | 17:45         | 18:18 | 19:52 | 20:23 |  |     |               | 19:56 | 20:40 |
| 26                  | 07:20 |               | 06:42         | 05:56 | 06:05 | 05:32 |  |     |               | 19:55 | 20:40 |
|                     | 17:07 |               | 17:46         | 18:19 | 19:53 | 20:24 |  |     |               | 19:56 | 20:40 |
| 27                  | 07:19 |               | 06:41         | 05:54 | 06:04 | 05:32 |  |     |               | 19:55 | 20:40 |
|                     | 17:09 |               | 17:48         | 18:20 | 19:54 | 20:25 |  |     |               | 19:56 | 20:40 |
| 28                  | 07:18 |               | 06:39         | 05:52 | 06:03 | 05:31 |  |     |               | 19:55 | 20:40 |
|                     | 17:10 |               | 17:49         | 18:21 | 19:55 | 20:25 |  |     |               | 19:56 | 20:40 |
| 29                  | 07:17 |               |               | 06:51 | 06:01 | 05:30 |  |     |               | 19:55 | 20:40 |
|                     | 17:11 |               |               | 19:22 | 19:56 | 20:26 |  |     |               | 19:56 | 20:40 |
| 30                  | 07:16 |               |               | 06:49 | 06:00 | 05:30 |  |     |               | 19:55 | 20:40 |
|                     | 17:12 |               |               | 19:23 | 19:57 | 20:27 |  |     |               | 19:56 | 20:40 |
| 31                  | 07:15 |               |               | 06:47 |       | 05:29 |  |     |               | 19:55 | 20:40 |
|                     | 17:14 |               |               | 19:24 |       | 20:28 |  |     |               | 19:56 | 20:40 |
| Potential sun hours | 295   |               | 296           | 369   | 400   | 451   |  |     |               | 455   |       |
| Total, worst case   | 198   |               |               |       |       | 212   |  |     |               |       |       |
| Sun reduction       | 0,44  |               |               |       |       | 0,47  |  |     |               |       |       |
| Oper. time red.     | 0,70  |               |               |       |       | 0,70  |  |     |               |       |       |
| Wind dir. red.      | 0,56  |               |               |       |       | 0,66  |  |     |               |       |       |
| Total reduction     | 0,17  |               |               |       |       | 0,21  |  |     |               |       |       |
| Total, real         | 34    |               |               |       |       | 45    |  |     |               |       |       |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

**Shadow receptor:** R80 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (64)

### Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August           |                  | September |       | October |               | November      |               | December |      |
|---------------------|-------|------------------|------------------|-----------|-------|---------|---------------|---------------|---------------|----------|------|
| 1                   | 05:29 | 05:54            | 19:45 (LAR13)    | 06:25     | 06:57 | 06:32   | 07:08         |               |               |          |      |
|                     | 20:40 | 20:20            | 11 19:56 (LAR13) | 19:36     | 18:44 | 16:56   | 16:31         |               |               |          |      |
| 2                   | 05:29 | 05:55            | 19:46 (LAR13)    | 06:27     | 06:58 | 06:33   | 07:09         |               | 14:51 (LAR01) |          |      |
|                     | 20:40 | 20:19            | 9 19:55 (LAR13)  | 19:34     | 18:42 | 16:55   | 16:31         | 3             | 14:54 (LAR01) |          |      |
| 3                   | 05:30 | 05:56            | 19:46 (LAR13)    | 06:28     | 06:59 | 06:34   | 07:10         |               | 14:47 (LAR01) |          |      |
|                     | 20:40 | 20:18            | 8 19:54 (LAR13)  | 19:33     | 18:41 | 16:54   | 16:31         | 11            | 14:58 (LAR01) |          |      |
| 4                   | 05:31 | 05:57            | 19:46 (LAR13)    | 06:29     | 07:00 | 06:36   | 07:11         |               | 14:45 (LAR01) |          |      |
|                     | 20:39 | 20:17            | 7 19:53 (LAR13)  | 19:31     | 18:39 | 16:53   | 16:30         | 16            | 15:01 (LAR01) |          |      |
| 5                   | 05:31 | 05:58            | 19:47 (LAR13)    | 06:30     | 07:01 | 06:37   | 07:12         |               | 14:44 (LAR01) |          |      |
|                     | 20:39 | 20:16            | 5 19:52 (LAR13)  | 19:29     | 18:37 | 16:51   | 16:30         | 18            | 15:02 (LAR01) |          |      |
| 6                   | 05:32 | 05:59            | 19:48 (LAR13)    | 06:31     | 07:02 | 06:38   | 07:13         |               | 14:43 (LAR01) |          |      |
|                     | 20:39 | 20:14            | 3 19:51 (LAR13)  | 19:28     | 18:36 | 16:50   | 16:30         | 21            | 15:04 (LAR01) |          |      |
| 7                   | 05:32 | 06:00            | 19:49 (LAR13)    | 06:32     | 07:03 | 06:39   | 07:14         |               | 14:43 (LAR01) |          |      |
|                     | 20:39 | 20:13            | 1 19:50 (LAR13)  | 19:26     | 18:34 | 16:49   | 16:30         | 22            | 15:05 (LAR01) |          |      |
| 8                   | 05:33 | 06:01            | 06:33            | 07:04     | 06:41 | 07:15   | 14:42 (LAR01) |               |               |          |      |
|                     | 20:38 | 20:12            | 19:24            | 18:32     | 16:48 | 16:30   | 25            | 15:07 (LAR01) |               |          |      |
| 9                   | 05:34 | 06:02            | 06:34            | 07:05     | 06:42 | 07:16   | 14:42 (LAR01) |               |               |          |      |
|                     | 20:38 | 20:10            | 19:22            | 18:31     | 16:47 | 16:30   | 26            | 15:08 (LAR01) |               |          |      |
| 10                  | 05:34 | 06:03            | 06:35            | 07:06     | 06:43 | 07:17   | 14:42 (LAR01) |               |               |          |      |
|                     | 20:37 | 20:09            | 19:21            | 18:29     | 16:46 | 16:30   | 27            | 15:09 (LAR01) |               |          |      |
| 11                  | 05:35 | 06:04            | 06:36            | 07:08     | 06:44 | 07:17   | 14:42 (LAR01) |               |               |          |      |
|                     | 20:37 | 20:08            | 19:19            | 18:27     | 16:45 | 16:30   | 28            | 15:10 (LAR01) |               |          |      |
| 12                  | 05:36 | 06:05            | 06:37            | 07:09     | 06:46 | 07:18   | 14:41 (LAR01) |               |               |          |      |
|                     | 20:36 | 20:06            | 19:17            | 18:26     | 16:44 | 16:30   | 29            | 15:10 (LAR01) |               |          |      |
| 13                  | 05:37 | 06:06            | 06:38            | 07:10     | 06:47 | 07:19   | 14:41 (LAR01) |               |               |          |      |
|                     | 20:36 | 20:05            | 19:16            | 18:24     | 16:43 | 16:30   | 30            | 15:11 (LAR01) |               |          |      |
| 14                  | 05:37 | 06:07            | 06:39            | 07:11     | 06:48 | 07:20   | 14:42 (LAR01) |               |               |          |      |
|                     | 20:35 | 20:04            | 19:14            | 18:23     | 16:42 | 16:30   | 30            | 15:12 (LAR01) |               |          |      |
| 15                  | 05:38 | 06:08            | 06:40            | 07:12     | 06:49 | 07:21   | 14:42 (LAR01) |               |               |          |      |
|                     | 20:35 | 20:02            | 19:12            | 18:21     | 16:41 | 16:30   | 31            | 15:13 (LAR01) |               |          |      |
| 16                  | 05:39 | 06:09            | 06:41            | 07:13     | 06:50 | 07:21   | 14:42 (LAR01) |               |               |          |      |
|                     | 20:34 | 20:01            | 19:10            | 18:19     | 16:40 | 16:31   | 31            | 15:13 (LAR01) |               |          |      |
| 17                  | 05:40 | 06:10            | 06:42            | 07:14     | 06:52 | 07:22   | 14:42 (LAR01) |               |               |          |      |
|                     | 20:34 | 19:59            | 19:09            | 18:18     | 16:39 | 16:31   | 32            | 15:14 (LAR01) |               |          |      |
| 18                  | 05:41 | 06:11            | 06:43            | 07:15     | 06:53 | 07:23   | 14:43 (LAR01) |               |               |          |      |
|                     | 20:33 | 19:58            | 19:07            | 18:16     | 16:38 | 16:31   | 32            | 15:15 (LAR01) |               |          |      |
| 19                  | 05:41 | 19:53 (LAR13)    | 06:12            | 06:44     | 07:17 | 06:54   | 07:23         | 14:43 (LAR01) |               |          |      |
|                     | 20:32 | 6 19:59 (LAR13)  | 19:56            | 19:05     | 18:15 | 16:38   | 16:32         | 32            | 15:15 (LAR01) |          |      |
| 20                  | 05:42 | 19:51 (LAR13)    | 06:13            | 06:45     | 07:18 | 06:55   | 07:24         | 14:43 (LAR01) |               |          |      |
|                     | 20:31 | 10 20:01 (LAR13) | 19:55            | 19:03     | 18:13 | 16:37   | 16:32         | 33            | 15:16 (LAR01) |          |      |
| 21                  | 05:43 | 19:50 (LAR13)    | 06:14            | 06:46     | 07:19 | 06:56   | 07:25         | 14:43 (LAR01) |               |          |      |
|                     | 20:31 | 12 20:02 (LAR13) | 19:53            | 19:02     | 18:12 | 16:36   | 16:32         | 33            | 15:16 (LAR01) |          |      |
| 22                  | 05:44 | 19:49 (LAR13)    | 06:15            | 06:47     | 07:20 | 06:58   | 07:25         | 14:44 (LAR01) |               |          |      |
|                     | 20:30 | 15 20:04 (LAR13) | 19:52            | 19:00     | 18:10 | 16:36   | 16:33         | 33            | 15:17 (LAR01) |          |      |
| 23                  | 05:45 | 19:48 (LAR13)    | 06:16            | 06:48     | 07:21 | 06:59   | 07:26         | 14:44 (LAR01) |               |          |      |
|                     | 20:29 | 17 20:05 (LAR13) | 19:50            | 18:58     | 18:09 | 16:35   | 16:33         | 33            | 15:17 (LAR01) |          |      |
| 24                  | 05:46 | 19:48 (LAR13)    | 06:17            | 06:49     | 07:22 | 07:00   | 07:26         | 14:45 (LAR01) |               |          |      |
|                     | 20:28 | 16 20:04 (LAR13) | 19:49            | 18:56     | 18:07 | 16:34   | 16:34         | 33            | 15:18 (LAR01) |          |      |
| 25                  | 05:47 | 19:47 (LAR13)    | 06:18            | 06:50     | 06:24 | 07:01   | 07:26         | 14:46 (LAR01) |               |          |      |
|                     | 20:27 | 16 20:03 (LAR13) | 19:47            | 18:55     | 17:06 | 16:34   | 16:35         | 32            | 15:18 (LAR01) |          |      |
| 26                  | 05:48 | 19:46 (LAR13)    | 06:19            | 06:51     | 06:25 | 07:02   | 07:27         | 14:46 (LAR01) |               |          |      |
|                     | 20:26 | 15 20:01 (LAR13) | 19:46            | 18:53     | 17:04 | 16:33   | 16:35         | 32            | 15:18 (LAR01) |          |      |
| 27                  | 05:49 | 19:46 (LAR13)    | 06:20            | 06:52     | 06:26 | 07:03   | 07:27         | 14:47 (LAR01) |               |          |      |
|                     | 20:25 | 15 20:01 (LAR13) | 19:44            | 18:51     | 17:03 | 16:33   | 16:36         | 32            | 15:19 (LAR01) |          |      |
| 28                  | 05:50 | 19:45 (LAR13)    | 06:21            | 06:53     | 06:27 | 07:05   | 07:28         | 14:48 (LAR01) |               |          |      |
|                     | 20:24 | 15 20:00 (LAR13) | 19:42            | 18:49     | 17:02 | 16:32   | 16:37         | 31            | 15:19 (LAR01) |          |      |
| 29                  | 05:51 | 19:45 (LAR13)    | 06:22            | 06:54     | 06:28 | 07:06   | 07:28         | 14:48 (LAR01) |               |          |      |
|                     | 20:23 | 14 19:59 (LAR13) | 19:41            | 18:48     | 17:00 | 16:32   | 16:37         | 31            | 15:19 (LAR01) |          |      |
| 30                  | 05:52 | 19:45 (LAR13)    | 06:23            | 06:56     | 06:30 | 07:07   | 07:28         | 14:49 (LAR01) |               |          |      |
|                     | 20:22 | 13 19:58 (LAR13) | 19:39            | 18:46     | 16:59 | 16:31   | 16:38         | 30            | 15:19 (LAR01) |          |      |
| 31                  | 05:53 | 19:45 (LAR13)    | 06:24            |           | 06:31 |         | 07:28         | 14:50 (LAR01) |               |          |      |
|                     | 20:21 | 12 19:57 (LAR13) | 19:38            |           | 16:58 |         | 16:39         | 29            | 15:19 (LAR01) |          |      |
| Potential sun hours | 462   |                  | 429              |           | 375   |         | 344           |               | 296           |          | 285  |
| Total, worst case   |       | 176              |                  | 44        |       |         |               |               |               |          | 826  |
| Sun reduction       |       | 0,61             |                  | 0,67      |       |         |               |               |               |          | 0,36 |
| Oper. time red.     |       | 0,70             |                  | 0,70      |       |         |               |               |               |          | 0,70 |
| Wind dir. red.      |       | 0,66             |                  | 0,66      |       |         |               |               |               |          | 0,56 |
| Total reduction     |       | 0,27             |                  | 0,30      |       |         |               |               |               |          | 0,14 |
| Total, real         |       | 48               |                  | 13        |       |         |               |               |               |          | 116  |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R81 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (65)

### Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May            | June                   |
|---------------------|----------------|----------------|----------------|----------------|----------------|------------------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 19:25 (LAR13)<br>20:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 19:25 (LAR13)<br>20:29 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 19:24 (LAR13)<br>20:30 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:55<br>20:02 | 19:24 (LAR13)<br>20:31 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 19:25 (LAR13)<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 19:25 (LAR13)<br>20:32 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 19:25 (LAR13)<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 19:26 (LAR13)<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 19:26 (LAR13)<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 19:27 (LAR13)<br>20:35 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 19:28 (LAR13)<br>20:35 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 19:30 (LAR13)<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:39 | 05:44<br>20:11 | 19:33 (LAR13)<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 19:37 (LAR13)<br>20:37 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 19:40 (LAR13)<br>20:37 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 19:43 (LAR13)<br>20:38 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 19:46 (LAR13)<br>20:38 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 19:49 (LAR13)<br>20:38 |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 19:52 (LAR13)<br>20:39 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 19:55 (LAR13)<br>20:39 |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 19:58 (LAR13)<br>20:39 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:03<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 19:59 (LAR13)<br>20:39 |
| 23                  | 07:22<br>17:04 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:50 | 05:34<br>20:21 | 20:02 (LAR13)<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 20:05 (LAR13)<br>20:40 |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52 | 05:33<br>20:23 | 20:08 (LAR13)<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 20:11 (LAR13)<br>20:40 |
| 27                  | 07:19<br>17:09 | 06:41<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:25 | 20:14 (LAR13)<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:26 | 20:17 (LAR13)<br>20:40 |
| 29                  | 07:17<br>17:11 | 06:37<br>19:22 | 06:51<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 20:20 (LAR13)<br>20:40 |
| 30                  | 07:16<br>17:12 | 06:35<br>19:23 | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 20:23 (LAR13)<br>20:40 |
| 31                  | 07:15<br>17:14 | 06:33<br>19:24 | 06:47<br>19:24 | 05:29<br>20:28 | 05:29<br>20:28 | 20:26 (LAR13)<br>20:40 |
| Potential sun hours | 295            | 296            | 369            | 400            | 451            | 455                    |
| Total, worst case   |                |                |                | 20             |                | 170                    |
| Sun reduction       |                |                |                | 0,48           |                | 0,47                   |
| Oper. time red.     |                |                |                | 0,70           |                | 0,70                   |
| Wind dir. red.      |                |                |                | 0,64           |                | 0,64                   |
| Total reduction     |                |                |                | 0,22           |                | 0,21                   |
| Total, real         |                |                |                | 4              |                | 36                     |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R81 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (65)

### Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August        |               | September |       | October |       | November |  | December |  |
|---------------------|-------|---------------|---------------|-----------|-------|---------|-------|----------|--|----------|--|
| 1                   | 05:29 | 05:54         | 19:40 (LAR13) | 06:25     | 06:57 | 06:32   | 07:08 |          |  |          |  |
|                     | 20:40 | 20:20         | 19:51 (LAR13) | 19:36     | 18:44 | 16:56   | 16:31 |          |  |          |  |
| 2                   | 05:29 | 05:55         | 19:38 (LAR13) | 06:27     | 06:58 | 06:33   | 07:09 |          |  |          |  |
|                     | 20:40 | 20:19         | 19:52 (LAR13) | 19:34     | 18:42 | 16:55   | 16:31 |          |  |          |  |
| 3                   | 05:30 | 05:56         | 19:37 (LAR13) | 06:28     | 06:59 | 06:34   | 07:10 |          |  |          |  |
|                     | 20:40 | 20:18         | 19:54 (LAR13) | 19:33     | 18:41 | 16:54   | 16:31 |          |  |          |  |
| 4                   | 05:31 | 05:57         | 19:36 (LAR13) | 06:29     | 07:00 | 06:36   | 07:11 |          |  |          |  |
|                     | 20:39 | 20:17         | 19:53 (LAR13) | 19:31     | 18:39 | 16:53   | 16:30 |          |  |          |  |
| 5                   | 05:31 | 05:58         | 19:35 (LAR13) | 06:30     | 07:01 | 06:37   | 07:12 |          |  |          |  |
|                     | 20:39 | 20:16         | 19:52 (LAR13) | 19:29     | 18:37 | 16:51   | 16:30 |          |  |          |  |
| 6                   | 05:32 | 05:59         | 19:35 (LAR13) | 06:31     | 07:02 | 06:38   | 07:13 |          |  |          |  |
|                     | 20:39 | 20:14         | 19:51 (LAR13) | 19:28     | 18:36 | 16:50   | 16:30 |          |  |          |  |
| 7                   | 05:32 | 06:00         | 19:34 (LAR13) | 06:32     | 07:03 | 06:39   | 07:14 |          |  |          |  |
|                     | 20:39 | 20:13         | 19:50 (LAR13) | 19:26     | 18:34 | 16:49   | 16:30 |          |  |          |  |
| 8                   | 05:33 | 06:01         | 19:34 (LAR13) | 06:33     | 07:04 | 06:41   | 07:15 |          |  |          |  |
|                     | 20:38 | 20:12         | 19:48 (LAR13) | 19:24     | 18:32 | 16:48   | 16:30 |          |  |          |  |
| 9                   | 05:34 | 06:02         | 19:34 (LAR13) | 06:34     | 07:05 | 06:42   | 07:16 |          |  |          |  |
|                     | 20:38 | 20:10         | 19:47 (LAR13) | 19:22     | 18:31 | 16:47   | 16:30 |          |  |          |  |
| 10                  | 05:34 | 06:03         | 19:34 (LAR13) | 06:35     | 07:06 | 06:43   | 07:17 |          |  |          |  |
|                     | 20:37 | 20:09         | 19:46 (LAR13) | 19:21     | 18:29 | 16:46   | 16:30 |          |  |          |  |
| 11                  | 05:35 | 06:04         | 19:34 (LAR13) | 06:36     | 07:08 | 06:44   | 07:17 |          |  |          |  |
|                     | 20:37 | 20:08         | 19:45 (LAR13) | 19:19     | 18:27 | 16:45   | 16:30 |          |  |          |  |
| 12                  | 05:36 | 06:05         | 19:34 (LAR13) | 06:37     | 07:09 | 06:46   | 07:18 |          |  |          |  |
|                     | 20:36 | 20:06         | 19:43 (LAR13) | 19:17     | 18:26 | 16:44   | 16:30 |          |  |          |  |
| 13                  | 05:37 | 06:06         | 19:34 (LAR13) | 06:38     | 07:10 | 06:47   | 07:19 |          |  |          |  |
|                     | 20:36 | 20:05         | 19:42 (LAR13) | 19:16     | 18:24 | 16:43   | 16:30 |          |  |          |  |
| 14                  | 05:37 | 06:07         | 19:35 (LAR13) | 06:39     | 07:11 | 06:48   | 07:20 |          |  |          |  |
|                     | 20:35 | 20:04         | 19:41 (LAR13) | 19:14     | 18:23 | 16:42   | 16:30 |          |  |          |  |
| 15                  | 05:38 | 06:08         | 19:36 (LAR13) | 06:40     | 07:12 | 06:49   | 07:21 |          |  |          |  |
|                     | 20:35 | 20:02         | 19:39 (LAR13) | 19:12     | 18:21 | 16:41   | 16:30 |          |  |          |  |
| 16                  | 05:39 | 06:09         | 19:37 (LAR13) | 06:41     | 07:13 | 06:50   | 07:21 |          |  |          |  |
|                     | 20:34 | 20:01         | 19:38 (LAR13) | 19:10     | 18:19 | 16:40   | 16:31 |          |  |          |  |
| 17                  | 05:40 | 06:10         |               | 06:42     | 07:14 | 06:52   | 07:22 |          |  |          |  |
|                     | 20:34 | 19:59         |               | 19:09     | 18:18 | 16:39   | 16:31 |          |  |          |  |
| 18                  | 05:41 | 06:11         |               | 06:43     | 07:15 | 06:53   | 07:23 |          |  |          |  |
|                     | 20:33 | 19:58         |               | 19:07     | 18:16 | 16:38   | 16:31 |          |  |          |  |
| 19                  | 05:41 | 06:12         |               | 06:44     | 07:17 | 06:54   | 07:23 |          |  |          |  |
|                     | 20:32 | 19:56         |               | 19:05     | 18:15 | 16:38   | 16:32 |          |  |          |  |
| 20                  | 05:42 | 06:13         |               | 06:45     | 07:18 | 06:55   | 07:24 |          |  |          |  |
|                     | 20:31 | 19:55         |               | 19:03     | 18:13 | 16:37   | 16:32 |          |  |          |  |
| 21                  | 05:43 | 06:14         |               | 06:46     | 07:19 | 06:56   | 07:25 |          |  |          |  |
|                     | 20:31 | 19:53         |               | 19:02     | 18:12 | 16:36   | 16:32 |          |  |          |  |
| 22                  | 05:44 | 06:15         |               | 06:47     | 07:20 | 06:58   | 07:25 |          |  |          |  |
|                     | 20:30 | 19:52         |               | 19:00     | 18:10 | 16:36   | 16:33 |          |  |          |  |
| 23                  | 05:45 | 06:16         |               | 06:48     | 07:21 | 06:59   | 07:26 |          |  |          |  |
|                     | 20:29 | 19:50         |               | 18:58     | 18:09 | 16:35   | 16:33 |          |  |          |  |
| 24                  | 05:46 | 06:17         |               | 06:49     | 07:22 | 07:00   | 07:26 |          |  |          |  |
|                     | 20:28 | 19:49         |               | 18:56     | 18:07 | 16:34   | 16:34 |          |  |          |  |
| 25                  | 05:47 | 06:18         |               | 06:50     | 06:24 | 07:01   | 07:26 |          |  |          |  |
|                     | 20:27 | 19:47         |               | 18:55     | 17:06 | 16:34   | 16:35 |          |  |          |  |
| 26                  | 05:48 | 06:19         |               | 06:51     | 06:25 | 07:02   | 07:27 |          |  |          |  |
|                     | 20:26 | 19:46         |               | 18:53     | 17:04 | 16:33   | 16:35 |          |  |          |  |
| 27                  | 05:49 | 06:20         |               | 06:52     | 06:26 | 07:03   | 07:27 |          |  |          |  |
|                     | 20:25 | 19:44         |               | 18:51     | 17:03 | 16:33   | 16:36 |          |  |          |  |
| 28                  | 05:50 | 06:21         |               | 06:53     | 06:27 | 07:05   | 07:28 |          |  |          |  |
|                     | 20:24 | 19:42         |               | 18:49     | 17:02 | 16:32   | 16:37 |          |  |          |  |
| 29                  | 05:51 | 06:22         |               | 06:54     | 06:28 | 07:06   | 07:28 |          |  |          |  |
|                     | 20:23 | 19:41         |               | 18:48     | 17:00 | 16:32   | 16:37 |          |  |          |  |
| 30                  | 05:52 | 06:23         |               | 06:56     | 06:30 | 07:07   | 07:28 |          |  |          |  |
|                     | 20:22 | 19:39         |               | 18:46     | 16:59 | 16:31   | 16:38 |          |  |          |  |
| 31                  | 05:53 | 19:42 (LAR13) | 06:24         |           | 06:31 |         | 07:28 |          |  |          |  |
|                     | 20:21 | 19:49 (LAR13) | 19:38         |           | 16:58 |         | 16:39 |          |  |          |  |
| Potential sun hours | 462   | 7             | 429           | 375       | 344   | 296     | 285   |          |  |          |  |
| Total, worst case   |       | 7             | 185           |           |       |         |       |          |  |          |  |
| Sun reduction       |       | 0,61          | 0,67          |           |       |         |       |          |  |          |  |
| Oper. time red.     |       | 0,70          | 0,70          |           |       |         |       |          |  |          |  |
| Wind dir. red.      |       | 0,64          | 0,64          |           |       |         |       |          |  |          |  |
| Total reduction     |       | 0,27          | 0,30          |           |       |         |       |          |  |          |  |
| Total, real         |       | 2             | 56            |           |       |         |       |          |  |          |  |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R82 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (66)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May  | June           | July           | August         | September   | October        | November       | December       |
|---------------------|----------------|----------------|----------------|----------------|--|----------------|----------------|----------------|---|----------------|----------------|----------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58                                   | 05:29<br>20:29 | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36                                      | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59                                   | 05:28<br>20:29 | 05:29<br>20:40 | 05:55<br>20:19 | 06:27<br>19:34                                      | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:28 | 05:56<br>20:00                                   | 05:28<br>20:30 | 05:30<br>20:40 | 05:56<br>20:18 | 06:28<br>19:33                                      | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 05:55<br>20:02                                   | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31                                      | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03                                   | 05:27<br>20:32 | 05:31<br>20:39 | 05:58<br>20:16 | 06:30<br>19:29                                      | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04                                   | 05:27<br>20:32 | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:28                                      | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05                                   | 05:26<br>20:33 | 05:32<br>20:39 | 06:00<br>20:13 | 06:32<br>19:26                                      | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06                                   | 05:26<br>20:34 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24                                      | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07                                   | 05:26<br>20:34 | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22                                      | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08                                   | 05:26<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21                                      | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09                                   | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19                                      | 07:08<br>18:27 | 06:44<br>16:45 | 07:18<br>16:30 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10                                   | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17                                      | 07:09<br>18:26 | 06:46<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:39 | 19:15 (LAR13)<br>05:44<br>19:16 (LAR13)<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:16                                      | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 | 19:13 (LAR13)<br>05:43<br>19:18 (LAR13)<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14                                      | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 19:11 (LAR13)<br>05:42<br>19:18 (LAR13)<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12                                      | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 19:11 (LAR13)<br>05:41<br>19:20 (LAR13)<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 9 19:21 (LAR13)<br>06:41<br>19:30 (LAR13)<br>19:10  | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 19:10 (LAR13)<br>05:40<br>19:21 (LAR13)<br>20:15 | 05:25<br>20:38 | 05:40<br>20:34 | 06:10<br>19:59 | 14 19:18 (LAR13)<br>06:42<br>19:32 (LAR13)<br>19:09 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 19:09 (LAR13)<br>05:39<br>19:21 (LAR13)<br>20:16 | 05:25<br>20:38 | 05:41<br>20:33 | 06:11<br>19:58 | 16 19:33 (LAR13)<br>06:43<br>19:33 (LAR13)<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 19:09 (LAR13)<br>05:38<br>19:23 (LAR13)<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 18 19:16 (LAR13)<br>06:44<br>19:34 (LAR13)<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 19:08 (LAR13)<br>05:37<br>19:23 (LAR13)<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 17 19:15 (LAR13)<br>06:45<br>19:32 (LAR13)<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 19:08 (LAR13)<br>05:36<br>19:25 (LAR13)<br>20:19 | 05:26<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 17 19:14 (LAR13)<br>06:46<br>19:31 (LAR13)<br>19:02 | 07:18<br>18:12 | 06:56<br>16:36 | 07:25<br>16:32 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:03<br>18:14 | 06:11<br>19:48 | 19:08 (LAR13)<br>05:35<br>19:25 (LAR13)<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 16 19:13 (LAR13)<br>06:47<br>19:29 (LAR13)<br>19:00 | 07:20<br>18:10 | 06:58<br>16:36 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:04 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:50 | 19:09 (LAR13)<br>05:34<br>19:27 (LAR13)<br>20:21 | 05:26<br>20:40 | 05:45<br>20:29 | 06:16<br>19:50 | 15 19:13 (LAR13)<br>06:48<br>19:28 (LAR13)<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:26<br>16:33 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 19:10 (LAR13)<br>05:34<br>19:28 (LAR13)<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 13 19:13 (LAR13)<br>06:49<br>19:26 (LAR13)<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52 | 19:10 (LAR13)<br>05:33<br>19:26 (LAR13)<br>20:23 | 05:27<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 13 19:12 (LAR13)<br>06:50<br>19:25 (LAR13)<br>18:55 | 07:24<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 19:12 (LAR13)<br>05:32<br>19:25 (LAR13)<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 10 19:13 (LAR13)<br>06:51<br>19:23 (LAR13)<br>18:53 | 07:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:09 | 06:41<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 19:14 (LAR13)<br>05:32<br>19:22 (LAR13)<br>20:25 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 9 19:13 (LAR13)<br>06:52<br>19:22 (LAR13)<br>18:51  | 07:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 8 19:13 (LAR13)<br>05:31<br>20:25                | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 9 19:13 (LAR13)<br>06:53<br>19:20 (LAR13)<br>18:49  | 07:27<br>17:02 | 07:05<br>16:32 | 07:28<br>16:37 |
| 29                  | 07:17<br>17:11 |                | 06:51<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26                                   | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 7 19:14 (LAR13)<br>06:54<br>19:19 (LAR13)<br>18:48  | 07:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27                                   | 05:28<br>20:40 | 05:52<br>20:22 | 06:23<br>19:39 | 5 19:16 (LAR13)<br>06:56<br>19:17 (LAR13)<br>18:46  | 07:30<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28                                   | 05:29          | 05:53<br>20:21 | 06:24<br>19:38 |   | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 451  | 455            | 462            | 429            | 375   | 344            | 296            | 285            |
| Total, worst case   |                |                |                | 181            |  |                |                | 180            |   |                |                |                |
| Sun reduction       |                |                |                | 0,48           |  |                |                | 0,67           |   |                |                |                |
| Oper. time red.     |                |                |                | 0,70           |  |                |                | 0,70           |   |                |                |                |
| Wind dir. red.      |                |                |                | 0,63           |  |                |                | 0,63           |   |                |                |                |
| Total reduction     |                |                |                | 0,21           |  |                |                | 0,30           |   |                |                |                |
| Total, real         |                |                |                | 38             |  |                |                | 53             |   |                |                |                |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R83 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (67)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April                          | May                            | June                           |
|---------------------|----------------|----------------|----------------|--------------------------------|--------------------------------|--------------------------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25                 | 18:50 (LAR13)<br>19:04 (LAR13) | 05:58<br>19:58                 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26                 | 18:50 (LAR13)<br>19:04 (LAR13) | 05:57<br>19:59                 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:28                 | 18:50 (LAR13)<br>19:06 (LAR13) | 05:56<br>20:00                 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29                 | 18:50 (LAR13)<br>19:07 (LAR13) | 05:55<br>20:02                 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30                 | 18:50 (LAR13)<br>19:08 (LAR13) | 05:53<br>20:03                 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31                 | 18:51 (LAR13)<br>19:09 (LAR13) | 05:52<br>20:04                 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32                 | 18:51 (LAR13)<br>19:07 (LAR13) | 05:51<br>20:05                 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33                 | 18:53 (LAR13)<br>19:05 (LAR13) | 05:50<br>20:06                 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34                 | 18:56 (LAR13)<br>19:02 (LAR13) | 05:48<br>20:07                 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35                 | 19:02 (LAR13)                  | 05:47<br>20:08                 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36                 |                                | 05:46<br>20:09                 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37                 |                                | 05:45<br>20:10                 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:39                 | 05:44                          | 19:44 (LAR12)<br>20:11         |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40                 | 05:43                          | 19:43 (LAR12)<br>20:12         |
| 15                  | 07:27<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41                 | 05:42                          | 19:42 (LAR12)<br>20:13         |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42                 | 05:41                          | 19:42 (LAR12)<br>20:14         |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43                 | 05:40                          | 19:41 (LAR12)<br>20:15         |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44                 | 05:39                          | 19:41 (LAR12)<br>20:16         |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45                 | 05:38                          | 19:41 (LAR12)<br>20:17         |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46                 | 05:37                          | 19:41 (LAR12)<br>20:18         |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47                 | 05:36                          | 19:40 (LAR12)<br>20:19         |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:03<br>18:14 | 06:11<br>19:48                 | 05:35                          | 19:40 (LAR12)<br>20:20         |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:50                 | 05:34                          | 19:41 (LAR12)<br>20:21         |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51                 | 05:34                          | 19:41 (LAR12)<br>20:22         |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52                 | 05:33                          | 19:41 (LAR12)<br>20:23         |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53                 | 05:32                          | 19:41 (LAR12)<br>20:24         |
| 27                  | 07:19<br>17:08 | 06:41<br>17:48 | 05:54<br>18:20 | 17:58 (LAR13)<br>17:59 (LAR13) | 06:04<br>19:54                 | 05:32<br>20:25                 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 17:55 (LAR13)<br>18:00 (LAR13) | 06:03<br>19:55                 | 05:31<br>20:25                 |
| 29                  | 07:17<br>17:11 |                | 06:51<br>19:22 | 18:53 (LAR13)<br>19:00 (LAR13) | 06:01<br>19:56                 | 05:30<br>20:26                 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 18:52 (LAR13)<br>19:02 (LAR13) | 06:00<br>19:57                 | 05:30<br>20:27                 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 | 18:51 (LAR13)<br>19:03 (LAR13) | 05:29<br>20:28                 | 19:43 (LAR12)<br>20:03 (LAR12) |
| Potential sun hours | 295            | 296            | 369            | 400                            | 451                            | 455                            |
| Total, worst case   |                |                | 35             | 131                            | 261                            | 213                            |
| Sun reduction       |                |                | 0,44           | 0,48                           | 0,47                           | 0,54                           |
| Oper. time red.     |                |                | 0,70           | 0,70                           | 0,70                           | 0,70                           |
| Wind dir. red.      |                |                | 0,62           | 0,62                           | 0,66                           | 0,66                           |
| Total reduction     |                |                | 0,19           | 0,21                           | 0,22                           | 0,25                           |
| Total, real         |                |                | 7              | 27                             | 56                             | 53                             |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R83 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (67)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August           |       | September |                  | October       |       | November |       | December |  |
|---------------------|-------|------------------|-------|-----------|------------------|---------------|-------|----------|-------|----------|--|
| 1                   | 05:29 | 19:55 (LAR12)    | 05:54 | 06:25     |                  | 06:57         | 06:32 | 07:08    |       |          |  |
|                     | 20:40 | 9 20:04 (LAR12)  | 20:20 | 19:36     |                  | 18:44         | 16:56 | 16:31    |       |          |  |
| 2                   | 05:29 | 19:54 (LAR12)    | 05:55 | 06:26     |                  | 06:58         | 06:33 | 07:09    |       |          |  |
|                     | 20:40 | 11 20:05 (LAR12) | 20:19 | 19:34     |                  | 18:42         | 16:55 | 16:31    |       |          |  |
| 3                   | 05:30 | 19:54 (LAR12)    | 05:56 | 06:28     | 18:54 (LAR13)    | 06:59         | 06:34 | 07:10    |       |          |  |
|                     | 20:40 | 12 20:06 (LAR12) | 20:18 | 19:33     | 6 19:00 (LAR13)  | 18:41         | 16:54 | 16:30    |       |          |  |
| 4                   | 05:31 | 19:54 (LAR12)    | 05:57 | 06:29     |                  | 18:51 (LAR13) | 07:00 | 06:36    | 07:11 |          |  |
|                     | 20:39 | 13 20:07 (LAR12) | 20:17 | 19:31     | 12 19:03 (LAR13) | 18:39         | 16:53 | 16:30    |       |          |  |
| 5                   | 05:31 | 19:53 (LAR12)    | 05:58 | 06:30     |                  | 18:49 (LAR13) | 07:01 | 06:37    | 07:12 |          |  |
|                     | 20:39 | 14 20:07 (LAR12) | 20:16 | 19:29     | 15 19:04 (LAR13) | 18:37         | 16:51 | 16:30    |       |          |  |
| 6                   | 05:32 | 19:53 (LAR12)    | 05:59 | 06:31     |                  | 18:46 (LAR13) | 07:02 | 06:38    | 07:13 |          |  |
|                     | 20:39 | 16 20:09 (LAR12) | 20:14 | 19:28     | 18 19:04 (LAR13) | 18:36         | 16:50 | 16:30    |       |          |  |
| 7                   | 05:32 | 19:52 (LAR12)    | 06:00 | 06:32     |                  | 18:45 (LAR13) | 07:03 | 06:39    | 07:14 |          |  |
|                     | 20:39 | 17 20:09 (LAR12) | 20:13 | 19:26     | 18 19:03 (LAR13) | 18:34         | 16:49 | 16:30    |       |          |  |
| 8                   | 05:33 | 19:52 (LAR12)    | 06:01 | 06:33     |                  | 18:44 (LAR13) | 07:04 | 06:41    | 07:15 |          |  |
|                     | 20:38 | 18 20:10 (LAR12) | 20:12 | 19:24     | 17 19:01 (LAR13) | 18:32         | 16:48 | 16:30    |       |          |  |
| 9                   | 05:34 | 19:52 (LAR12)    | 06:02 | 06:34     |                  | 18:43 (LAR13) | 07:05 | 06:42    | 07:16 |          |  |
|                     | 20:38 | 19 20:11 (LAR12) | 20:11 | 19:22     | 16 18:59 (LAR13) | 18:31         | 16:47 | 16:30    |       |          |  |
| 10                  | 05:34 | 19:51 (LAR12)    | 06:03 | 06:35     |                  | 18:43 (LAR13) | 07:06 | 06:43    | 07:17 |          |  |
|                     | 20:37 | 20 20:11 (LAR12) | 20:09 | 19:21     | 15 18:58 (LAR13) | 18:29         | 16:46 | 16:30    |       |          |  |
| 11                  | 05:35 | 19:51 (LAR12)    | 06:04 | 06:36     |                  | 18:42 (LAR13) | 07:08 | 06:44    | 07:18 |          |  |
|                     | 20:37 | 20 20:11 (LAR12) | 20:08 | 19:19     | 14 18:56 (LAR13) | 18:27         | 16:45 | 16:30    |       |          |  |
| 12                  | 05:36 | 19:52 (LAR12)    | 06:05 | 06:37     |                  | 18:42 (LAR13) | 07:09 | 06:46    | 07:18 |          |  |
|                     | 20:36 | 19 20:11 (LAR12) | 20:07 | 19:17     | 12 18:54 (LAR13) | 18:26         | 16:44 | 16:30    |       |          |  |
| 13                  | 05:37 | 19:51 (LAR12)    | 06:06 | 06:38     |                  | 18:43 (LAR13) | 07:10 | 06:47    | 07:19 |          |  |
|                     | 20:36 | 19 20:10 (LAR12) | 20:05 | 19:16     | 10 18:53 (LAR13) | 18:24         | 16:43 | 16:30    |       |          |  |
| 14                  | 05:37 | 19:51 (LAR12)    | 06:07 | 06:39     |                  | 18:43 (LAR13) | 07:11 | 06:48    | 07:20 |          |  |
|                     | 20:35 | 19 20:10 (LAR12) | 20:04 | 19:14     | 8 18:51 (LAR13)  | 18:23         | 16:42 | 16:30    |       |          |  |
| 15                  | 05:38 | 19:51 (LAR12)    | 06:08 | 06:40     |                  | 18:44 (LAR13) | 07:12 | 06:49    | 07:21 |          |  |
|                     | 20:35 | 19 20:10 (LAR12) | 20:02 | 19:12     | 5 18:49 (LAR13)  | 18:21         | 16:41 | 16:30    |       |          |  |
| 16                  | 05:39 | 19:51 (LAR12)    | 06:09 | 06:41     |                  | 18:45 (LAR13) | 07:13 | 06:50    | 07:21 |          |  |
|                     | 20:34 | 18 20:09 (LAR12) | 20:01 | 19:10     | 2 18:47 (LAR13)  | 18:19         | 16:40 | 16:31    |       |          |  |
| 17                  | 05:40 | 19:51 (LAR12)    | 06:10 | 06:42     |                  | 07:14         | 06:52 | 07:22    |       |          |  |
|                     | 20:34 | 18 20:09 (LAR12) | 19:59 | 19:09     |                  | 18:18         | 16:39 | 16:31    |       |          |  |
| 18                  | 05:41 | 19:50 (LAR12)    | 06:11 | 06:43     |                  | 07:15         | 06:53 | 07:23    |       |          |  |
|                     | 20:33 | 17 20:07 (LAR12) | 19:58 | 19:07     |                  | 18:16         | 16:38 | 16:31    |       |          |  |
| 19                  | 05:41 | 19:50 (LAR12)    | 06:12 | 06:44     |                  | 07:17         | 06:54 | 07:23    |       |          |  |
|                     | 20:32 | 17 20:07 (LAR12) | 19:56 | 19:05     |                  | 18:15         | 16:38 | 16:32    |       |          |  |
| 20                  | 05:42 | 19:50 (LAR12)    | 06:13 | 06:45     |                  | 07:18         | 06:55 | 07:24    |       |          |  |
|                     | 20:31 | 16 20:06 (LAR12) | 19:55 | 19:03     |                  | 18:13         | 16:37 | 16:32    |       |          |  |
| 21                  | 05:43 | 19:51 (LAR12)    | 06:14 | 06:46     |                  | 07:19         | 06:56 | 07:25    |       |          |  |
|                     | 20:31 | 15 20:06 (LAR12) | 19:53 | 19:02     |                  | 18:12         | 16:36 | 16:32    |       |          |  |
| 22                  | 05:44 | 19:51 (LAR12)    | 06:15 | 06:47     |                  | 07:20         | 06:58 | 07:25    |       |          |  |
|                     | 20:30 | 14 20:05 (LAR12) | 19:52 | 19:00     |                  | 18:10         | 16:36 | 16:33    |       |          |  |
| 23                  | 05:45 | 19:51 (LAR12)    | 06:16 | 06:48     |                  | 07:21         | 06:59 | 07:26    |       |          |  |
|                     | 20:29 | 14 20:05 (LAR12) | 19:50 | 18:58     |                  | 18:09         | 16:35 | 16:33    |       |          |  |
| 24                  | 05:46 | 19:51 (LAR12)    | 06:17 | 06:49     |                  | 07:22         | 07:00 | 07:26    |       |          |  |
|                     | 20:28 | 13 20:04 (LAR12) | 19:49 | 18:56     |                  | 18:07         | 16:34 | 16:34    |       |          |  |
| 25                  | 05:47 | 19:51 (LAR12)    | 06:18 | 06:50     |                  | 06:24         | 07:01 | 07:26    |       |          |  |
|                     | 20:27 | 11 20:02 (LAR12) | 19:47 | 18:55     |                  | 17:06         | 16:34 | 16:35    |       |          |  |
| 26                  | 05:48 | 19:51 (LAR12)    | 06:19 | 06:51     |                  | 06:25         | 07:02 | 07:27    |       |          |  |
|                     | 20:26 | 10 20:01 (LAR12) | 19:46 | 18:53     |                  | 17:04         | 16:33 | 16:35    |       |          |  |
| 27                  | 05:49 | 19:52 (LAR12)    | 06:20 | 06:52     |                  | 06:26         | 07:03 | 07:27    |       |          |  |
|                     | 20:25 | 9 20:01 (LAR12)  | 19:44 | 18:51     |                  | 17:03         | 16:33 | 16:36    |       |          |  |
| 28                  | 05:50 | 19:52 (LAR12)    | 06:21 | 06:53     |                  | 06:27         | 07:05 | 07:28    |       |          |  |
|                     | 20:24 | 8 20:00 (LAR12)  | 19:42 | 18:49     |                  | 17:02         | 16:32 | 16:37    |       |          |  |
| 29                  | 05:51 | 19:53 (LAR12)    | 06:22 | 06:54     |                  | 06:28         | 07:06 | 07:28    |       |          |  |
|                     | 20:23 | 6 19:59 (LAR12)  | 19:41 | 18:48     |                  | 17:00         | 16:32 | 16:37    |       |          |  |
| 30                  | 05:52 | 19:54 (LAR12)    | 06:23 | 06:56     |                  | 06:30         | 07:07 | 07:28    |       |          |  |
|                     | 20:22 | 4 19:58 (LAR12)  | 19:39 | 18:46     |                  | 16:59         | 16:31 | 16:38    |       |          |  |
| 31                  | 05:53 | 19:55 (LAR12)    | 06:24 |           |                  | 06:31         |       | 07:28    |       |          |  |
|                     | 20:21 | 2 19:57 (LAR12)  | 19:38 |           |                  | 16:58         |       | 16:39    |       |          |  |
| Potential sun hours | 462   |                  | 429   | 375       |                  | 344           | 296   | 285      |       |          |  |
| Total, worst case   | 437   |                  |       | 168       |                  |               |       |          |       |          |  |
| Sun reduction       | 0,61  |                  |       | 0,58      |                  |               |       |          |       |          |  |
| Oper. time red.     | 0,70  |                  |       | 0,70      |                  |               |       |          |       |          |  |
| Wind dir. red.      | 0,66  |                  |       | 0,62      |                  |               |       |          |       |          |  |
| Total reduction     | 0,28  |                  |       | 0,25      |                  |               |       |          |       |          |  |
| Total, real         | 122   |                  |       | 42        |                  |               |       |          |       |          |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

Shadow receptor: R85 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (68)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April                          | May                                | June                               |
|---------------------|----------------|----------------|----------------|--------------------------------|------------------------------------|------------------------------------|
| 1                   | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25                 | 18:45 (LAR13)<br>19:58             | 05:58<br>20:29                     |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26                 | 10 18:55 (LAR13)<br>05:57<br>19:59 | 05:28<br>20:29                     |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:28                 | 05:56<br>20:00                     | 19:33 (LAR12)<br>05:28<br>20:30    |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29                 | 05:55<br>20:02                     | 4 19:37 (LAR12)<br>05:27<br>20:31  |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30                 | 05:53<br>20:03                     | 6 19:38 (LAR12)<br>05:27<br>20:32  |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31                 | 05:52<br>20:04                     | 8 19:39 (LAR12)<br>05:27<br>20:32  |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32                 | 05:51<br>20:05                     | 9 19:40 (LAR12)<br>05:26<br>20:33  |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33                 | 05:50<br>20:06                     | 11 19:41 (LAR12)<br>05:26<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34                 | 05:48<br>20:07                     | 13 19:43 (LAR12)<br>05:26<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35                 | 05:47<br>20:08                     | 15 19:44 (LAR12)<br>05:26<br>20:35 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36                 | 05:46<br>20:09                     | 16 19:44 (LAR12)<br>05:25<br>20:35 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37                 | 05:45<br>20:10                     | 17 19:45 (LAR12)<br>05:25<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:39                 | 05:44<br>20:11                     | 18 19:46 (LAR12)<br>05:25<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40                 | 05:43<br>20:12                     | 19 19:47 (LAR12)<br>05:25<br>20:37 |
| 15                  | 07:27<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41                 | 05:42<br>20:13                     | 19 19:48 (LAR12)<br>05:25<br>20:37 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42                 | 05:41<br>20:14                     | 20 19:49 (LAR12)<br>05:25<br>20:38 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43                 | 05:40<br>20:15                     | 21 19:50 (LAR12)<br>05:25<br>20:38 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44                 | 05:39<br>20:16                     | 20 19:51 (LAR12)<br>05:25<br>20:38 |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45                 | 05:38<br>20:17                     | 19 19:52 (LAR12)<br>05:25<br>20:39 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 17:48 (LAR13)<br>17:51 (LAR13) | 06:14<br>19:46                     | 19 19:53 (LAR12)<br>05:25<br>20:39 |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 06:04<br>18:13 | 17:46 (LAR13)<br>17:52 (LAR13) | 06:13<br>19:47                     | 18 19:54 (LAR12)<br>05:26<br>20:39 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:03<br>18:14 | 17:44 (LAR13)<br>17:53 (LAR13) | 06:11<br>19:48                     | 16 19:49 (LAR12)<br>05:26<br>20:39 |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 17:43 (LAR13)<br>17:55 (LAR13) | 06:10<br>19:50                     | 13 19:47 (LAR12)<br>05:26<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 17:42 (LAR13)<br>17:55 (LAR13) | 06:08<br>19:51                     | 11 19:47 (LAR12)<br>05:26<br>20:40 |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 17:41 (LAR13)<br>17:56 (LAR13) | 06:07<br>19:52                     | 6 19:44 (LAR12)<br>05:27<br>20:40  |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 17:41 (LAR13)<br>17:57 (LAR13) | 06:05<br>19:53                     | 05:27<br>20:40                     |
| 27                  | 07:19<br>17:08 | 06:41<br>17:48 | 05:54<br>18:20 | 17:41 (LAR13)<br>17:59 (LAR13) | 06:04<br>19:54                     | 05:27<br>20:40                     |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 17:41 (LAR13)<br>18:00 (LAR13) | 06:03<br>19:55                     | 05:28<br>20:40                     |
| 29                  | 07:17<br>17:11 | 06:38<br>19:22 | 05:51<br>19:23 | 18:41 (LAR13)<br>19:00 (LAR13) | 06:01<br>19:56                     | 05:28<br>20:40                     |
| 30                  | 07:16<br>17:12 | 06:49<br>19:23 | 05:49<br>19:24 | 18:43 (LAR13)<br>19:00 (LAR13) | 06:00<br>19:57                     | 05:28<br>20:40                     |
| 31                  | 07:15<br>17:14 | 06:47<br>19:24 | 05:47<br>19:24 | 18:44 (LAR13)<br>18:58 (LAR13) | 05:29<br>20:28                     | 05:29<br>20:40                     |
| Potential sun hours | 295            | 296            | 369            | 400                            | 451                                | 455                                |
| Total, worst case   |                |                | 161            | 10                             | 319                                |                                    |
| Sun reduction       |                |                | 0,44           | 0,48                           | 0,47                               |                                    |
| Oper. time red.     |                |                | 0,70           | 0,70                           | 0,70                               |                                    |
| Wind dir. red.      |                |                | 0,62           | 0,62                           | 0,65                               |                                    |
| Total reduction     |                |                | 0,19           | 0,21                           | 0,21                               |                                    |
| Total, real         |                |                | 30             | 2                              | 68                                 |                                    |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R85 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (68)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August                         | September                      | October                              | November       | December       |
|---------------------|----------------|--------------------------------|--------------------------------|--------------------------------------|----------------|----------------|
| 1                   | 05:29<br>20:40 | 05:54<br>20:20                 | 19:39 (LAR12)<br>19:56 (LAR12) | 06:25<br>19:36                       | 06:57<br>18:44 | 07:08<br>16:56 |
| 2                   | 05:29<br>20:40 | 05:55<br>20:19                 | 19:39 (LAR12)<br>19:55 (LAR12) | 06:26<br>19:34                       | 06:58<br>18:42 | 07:09<br>16:55 |
| 3                   | 05:30<br>20:40 | 05:56<br>20:18                 | 19:39 (LAR12)<br>19:54 (LAR12) | 06:28<br>19:33                       | 06:59<br>18:41 | 07:10<br>16:54 |
| 4                   | 05:31<br>20:39 | 05:57<br>20:17                 | 19:39 (LAR12)<br>19:53 (LAR12) | 06:29<br>19:31                       | 07:00<br>18:39 | 07:11<br>16:53 |
| 5                   | 05:31<br>20:39 | 05:58<br>20:16                 | 19:39 (LAR12)<br>19:52 (LAR12) | 06:30<br>19:29                       | 07:01<br>18:37 | 07:12<br>16:51 |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14                 | 19:40 (LAR12)<br>19:51 (LAR12) | 06:31<br>19:28                       | 07:02<br>18:36 | 07:13<br>16:50 |
| 7                   | 05:32<br>20:39 | 06:00<br>20:13                 | 19:40 (LAR12)<br>19:50 (LAR12) | 06:32<br>19:26                       | 07:03<br>18:34 | 07:14<br>16:49 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12                 | 19:41 (LAR12)<br>19:48 (LAR12) | 06:33<br>19:24                       | 07:04<br>18:32 | 07:15<br>16:48 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:11                 | 19:42 (LAR12)<br>19:47 (LAR12) | 06:34<br>19:22                       | 07:05<br>18:31 | 07:16<br>16:47 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09                 | 19:44 (LAR12)<br>19:46 (LAR12) | 06:35<br>19:21                       | 07:06<br>18:29 | 07:17<br>16:46 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08                 | 06:36<br>19:19                 | 18:38 (LAR13)<br>18:47 (LAR13)       | 07:08<br>18:27 | 07:18<br>16:45 |
| 12                  | 05:36<br>20:36 | 06:05<br>20:07                 | 06:37<br>19:17                 | 9 18:35 (LAR13)<br>14 18:49 (LAR13)  | 07:09<br>18:26 | 07:18<br>16:44 |
| 13                  | 05:37<br>20:36 | 06:06<br>20:05                 | 06:38<br>19:16                 | 17 18:33 (LAR13)<br>17 18:50 (LAR13) | 07:10<br>18:24 | 07:19<br>16:43 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04                 | 06:39<br>19:14                 | 19 18:32 (LAR13)<br>19 18:51 (LAR13) | 07:11<br>18:23 | 07:20<br>16:42 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02                 | 06:40<br>19:12                 | 18 18:31 (LAR13)<br>18 18:49 (LAR13) | 07:12<br>18:21 | 07:21<br>16:41 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01                 | 06:41<br>19:10                 | 17 18:30 (LAR13)<br>17 18:47 (LAR13) | 07:13<br>18:19 | 07:21<br>16:40 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59                 | 06:42<br>19:09                 | 17 18:29 (LAR13)<br>17 18:46 (LAR13) | 07:14<br>18:18 | 07:22<br>16:39 |
| 18                  | 05:41<br>20:33 | 06:11<br>19:58                 | 06:43<br>19:07                 | 15 18:29 (LAR13)<br>15 18:44 (LAR13) | 07:15<br>18:16 | 07:23<br>16:38 |
| 19                  | 05:41<br>20:32 | 19:50 (LAR12)<br>19:51 (LAR12) | 06:12<br>19:56                 | 13 18:29 (LAR13)<br>13 18:42 (LAR13) | 07:17<br>18:15 | 07:23<br>16:38 |
| 20                  | 05:42<br>20:31 | 19:47 (LAR12)<br>19:55 (LAR12) | 06:13<br>19:55                 | 11 18:29 (LAR13)<br>11 18:40 (LAR13) | 07:18<br>18:13 | 07:24<br>16:37 |
| 21                  | 05:43<br>20:31 | 19:45 (LAR12)<br>19:57 (LAR12) | 06:14<br>19:53                 | 9 18:29 (LAR13)<br>9 18:38 (LAR13)   | 07:19<br>18:12 | 07:25<br>16:36 |
| 22                  | 05:44<br>20:30 | 19:44 (LAR12)<br>19:59 (LAR12) | 06:15<br>19:52                 | 7 18:31 (LAR13)<br>7 18:38 (LAR13)   | 07:20<br>18:10 | 07:25<br>16:36 |
| 23                  | 05:45<br>20:29 | 19:43 (LAR12)<br>20:00 (LAR12) | 06:16<br>19:50                 | 4 18:32 (LAR13)<br>4 18:36 (LAR13)   | 07:21<br>18:09 | 07:26<br>16:35 |
| 24                  | 05:46<br>20:28 | 19:42 (LAR12)<br>20:01 (LAR12) | 06:17<br>19:49                 | 06:49<br>18:56                       | 07:22<br>18:07 | 07:26<br>16:34 |
| 25                  | 05:47<br>20:27 | 19:41 (LAR12)<br>20:01 (LAR12) | 06:18<br>19:47                 | 06:50<br>18:55                       | 06:24<br>17:06 | 07:26<br>16:34 |
| 26                  | 05:48<br>20:26 | 19:40 (LAR12)<br>20:01 (LAR12) | 06:19<br>19:46                 | 06:51<br>18:53                       | 06:25<br>17:04 | 07:27<br>16:33 |
| 27                  | 05:49<br>20:25 | 19:40 (LAR12)<br>20:01 (LAR12) | 06:20<br>19:44                 | 06:52<br>18:51                       | 06:26<br>17:03 | 07:27<br>16:33 |
| 28                  | 05:50<br>20:24 | 19:40 (LAR12)<br>20:00 (LAR12) | 06:21<br>19:42                 | 06:53<br>18:49                       | 06:27<br>17:02 | 07:28<br>16:32 |
| 29                  | 05:51<br>20:23 | 19:39 (LAR12)<br>19:59 (LAR12) | 06:22<br>19:41                 | 06:54<br>18:48                       | 06:28<br>17:00 | 07:28<br>16:32 |
| 30                  | 05:52<br>20:22 | 19:39 (LAR12)<br>19:58 (LAR12) | 06:23<br>19:39                 | 06:56<br>18:46                       | 06:30<br>16:59 | 07:28<br>16:31 |
| 31                  | 05:53<br>20:21 | 19:39 (LAR12)<br>19:57 (LAR12) | 06:24<br>19:38                 | 06:57<br>18:44                       | 06:31<br>16:58 | 07:28<br>16:30 |
| Potential sun hours | 462            | 429                            | 375                            | 344                                  | 296            | 285            |
| Total, worst case   | 211            | 110                            | 170                            |                                      |                |                |
| Sun reduction       | 0,61           | 0,67                           | 0,58                           |                                      |                |                |
| Oper. time red.     | 0,70           | 0,70                           | 0,70                           |                                      |                |                |
| Wind dir. red.      | 0,65           | 0,65                           | 0,62                           |                                      |                |                |
| Total reduction     | 0,28           | 0,30                           | 0,25                           |                                      |                |                |
| Total, real         | 58             | 33                             | 42                             |                                      |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R86 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (69)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April                          | May                            | June           |
|---------------------|----------------|----------------|----------------|--------------------------------|--------------------------------|----------------|
| 1                   | 07:29<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25                 | 18:55 (LAR13)<br>19:04 (LAR13) | 05:58<br>19:58 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26                 | 18:52 (LAR13)<br>19:04 (LAR13) | 05:57<br>19:59 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:28                 | 18:50 (LAR13)<br>19:06 (LAR13) | 05:56<br>20:01 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29                 | 18:48 (LAR13)<br>19:07 (LAR13) | 05:55<br>20:02 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30                 | 18:46 (LAR13)<br>19:08 (LAR13) | 05:53<br>20:03 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31                 | 18:46 (LAR13)<br>19:09 (LAR13) | 05:52<br>20:04 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32                 | 18:45 (LAR13)<br>19:10 (LAR13) | 05:51<br>20:05 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33                 | 18:43 (LAR13)<br>19:11 (LAR13) | 05:50<br>20:06 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:25<br>17:59 | 06:32<br>19:34                 | 18:43 (LAR13)<br>19:13 (LAR13) | 05:48<br>20:07 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35                 | 18:43 (LAR13)<br>19:13 (LAR13) | 05:47<br>20:08 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36                 | 18:42 (LAR13)<br>19:14 (LAR13) | 05:46<br>20:09 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:20<br>18:03 | 06:27<br>19:37                 | 18:42 (LAR13)<br>19:16 (LAR13) | 05:45<br>20:10 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:39                 | 18:42 (LAR13)<br>19:15 (LAR13) | 05:44<br>20:11 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40                 | 18:43 (LAR13)<br>19:15 (LAR13) | 05:43<br>20:12 |
| 15                  | 07:27<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41                 | 18:42 (LAR13)<br>19:14 (LAR13) | 05:42<br>20:13 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:08 | 06:21<br>19:42                 | 18:43 (LAR13)<br>19:14 (LAR13) | 05:41<br>20:14 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43                 | 18:43 (LAR13)<br>19:13 (LAR13) | 05:40<br>20:15 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:18<br>19:44                 | 18:44 (LAR13)<br>19:11 (LAR13) | 05:39<br>20:16 |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45                 | 18:45 (LAR13)<br>19:10 (LAR13) | 05:38<br>20:17 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46                 | 18:46 (LAR13)<br>19:08 (LAR13) | 05:37<br>20:18 |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47                 | 18:48 (LAR13)<br>19:06 (LAR13) | 05:36<br>20:19 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:03<br>18:14 | 06:11<br>19:48                 | 18:50 (LAR13)<br>19:03 (LAR13) | 05:35<br>20:20 |
| 23                  | 07:22<br>17:04 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:50                 | 18:55 (LAR13)<br>18:58 (LAR13) | 05:35<br>20:21 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51                 | 05:34<br>20:22                 | 05:26<br>20:40 |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52                 | 05:33<br>20:23                 | 05:27<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53                 | 05:32<br>20:24                 | 05:27<br>20:40 |
| 27                  | 07:19<br>17:09 | 06:41<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54                 | 05:32<br>20:25                 | 05:27<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55                 | 05:31<br>20:25                 | 05:28<br>20:40 |
| 29                  | 07:17<br>17:11 |                | 06:51<br>19:22 | 06:01<br>19:56                 | 05:30<br>20:26                 | 05:28<br>20:40 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57                 | 05:30<br>20:27                 | 05:29<br>20:40 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 | 19:00 (LAR13)<br>19:03 (LAR13) | 05:29<br>20:28                 |                |
| Potential sun hours | 295            | 296            | 369            | 400                            | 451                            | 455            |
| Total, worst case   |                |                | 3              | 546                            |                                |                |
| Sun reduction       |                |                | 0,44           | 0,48                           |                                |                |
| Oper. time red.     |                |                | 0,70           | 0,70                           |                                |                |
| Wind dir. red.      |                |                | 0,63           | 0,63                           |                                |                |
| Total reduction     |                |                | 0,19           | 0,21                           |                                |                |
| Total, real         |                |                | 1              | 115                            |                                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R86 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (69)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September      | October                        | November       | December       |
|---------------------|----------------|----------------|----------------|--------------------------------|----------------|----------------|
| 1                   | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36 | 18:42 (LAR13)<br>19:14 (LAR13) | 06:57<br>18:44 | 06:32<br>16:31 |
| 2                   | 05:29<br>20:40 | 05:55<br>20:19 | 06:27<br>19:34 | 18:42 (LAR13)<br>19:12 (LAR13) | 06:58<br>18:43 | 06:33<br>16:31 |
| 3                   | 05:30<br>20:40 | 05:56<br>20:18 | 06:28<br>19:33 | 18:42 (LAR13)<br>19:11 (LAR13) | 06:59<br>18:41 | 06:35<br>16:31 |
| 4                   | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31 | 18:42 (LAR13)<br>19:09 (LAR13) | 07:00<br>18:39 | 06:36<br>16:30 |
| 5                   | 05:31<br>20:39 | 05:58<br>20:16 | 06:30<br>19:29 | 18:42 (LAR13)<br>19:07 (LAR13) | 07:01<br>18:37 | 06:37<br>16:30 |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:28 | 18:42 (LAR13)<br>19:06 (LAR13) | 07:02<br>18:36 | 06:38<br>16:30 |
| 7                   | 05:32<br>20:39 | 06:00<br>20:13 | 06:32<br>19:26 | 18:42 (LAR13)<br>19:04 (LAR13) | 07:03<br>18:34 | 06:39<br>16:30 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 18:43 (LAR13)<br>19:02 (LAR13) | 07:04<br>18:32 | 06:41<br>16:30 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:11 | 06:34<br>19:22 | 18:43 (LAR13)<br>18:59 (LAR13) | 07:05<br>18:31 | 06:42<br>16:30 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 18:45 (LAR13)<br>18:58 (LAR13) | 07:06<br>18:29 | 06:43<br>16:30 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 18:47 (LAR13)<br>18:56 (LAR13) | 07:08<br>18:27 | 06:44<br>16:30 |
| 12                  | 05:36<br>20:37 | 06:05<br>20:07 | 06:37<br>19:17 | 18:51 (LAR13)<br>18:54 (LAR13) | 07:09<br>18:26 | 06:46<br>16:30 |
| 13                  | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:16 |                                | 07:10<br>18:24 | 06:47<br>16:30 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 |                                | 07:11<br>18:23 | 06:48<br>16:30 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 |                                | 07:12<br>18:21 | 06:49<br>16:30 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 |                                | 07:13<br>18:19 | 06:50<br>16:31 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:09 |                                | 07:14<br>18:18 | 06:52<br>16:31 |
| 18                  | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 |                                | 07:15<br>18:16 | 06:53<br>16:31 |
| 19                  | 05:41<br>20:32 | 06:12<br>19:57 | 06:44<br>19:05 |                                | 07:17<br>18:15 | 06:54<br>16:32 |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 18:59 (LAR13)<br>19:06 (LAR13) | 07:18<br>18:13 | 06:55<br>16:32 |
| 21                  | 05:43<br>20:31 | 06:14<br>19:54 | 06:46<br>19:02 | 18:55 (LAR13)<br>19:09 (LAR13) | 07:19<br>18:12 | 06:56<br>16:32 |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 18:52 (LAR13)<br>19:11 (LAR13) | 07:20<br>18:10 | 06:58<br>16:33 |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 18:50 (LAR13)<br>19:13 (LAR13) | 07:21<br>18:09 | 06:59<br>16:33 |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 18:49 (LAR13)<br>19:14 (LAR13) | 07:22<br>18:07 | 07:00<br>16:34 |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 18:47 (LAR13)<br>19:15 (LAR13) | 06:24<br>17:06 | 07:01<br>16:34 |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 18:46 (LAR13)<br>19:16 (LAR13) | 06:25<br>17:04 | 07:02<br>16:33 |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 18:45 (LAR13)<br>19:16 (LAR13) | 06:26<br>17:03 | 07:03<br>16:36 |
| 28                  | 05:50<br>20:24 | 06:21<br>19:43 | 06:53<br>18:49 | 18:44 (LAR13)<br>19:16 (LAR13) | 06:27<br>17:02 | 07:05<br>16:37 |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:55<br>18:48 | 18:43 (LAR13)<br>19:16 (LAR13) | 06:28<br>17:00 | 07:06<br>16:37 |
| 30                  | 05:52<br>20:22 | 06:23<br>19:39 | 06:56<br>18:46 | 18:43 (LAR13)<br>19:16 (LAR13) | 06:30<br>16:59 | 07:07<br>16:38 |
| 31                  | 05:53<br>20:21 | 06:24<br>19:38 | 06:57<br>18:45 | 18:42 (LAR13)<br>19:15 (LAR13) | 06:31<br>16:58 | 07:28<br>16:39 |
| Potential sun hours | 462            | 429            | 375            | 344                            | 296            | 285            |
| Total, worst case   |                | 308            | 249            |                                |                |                |
| Sun reduction       |                | 0,67           | 0,58           |                                |                |                |
| Oper. time red.     |                | 0,70           | 0,70           |                                |                |                |
| Wind dir. red.      |                | 0,63           | 0,63           |                                |                |                |
| Total reduction     |                | 0,29           | 0,25           |                                |                |                |
| Total, real         |                | 90             | 63             |                                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R87 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (70)

### Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

### Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April          | May                            | June           | July           | August         | September      | October                        | November       | December       |                |
|---------------------|----------------|----------------|----------------|----------------|--------------------------------|----------------|----------------|----------------|----------------|--------------------------------|----------------|----------------|----------------|
| 1                   | 07:29<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58                 | 05:29<br>20:29 | 05:29<br>20:40 | 05:54<br>20:20 | 06:26<br>19:36 | 18:43 (LAR13)<br>19:14 (LAR13) | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59                 | 05:28<br>20:30 | 05:29<br>20:40 | 05:55<br>20:19 | 06:27<br>19:34 | 18:43 (LAR13)<br>19:12 (LAR13) | 06:58<br>18:43 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:28 | 18:59 (LAR13)<br>19:06 (LAR13) | 05:56<br>20:01 | 05:28<br>20:30 | 05:56<br>20:18 | 06:28<br>19:33 | 18:44 (LAR13)<br>19:11 (LAR13) | 06:59<br>18:41 | 06:35<br>16:54 | 07:10<br>16:31 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:29 | 18:54 (LAR13)<br>19:07 (LAR13) | 05:55<br>20:02 | 05:27<br>20:31 | 05:57<br>20:17 | 06:29<br>19:31 | 18:44 (LAR13)<br>19:09 (LAR13) | 07:00<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 18:51 (LAR13)<br>19:08 (LAR13) | 05:53<br>20:03 | 05:27<br>20:32 | 05:58<br>20:16 | 06:30<br>19:29 | 18:45 (LAR13)<br>19:07 (LAR13) | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 18:50 (LAR13)<br>19:09 (LAR13) | 05:52<br>20:04 | 05:27<br>20:32 | 05:59<br>20:14 | 06:31<br>19:28 | 18:46 (LAR13)<br>19:06 (LAR13) | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 18:48 (LAR13)<br>19:10 (LAR13) | 05:51<br>20:05 | 05:26<br>20:33 | 06:00<br>20:13 | 06:32<br>19:26 | 18:47 (LAR13)<br>19:04 (LAR13) | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 18:46 (LAR13)<br>19:11 (LAR13) | 05:50<br>20:06 | 05:26<br>20:34 | 06:01<br>20:12 | 06:33<br>19:24 | 18:49 (LAR13)<br>19:02 (LAR13) | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:25<br>17:59 | 06:32<br>19:34 | 18:46 (LAR13)<br>19:13 (LAR13) | 05:48<br>20:07 | 05:26<br>20:34 | 06:02<br>20:11 | 06:34<br>19:22 | 18:51 (LAR13)<br>18:59 (LAR13) | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 18:44 (LAR13)<br>19:13 (LAR13) | 05:47<br>20:08 | 05:26<br>20:35 | 06:03<br>20:09 | 06:35<br>19:21 | 18:59 (LAR13)<br>19:08 (LAR13) | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 18:43 (LAR13)<br>19:14 (LAR13) | 05:46<br>20:09 | 05:25<br>20:35 | 06:04<br>20:08 | 06:36<br>19:19 | 18:58 (LAR13)<br>19:07 (LAR13) | 07:07<br>18:27 | 06:44<br>16:45 | 07:18<br>16:30 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:20<br>18:03 | 06:27<br>19:37 | 18:43 (LAR13)<br>19:16 (LAR13) | 05:45<br>20:10 | 05:25<br>20:36 | 06:05<br>20:07 | 06:37<br>19:17 | 18:57 (LAR13)<br>19:06 (LAR13) | 07:08<br>18:26 | 06:46<br>16:44 | 07:18<br>16:30 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:39 | 18:42 (LAR13)<br>19:16 (LAR13) | 05:44<br>20:11 | 05:25<br>20:36 | 06:06<br>20:05 | 06:38<br>19:16 | 18:56 (LAR13)<br>19:05 (LAR13) | 07:09<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40 | 18:42 (LAR13)<br>19:18 (LAR13) | 05:43<br>20:12 | 05:25<br>20:37 | 06:07<br>20:04 | 06:39<br>19:14 | 19:03 (LAR13)<br>19:08 (LAR13) | 06:39<br>19:14 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 07:27<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 18:41 (LAR13)<br>19:18 (LAR13) | 05:42<br>20:13 | 05:25<br>20:37 | 06:08<br>20:02 | 06:40<br>19:12 | 18:58 (LAR13)<br>19:13 (LAR13) | 06:40<br>19:12 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:08 | 06:21<br>19:42 | 18:42 (LAR13)<br>19:19 (LAR13) | 05:41<br>20:14 | 05:25<br>20:38 | 06:09<br>20:01 | 06:41<br>19:10 | 18:56 (LAR13)<br>19:15 (LAR13) | 06:41<br>19:10 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 18:41 (LAR13)<br>19:19 (LAR13) | 05:40<br>20:15 | 05:25<br>20:38 | 06:10<br>19:59 | 06:42<br>19:09 | 18:54 (LAR13)<br>19:17 (LAR13) | 06:42<br>19:09 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:18<br>19:44 | 18:41 (LAR13)<br>19:18 (LAR13) | 05:39<br>20:16 | 05:25<br>20:38 | 06:11<br>19:58 | 06:43<br>19:07 | 18:52 (LAR13)<br>19:18 (LAR13) | 06:43<br>19:07 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 18:42 (LAR13)<br>19:18 (LAR13) | 05:38<br>20:17 | 05:25<br>20:39 | 06:12<br>19:57 | 06:44<br>19:05 | 18:50 (LAR13)<br>19:19 (LAR13) | 06:44<br>19:05 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 18:41 (LAR13)<br>19:16 (LAR13) | 05:37<br>20:18 | 05:25<br>20:39 | 06:13<br>19:55 | 06:45<br>19:03 | 18:49 (LAR13)<br>19:20 (LAR13) | 06:45<br>19:03 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 18:42 (LAR13)<br>19:16 (LAR13) | 05:36<br>20:19 | 05:26<br>20:39 | 06:14<br>19:54 | 06:46<br>19:02 | 18:48 (LAR13)<br>19:20 (LAR13) | 06:46<br>19:02 | 06:56<br>16:36 | 07:25<br>16:33 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:03<br>18:14 | 06:11<br>19:48 | 18:42 (LAR13)<br>19:14 (LAR13) | 05:35<br>20:20 | 05:26<br>20:39 | 06:15<br>19:52 | 06:47<br>19:00 | 18:47 (LAR13)<br>19:21 (LAR13) | 06:47<br>19:00 | 06:58<br>16:36 | 07:25<br>16:33 |
| 23                  | 07:22<br>17:04 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:50 | 18:43 (LAR13)<br>19:14 (LAR13) | 05:35<br>20:21 | 05:26<br>20:40 | 06:16<br>19:50 | 06:48<br>18:58 | 18:46 (LAR13)<br>19:21 (LAR13) | 06:48<br>18:58 | 06:59<br>16:35 | 07:26<br>16:33 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 18:45 (LAR13)<br>19:13 (LAR13) | 05:34<br>20:22 | 05:26<br>20:40 | 06:17<br>19:49 | 06:49<br>18:56 | 18:45 (LAR13)<br>19:21 (LAR13) | 06:49<br>18:56 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52 | 18:45 (LAR13)<br>19:11 (LAR13) | 05:33<br>20:23 | 05:27<br>20:40 | 06:18<br>19:47 | 06:50<br>18:55 | 18:45 (LAR13)<br>19:22 (LAR13) | 06:50<br>18:55 | 07:01<br>16:34 | 07:27<br>16:35 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 18:47 (LAR13)<br>19:10 (LAR13) | 05:32<br>20:24 | 05:27<br>20:40 | 06:19<br>19:46 | 06:51<br>18:53 | 18:44 (LAR13)<br>19:22 (LAR13) | 06:51<br>18:53 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                  | 07:19<br>17:09 | 06:41<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 18:48 (LAR13)<br>19:07 (LAR13) | 05:32<br>20:25 | 05:27<br>20:40 | 06:20<br>19:44 | 06:52<br>18:51 | 18:44 (LAR13)<br>19:21 (LAR13) | 06:52<br>18:51 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 18:51 (LAR13)<br>19:04 (LAR13) | 05:31<br>20:25 | 05:28<br>20:40 | 06:21<br>19:43 | 06:53<br>18:49 | 18:43 (LAR13)<br>19:20 (LAR13) | 06:53<br>18:49 | 07:05<br>16:32 | 07:28<br>16:37 |
| 29                  | 07:17<br>17:11 | 06:39<br>17:50 | 05:51<br>18:22 | 06:01<br>19:56 | 19:04 (LAR13)                  | 05:30<br>20:26 | 05:28<br>20:40 | 06:22<br>19:41 | 06:55<br>18:48 | 18:43 (LAR13)<br>19:19 (LAR13) | 06:55<br>18:48 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                  | 07:16<br>17:12 | 06:49<br>17:51 | 05:57<br>18:23 | 06:06<br>19:57 |                                | 05:30<br>20:27 | 05:29<br>20:40 | 06:23<br>19:39 | 06:56<br>18:46 | 18:43 (LAR13)<br>19:17 (LAR13) | 06:56<br>18:46 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                  | 07:15<br>17:14 | 06:47<br>19:24 | 05:58<br>19:24 | 06:07<br>19:57 |                                | 05:29<br>20:28 | 05:29<br>20:40 | 06:24<br>19:38 | 06:57<br>19:38 | 18:43 (LAR13)<br>19:15 (LAR13) | 06:57<br>18:46 | 07:08<br>16:31 | 07:28<br>16:39 |
| Potential sun hours | 295            | 296            | 369            | 400            | 451                            | 455            | 462            | 429            | 375            | 344                            | 296            | 285            |                |
| Total, worst case   |                |                |                | 719            |                                |                |                | 536            | 192            |                                |                |                |                |
| Sun reduction       |                |                |                | 0,48           |                                |                |                | 0,67           | 0,58           |                                |                |                |                |
| Oper. time red.     |                |                |                | 0,70           |                                |                |                | 0,70           | 0,70           |                                |                |                |                |
| Wind dir. red.      |                |                |                | 0,63           |                                |                |                | 0,63           | 0,63           |                                |                |                |                |
| Total reduction     |                |                |                | 0,21           |                                |                |                | 0,29           | 0,25           |                                |                |                |                |
| Total, real         |                |                |                | 152            |                                |                |                | 157            | 49             |                                |                |                |                |

### Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R88 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (71)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April                  | May                    | June                   |
|---------------------|----------------|----------------|----------------|------------------------|------------------------|------------------------|
| 1                   | 07:29<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25         | 05:58<br>19:58         | 19:07 (LAR12)<br>20:29 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 17:25 (LAR13)<br>19:26 | 05:57<br>19:59         | 19:33 (LAR12)<br>20:30 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 17:22 (LAR13)<br>19:28 | 05:56<br>20:00         | 19:08 (LAR12)<br>20:30 |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 17:21 (LAR13)<br>19:29 | 05:55<br>20:02         | 19:31 (LAR12)<br>20:31 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 17:20 (LAR13)<br>19:30 | 05:53<br>20:03         | 19:10 (LAR12)<br>20:32 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 17:18 (LAR13)<br>19:31 | 05:52<br>20:04         | 19:29 (LAR12)<br>20:32 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 17:18 (LAR13)<br>19:32 | 05:51<br>20:05         | 19:14 (LAR12)<br>20:33 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 17:17 (LAR13)<br>19:33 | 05:50<br>20:06         | 19:25 (LAR12)<br>20:34 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 17:18 (LAR13)<br>19:34 | 05:48<br>20:07         | 19:18 (LAR12)<br>20:34 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 17:17 (LAR13)<br>19:35 | 05:47<br>20:08         | 19:17 (LAR12)<br>20:35 |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 17:17 (LAR13)<br>19:36 | 05:46<br>20:09         | 19:16 (LAR12)<br>20:35 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:20<br>18:03 | 17:17 (LAR13)<br>19:37 | 05:45<br>20:10         | 19:15 (LAR12)<br>20:36 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 17:19 (LAR13)<br>19:39 | 05:44<br>20:11         | 19:14 (LAR12)<br>20:36 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 17:19 (LAR13)<br>19:40 | 05:43<br>20:12         | 19:13 (LAR12)<br>20:37 |
| 15                  | 07:27<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 17:20 (LAR13)<br>19:41 | 05:42<br>20:13         | 19:12 (LAR12)<br>20:37 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 17:24 (LAR13)<br>19:42 | 05:41<br>20:14         | 19:11 (LAR12)<br>20:38 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43         | 05:40<br>19:16 (LAR12) | 19:10 (LAR12)<br>20:38 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44         | 05:39<br>19:13 (LAR12) | 19:09 (LAR12)<br>20:38 |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45         | 05:38<br>19:11 (LAR12) | 19:08 (LAR12)<br>20:39 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46         | 05:37<br>19:10 (LAR12) | 19:07 (LAR12)<br>20:39 |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47         | 05:36<br>19:09 (LAR12) | 19:06 (LAR12)<br>20:39 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:03<br>18:14 | 06:11<br>19:48         | 05:35<br>19:08 (LAR12) | 19:05 (LAR12)<br>20:39 |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:50         | 05:34<br>19:07 (LAR12) | 19:04 (LAR12)<br>20:40 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51         | 05:34<br>19:06 (LAR12) | 19:03 (LAR12)<br>20:40 |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52         | 05:33<br>19:06 (LAR12) | 19:02 (LAR12)<br>20:40 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53         | 05:32<br>19:06 (LAR12) | 19:01 (LAR12)<br>20:40 |
| 27                  | 07:19<br>17:09 | 06:41<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54         | 05:32<br>19:06 (LAR12) | 19:00 (LAR12)<br>20:40 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55         | 05:31<br>19:06 (LAR12) | 19:00 (LAR12)<br>20:40 |
| 29                  | 07:17<br>17:11 |                | 06:51<br>19:22 | 06:01<br>19:56         | 05:30<br>19:06 (LAR12) | 19:00 (LAR12)<br>20:40 |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57         | 05:30<br>19:06 (LAR12) | 19:00 (LAR12)<br>20:40 |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 |                        | 05:29<br>20:28         | 19:00 (LAR12)<br>20:40 |
| Potential sun hours | 295            | 296            | 369            | 400                    | 451                    | 455                    |
| Total, worst case   |                |                | 243            | 264                    | 139                    |                        |
| Sun reduction       |                |                | 0,44           | 0,48                   | 0,47                   |                        |
| Oper. time red.     |                |                | 0,70           | 0,70                   | 0,70                   |                        |
| Wind dir. red.      |                |                | 0,58           | 0,63                   | 0,63                   |                        |
| Total reduction     |                |                | 0,18           | 0,21                   | 0,21                   |                        |
| Total, real         |                |                | 43             | 56                     | 29                     |                        |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|



### SHADOW - Calendar

Shadow receptor: R88 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (71)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September                      | October                        | November                       | December                       |                |                |
|---------------------|----------------|----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|----------------|----------------|
| 1                   | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36                 | 06:57<br>18:44                 | 17:57 (LAR13)<br>18:19 (LAR13) | 06:32<br>16:56                 | 07:08<br>16:31 |                |
| 2                   | 05:29<br>20:40 | 05:55<br>20:19 | 06:27<br>19:34                 | 06:58<br>18:43                 | 17:56 (LAR13)<br>18:19 (LAR13) | 06:33<br>16:55                 | 07:09<br>16:31 |                |
| 3                   | 05:30<br>20:40 | 05:56<br>20:18 | 06:28<br>19:33                 | 06:59<br>18:41                 | 17:55 (LAR13)<br>18:18 (LAR13) | 06:34<br>16:54                 | 07:10<br>16:30 |                |
| 4                   | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31                 | 07:00<br>18:39                 | 17:55 (LAR13)<br>18:16 (LAR13) | 06:36<br>16:53                 | 07:11<br>16:30 |                |
| 5                   | 05:31<br>20:39 | 05:58<br>20:16 | 19:26 (LAR12)<br>19:32 (LAR12) | 06:30<br>19:29                 | 07:01<br>18:37                 | 17:54 (LAR13)<br>18:14 (LAR13) | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 19:23 (LAR12)<br>19:35 (LAR12) | 06:31<br>19:28                 | 07:02<br>18:36                 | 17:54 (LAR13)<br>18:12 (LAR13) | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 05:32<br>20:39 | 06:00<br>20:13 | 19:21 (LAR12)<br>19:37 (LAR12) | 06:32<br>19:26                 | 07:03<br>18:34                 | 17:55 (LAR13)<br>18:11 (LAR13) | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 19:19 (LAR12)<br>19:39 (LAR12) | 06:33<br>19:24                 | 07:04<br>18:32                 | 17:55 (LAR13)<br>18:10 (LAR13) | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:11 | 19:18 (LAR12)<br>19:40 (LAR12) | 06:34<br>19:22                 | 07:05<br>18:31                 | 17:55 (LAR13)<br>18:08 (LAR13) | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 19:17 (LAR12)<br>19:40 (LAR12) | 06:35<br>19:21                 | 07:06<br>18:29                 | 17:56 (LAR13)<br>18:06 (LAR13) | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 19:16 (LAR12)<br>19:41 (LAR12) | 06:36<br>19:19                 | 07:08<br>18:27                 | 17:57 (LAR13)<br>18:04 (LAR13) | 06:44<br>16:45 | 07:18<br>16:30 |
| 12                  | 05:36<br>20:37 | 06:05<br>20:07 | 19:15 (LAR12)<br>19:42 (LAR12) | 06:37<br>19:17                 | 07:09<br>18:26                 | 17:59 (LAR13)<br>18:02 (LAR13) | 06:46<br>16:44 | 07:18<br>16:30 |
| 13                  | 05:37<br>20:36 | 06:06<br>20:05 | 19:15 (LAR12)<br>19:42 (LAR12) | 06:38<br>19:16                 | 07:10<br>18:24                 | 16:47<br>16:43                 | 07:19<br>16:30 |                |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 19:14 (LAR12)<br>19:41 (LAR12) | 06:39<br>19:14                 | 07:11<br>18:23                 | 06:48<br>16:42                 | 07:20<br>16:30 |                |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 19:14 (LAR12)<br>19:39 (LAR12) | 06:40<br>19:12                 | 07:12<br>18:21                 | 06:49<br>16:41                 | 07:21<br>16:30 |                |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 19:13 (LAR12)<br>19:38 (LAR12) | 06:41<br>19:10                 | 07:13<br>18:19                 | 06:50<br>16:40                 | 07:21<br>16:31 |                |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 19:13 (LAR12)<br>19:37 (LAR12) | 06:42<br>19:09                 | 07:14<br>18:18                 | 06:52<br>16:39                 | 07:22<br>16:31 |                |
| 18                  | 05:41<br>20:33 | 06:11<br>19:58 | 19:13 (LAR12)<br>19:35 (LAR12) | 06:43<br>19:07                 | 07:15<br>18:16                 | 06:53<br>16:38                 | 07:23<br>16:31 |                |
| 19                  | 05:41<br>20:32 | 06:12<br>19:57 | 19:13 (LAR12)<br>19:34 (LAR12) | 06:44<br>19:05                 | 07:17<br>18:15                 | 06:54<br>16:38                 | 07:23<br>16:32 |                |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 19:13 (LAR12)<br>19:32 (LAR12) | 06:45<br>19:03                 | 07:18<br>18:13                 | 06:55<br>16:37                 | 07:24<br>16:32 |                |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 19:13 (LAR12)<br>19:31 (LAR12) | 06:46<br>19:02                 | 07:19<br>18:12                 | 06:56<br>16:36                 | 07:25<br>16:32 |                |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 19:14 (LAR12)<br>19:29 (LAR12) | 06:47<br>19:00                 | 07:20<br>18:10                 | 06:58<br>16:36                 | 07:25<br>16:33 |                |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 19:15 (LAR12)<br>19:28 (LAR12) | 06:48<br>18:58                 | 07:21<br>18:09                 | 06:59<br>16:35                 | 07:26<br>16:33 |                |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 19:15 (LAR12)<br>19:26 (LAR12) | 06:49<br>18:56                 | 07:22<br>18:07                 | 07:00<br>16:34                 | 07:26<br>16:34 |                |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 19:17 (LAR12)<br>19:25 (LAR12) | 06:50<br>18:55                 | 06:24<br>17:06                 | 07:01<br>16:34                 | 07:26<br>16:35 |                |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 19:19 (LAR12)<br>19:23 (LAR12) | 06:51<br>18:53                 | 06:25<br>17:04                 | 07:02<br>16:33                 | 07:27<br>16:35 |                |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51                 | 18:07 (LAR13)<br>18:13 (LAR13) | 06:26<br>17:03                 | 07:03<br>16:33                 | 07:27<br>16:36 |                |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49                 | 18:03 (LAR13)<br>18:16 (LAR13) | 06:27<br>17:02                 | 07:05<br>16:32                 | 07:28<br>16:37 |                |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48                 | 18:00 (LAR13)<br>18:17 (LAR13) | 06:28<br>17:00                 | 07:06<br>16:32                 | 07:28<br>16:37 |                |
| 30                  | 05:52<br>20:22 | 06:23<br>19:39 | 06:56<br>18:46                 | 17:59 (LAR13)<br>18:18 (LAR13) | 06:30<br>16:59                 | 07:07<br>16:31                 | 07:28<br>16:38 |                |
| 31                  | 05:53<br>20:21 | 06:24<br>19:38 | 06:31<br>16:58                 |                                | 06:31<br>16:58                 |                                | 07:28<br>16:39 |                |
| Potential sun hours | 462            | 429            | 375                            | 344                            | 296                            | 285                            |                |                |
| Total, worst case   |                | 410            | 55                             |                                | 191                            |                                |                |                |
| Sun reduction       |                | 0,67           | 0,58                           |                                | 0,44                           |                                |                |                |
| Oper. time red.     |                | 0,70           | 0,70                           |                                | 0,70                           |                                |                |                |
| Wind dir. red.      |                | 0,63           | 0,58                           |                                | 0,58                           |                                |                |                |
| Total reduction     |                | 0,29           | 0,23                           |                                | 0,18                           |                                |                |                |
| Total, real         |                | 120            | 13                             |                                | 34                             |                                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R89 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (72)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March          | April                             | May            | June                            |                |    |                                |  |  |  |
|---------------------|----------------|----------------|----------------|-----------------------------------|----------------|---------------------------------|----------------|----|--------------------------------|--|--|--|
| 1                   | 07:29<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 17:09 (LAR13)<br>20 17:29 (LAR13) | 06:45<br>19:25 | 05:58<br>19:58                  | 05:29<br>20:29 | 40 | 06:00 (LAR03)<br>06:40 (LAR03) |  |  |  |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 17:08 (LAR13)<br>22 17:30 (LAR13) | 06:44<br>19:26 | 05:57<br>19:59                  | 05:28<br>20:30 | 41 | 06:00 (LAR03)<br>06:41 (LAR03) |  |  |  |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 17:08 (LAR13)<br>22 17:30 (LAR13) | 06:42<br>19:28 | 05:56<br>20:00                  | 05:28<br>20:30 | 42 | 06:00 (LAR03)<br>06:42 (LAR03) |  |  |  |
| 4                   | 07:29<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 17:09 (LAR13)<br>22 17:31 (LAR13) | 06:40<br>19:29 | 05:55<br>20:02                  | 05:27<br>20:31 | 42 | 05:59 (LAR03)<br>06:41 (LAR03) |  |  |  |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 17:09 (LAR13)<br>21 17:30 (LAR13) | 06:39<br>19:30 | 05:53<br>20:03                  | 05:27<br>20:32 | 42 | 06:00 (LAR03)<br>06:42 (LAR03) |  |  |  |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 17:10 (LAR13)<br>18 17:28 (LAR13) | 06:37<br>19:31 | 05:52<br>20:04                  | 05:27<br>20:32 | 43 | 06:00 (LAR03)<br>06:43 (LAR03) |  |  |  |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 17:12 (LAR13)<br>15 17:27 (LAR13) | 06:35<br>19:32 | 05:51<br>19:05 (LAR12)<br>20:05 | 05:26<br>20:33 | 43 | 05:59 (LAR03)<br>06:42 (LAR03) |  |  |  |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 17:14 (LAR13)<br>9 17:23 (LAR13)  | 06:34<br>19:33 | 05:50<br>19:02 (LAR12)<br>20:06 | 05:26<br>20:34 | 44 | 05:59 (LAR03)<br>06:43 (LAR03) |  |  |  |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:23<br>19:34                    | 06:32<br>19:34 | 05:48<br>19:01 (LAR12)<br>20:07 | 05:26<br>20:34 | 43 | 06:00 (LAR03)<br>06:43 (LAR03) |  |  |  |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:23<br>19:35                    | 06:30<br>19:35 | 05:47<br>18:59 (LAR12)<br>20:08 | 05:26<br>20:35 | 44 | 06:00 (LAR03)<br>06:44 (LAR03) |  |  |  |
| 11                  | 07:28<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36                    | 06:29<br>19:36 | 05:46<br>18:57 (LAR12)<br>20:09 | 05:25<br>20:35 | 44 | 06:00 (LAR03)<br>06:44 (LAR03) |  |  |  |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 06:20<br>18:03 | 06:27<br>19:37                    | 06:27<br>19:37 | 05:45<br>18:57 (LAR12)<br>20:10 | 05:25<br>20:36 | 45 | 06:00 (LAR03)<br>06:45 (LAR03) |  |  |  |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:39                    | 06:25<br>19:39 | 05:44<br>18:56 (LAR12)<br>20:11 | 05:25<br>20:36 | 45 | 06:00 (LAR03)<br>06:45 (LAR03) |  |  |  |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:40                    | 06:24<br>19:40 | 05:43<br>18:56 (LAR12)<br>20:12 | 05:25<br>20:37 | 44 | 06:01 (LAR03)<br>06:45 (LAR03) |  |  |  |
| 15                  | 07:27<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41                    | 06:22<br>19:41 | 05:42<br>18:55 (LAR12)<br>20:13 | 05:25<br>20:37 | 44 | 06:01 (LAR03)<br>06:45 (LAR03) |  |  |  |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42                    | 06:21<br>19:42 | 05:41<br>18:55 (LAR12)<br>20:14 | 05:25<br>20:38 | 45 | 06:01 (LAR03)<br>06:46 (LAR03) |  |  |  |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43                    | 06:19<br>19:43 | 05:40<br>18:55 (LAR12)<br>20:15 | 05:25<br>20:38 | 45 | 06:01 (LAR03)<br>06:46 (LAR03) |  |  |  |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44                    | 06:17<br>19:44 | 05:39<br>18:55 (LAR12)<br>20:16 | 05:25<br>20:38 | 45 | 06:01 (LAR03)<br>06:46 (LAR03) |  |  |  |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45                    | 06:16<br>19:45 | 05:38<br>18:55 (LAR12)<br>20:17 | 05:25<br>20:39 | 45 | 06:01 (LAR03)<br>06:46 (LAR03) |  |  |  |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46                    | 06:14<br>19:46 | 05:37<br>18:55 (LAR12)<br>20:18 | 05:25<br>20:39 | 45 | 06:01 (LAR03)<br>06:46 (LAR03) |  |  |  |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47                    | 06:13<br>19:47 | 05:36<br>18:56 (LAR12)<br>20:19 | 05:26<br>20:39 | 45 | 06:01 (LAR03)<br>06:46 (LAR03) |  |  |  |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:03<br>18:14 | 06:11<br>19:48                    | 06:11<br>19:48 | 05:35<br>18:56 (LAR12)<br>20:20 | 05:26<br>20:39 | 45 | 06:02 (LAR03)<br>06:47 (LAR03) |  |  |  |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:50                    | 06:10<br>19:50 | 05:34<br>18:58 (LAR12)<br>20:21 | 05:26<br>20:40 | 45 | 06:02 (LAR03)<br>06:47 (LAR03) |  |  |  |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51                    | 06:08<br>19:51 | 05:34<br>19:18 (LAR12)<br>20:22 | 05:26<br>20:40 | 45 | 06:02 (LAR03)<br>06:47 (LAR03) |  |  |  |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18 | 06:07<br>19:52                    | 06:07<br>19:52 | 05:33<br>19:01 (LAR12)<br>20:23 | 05:27<br>20:40 | 45 | 06:02 (LAR03)<br>06:47 (LAR03) |  |  |  |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53                    | 06:05<br>19:53 | 05:32<br>20:24                  | 05:27<br>20:40 | 45 | 06:03 (LAR03)<br>06:48 (LAR03) |  |  |  |
| 27                  | 07:19<br>17:08 | 06:41<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54                    | 06:04<br>19:54 | 05:32<br>20:25                  | 05:27<br>20:40 | 45 | 06:03 (LAR03)<br>06:48 (LAR03) |  |  |  |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55                    | 06:03<br>19:55 | 05:31<br>20:25                  | 05:28<br>20:40 | 44 | 06:04 (LAR03)<br>06:48 (LAR03) |  |  |  |
| 29                  | 07:17<br>17:11 |                | 06:51<br>19:22 | 06:01<br>19:56                    | 06:01<br>19:56 | 05:30<br>20:26                  | 05:28<br>20:40 | 45 | 06:03 (LAR03)<br>06:48 (LAR03) |  |  |  |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57                    | 06:00<br>19:57 | 05:30<br>20:27                  | 05:28<br>20:40 | 45 | 06:03 (LAR03)<br>06:48 (LAR03) |  |  |  |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24 | 05:59<br>19:58                    | 05:59<br>19:58 | 05:29<br>20:28                  | 05:28<br>20:40 | 45 | 06:03 (LAR03)<br>06:48 (LAR03) |  |  |  |
| Potential sun hours | 295            | 296            | 369            | 400                               | 451            | 432                             | 455            |    |                                |  |  |  |
| Total, worst case   |                | 87             | 149            | 367                               | 432            | 432                             | 1320           |    |                                |  |  |  |
| Sun reduction       |                | 0,46           | 0,44           | 0,48                              | 0,47           | 0,47                            | 0,54           |    |                                |  |  |  |
| Oper. time red.     |                | 0,70           | 0,70           | 0,70                              | 0,70           | 0,70                            | 0,70           |    |                                |  |  |  |
| Wind dir. red.      |                | 0,56           | 0,56           | 0,63                              | 0,57           | 0,57                            | 0,57           |    |                                |  |  |  |
| Total reduction     |                | 0,18           | 0,17           | 0,21                              | 0,18           | 0,18                            | 0,21           |    |                                |  |  |  |
| Total, real         |                | 16             | 26             | 77                                | 80             | 80                              | 281            |    |                                |  |  |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

### SHADOW - Calendar

Shadow receptor: R89 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (72)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  |                  | August |      | September     |                  | October |                  | November |       | December |  |
|---------------------|-------|------------------|--------|------|---------------|------------------|---------|------------------|----------|-------|----------|--|
| 1                   | 05:29 | 06:04 (LAR03)    | 05:54  |      | 06:25         | 18:57 (LAR12)    | 06:57   |                  | 06:32    | 07:08 |          |  |
|                     | 20:40 | 44 06:48 (LAR03) | 20:20  |      | 19:36         | 17 19:14 (LAR12) | 18:44   |                  | 16:56    | 16:31 |          |  |
| 2                   | 05:29 | 06:04 (LAR03)    | 05:55  |      | 06:27         | 18:58 (LAR12)    | 06:58   |                  | 06:33    | 07:09 |          |  |
|                     | 20:40 | 44 06:48 (LAR03) | 20:19  |      | 19:34         | 14 19:12 (LAR12) | 18:43   |                  | 16:55    | 16:31 |          |  |
| 3                   | 05:30 | 06:05 (LAR03)    | 05:56  |      | 06:28         | 18:59 (LAR12)    | 06:59   |                  | 06:34    | 07:10 |          |  |
|                     | 20:40 | 44 06:49 (LAR03) | 20:18  |      | 19:33         | 12 19:11 (LAR12) | 18:41   |                  | 16:54    | 16:30 |          |  |
| 4                   | 05:31 | 06:05 (LAR03)    | 05:57  |      | 06:29         | 19:00 (LAR12)    | 07:00   |                  | 06:36    | 07:11 |          |  |
|                     | 20:39 | 44 06:49 (LAR03) | 20:17  |      | 19:31         | 9 19:09 (LAR12)  | 18:39   |                  | 16:53    | 16:30 |          |  |
| 5                   | 05:31 | 06:05 (LAR03)    | 05:58  |      | 06:30         | 19:02 (LAR12)    | 07:01   | 17:54 (LAR13)    | 06:37    | 07:12 |          |  |
|                     | 20:39 | 44 06:49 (LAR03) | 20:16  |      | 19:29         | 5 19:07 (LAR12)  | 18:37   | 4 17:58 (LAR13)  | 16:51    | 16:30 |          |  |
| 6                   | 05:32 | 06:06 (LAR03)    | 05:59  |      | 06:31         | 19:05 (LAR12)    | 07:02   | 17:49 (LAR13)    | 06:38    | 07:13 |          |  |
|                     | 20:39 | 43 06:49 (LAR03) | 20:14  |      | 19:28         | 1 19:06 (LAR12)  | 18:36   | 12 18:01 (LAR13) | 16:50    | 16:30 |          |  |
| 7                   | 05:32 | 06:06 (LAR03)    | 06:00  |      | 06:32         |                  | 07:03   | 17:47 (LAR13)    | 06:39    | 07:14 |          |  |
|                     | 20:39 | 42 06:48 (LAR03) | 20:13  |      | 19:26         |                  | 18:34   | 17 18:04 (LAR13) | 16:49    | 16:30 |          |  |
| 8                   | 05:33 | 06:06 (LAR03)    | 06:01  |      | 06:33         |                  | 07:04   | 17:46 (LAR13)    | 06:41    | 07:15 |          |  |
|                     | 20:38 | 43 06:49 (LAR03) | 20:12  |      | 19:24         |                  | 18:32   | 19 18:05 (LAR13) | 16:48    | 16:30 |          |  |
| 9                   | 05:34 | 06:07 (LAR03)    | 06:02  |      | 06:34         |                  | 07:05   | 17:44 (LAR13)    | 06:42    | 07:16 |          |  |
|                     | 20:38 | 42 06:49 (LAR03) | 20:11  |      | 19:22         |                  | 18:31   | 22 18:06 (LAR13) | 16:47    | 16:30 |          |  |
| 10                  | 05:34 | 06:07 (LAR03)    | 06:03  |      | 06:35         |                  | 07:06   | 17:43 (LAR13)    | 06:43    | 07:17 |          |  |
|                     | 20:37 | 41 06:48 (LAR03) | 20:09  |      | 19:21         |                  | 18:29   | 23 18:06 (LAR13) | 16:46    | 16:30 |          |  |
| 11                  | 05:35 | 06:08 (LAR03)    | 06:04  |      | 06:36         |                  | 07:08   | 17:42 (LAR13)    | 06:44    | 07:18 |          |  |
|                     | 20:37 | 40 06:48 (LAR03) | 20:08  |      | 19:19         |                  | 18:27   | 22 18:04 (LAR13) | 16:45    | 16:30 |          |  |
| 12                  | 05:36 | 06:08 (LAR03)    | 06:05  |      | 06:37         |                  | 07:09   | 17:41 (LAR13)    | 06:46    | 07:18 |          |  |
|                     | 20:37 | 40 06:48 (LAR03) | 20:07  |      | 19:17         |                  | 18:26   | 21 18:02 (LAR13) | 16:44    | 16:30 |          |  |
| 13                  | 05:37 | 06:08 (LAR03)    | 06:06  |      | 06:38         |                  | 07:10   | 17:41 (LAR13)    | 06:47    | 07:19 |          |  |
|                     | 20:36 | 39 06:47 (LAR03) | 20:05  |      | 19:16         |                  | 18:24   | 19 18:00 (LAR13) | 16:43    | 16:30 |          |  |
| 14                  | 05:37 | 06:09 (LAR03)    | 06:07  |      | 06:39         |                  | 07:11   | 17:42 (LAR13)    | 06:48    | 07:20 |          |  |
|                     | 20:35 | 38 06:47 (LAR03) | 20:04  |      | 19:14         |                  | 18:23   | 18 18:00 (LAR13) | 16:42    | 16:30 |          |  |
| 15                  | 05:38 | 06:10 (LAR03)    | 06:08  |      | 06:40         |                  | 07:12   | 17:42 (LAR13)    | 06:49    | 07:21 |          |  |
|                     | 20:35 | 37 06:47 (LAR03) | 20:02  |      | 19:12         |                  | 18:21   | 16 17:58 (LAR13) | 16:41    | 16:30 |          |  |
| 16                  | 05:39 | 06:11 (LAR03)    | 06:09  |      | 06:41         |                  | 07:13   | 17:42 (LAR13)    | 06:50    | 07:21 |          |  |
|                     | 20:34 | 36 06:47 (LAR03) | 20:01  |      | 19:10         |                  | 18:19   | 14 17:56 (LAR13) | 16:40    | 16:31 |          |  |
| 17                  | 05:40 | 06:12 (LAR03)    | 06:10  |      | 19:12 (LAR12) | 06:42            | 07:14   | 17:42 (LAR13)    | 06:52    | 07:22 |          |  |
|                     | 20:34 | 35 06:47 (LAR03) | 19:59  | 5    | 19:17 (LAR12) | 19:09            | 18:18   | 12 17:54 (LAR13) | 16:39    | 16:31 |          |  |
| 18                  | 05:41 | 06:12 (LAR03)    | 06:11  |      | 19:08 (LAR12) | 06:43            | 07:15   | 17:43 (LAR13)    | 06:53    | 07:23 |          |  |
|                     | 20:33 | 34 06:46 (LAR03) | 19:58  | 13   | 19:21 (LAR12) | 19:07            | 18:16   | 9 17:52 (LAR13)  | 16:38    | 16:31 |          |  |
| 19                  | 05:41 | 06:13 (LAR03)    | 06:12  |      | 19:05 (LAR12) | 06:44            | 07:17   | 17:45 (LAR13)    | 06:54    | 07:23 |          |  |
|                     | 20:32 | 32 06:45 (LAR03) | 19:57  | 17   | 19:22 (LAR12) | 19:05            | 18:15   | 7 17:52 (LAR13)  | 16:38    | 16:32 |          |  |
| 20                  | 05:42 | 06:14 (LAR03)    | 06:13  |      | 19:04 (LAR12) | 06:45            | 07:18   | 17:46 (LAR13)    | 06:55    | 07:24 |          |  |
|                     | 20:31 | 30 06:44 (LAR03) | 19:55  | 20   | 19:24 (LAR12) | 19:03            | 18:13   | 4 17:50 (LAR13)  | 16:37    | 16:32 |          |  |
| 21                  | 05:43 | 06:15 (LAR03)    | 06:14  |      | 19:02 (LAR12) | 06:46            | 07:19   |                  | 06:56    | 07:25 |          |  |
|                     | 20:31 | 29 06:44 (LAR03) | 19:53  | 23   | 19:25 (LAR12) | 19:02            | 18:12   |                  | 16:36    | 16:32 |          |  |
| 22                  | 05:44 | 06:16 (LAR03)    | 06:15  |      | 19:01 (LAR12) | 06:47            | 07:20   |                  | 06:58    | 07:25 |          |  |
|                     | 20:30 | 27 06:43 (LAR03) | 19:52  | 24   | 19:25 (LAR12) | 19:00            | 18:10   |                  | 16:36    | 16:33 |          |  |
| 23                  | 05:45 | 06:18 (LAR03)    | 06:16  |      | 19:00 (LAR12) | 06:48            | 07:21   |                  | 06:59    | 07:26 |          |  |
|                     | 20:29 | 24 06:42 (LAR03) | 19:50  | 26   | 19:26 (LAR12) | 18:58            | 18:09   |                  | 16:35    | 16:33 |          |  |
| 24                  | 05:46 | 06:19 (LAR03)    | 06:17  |      | 18:59 (LAR12) | 06:49            | 07:22   |                  | 07:00    | 07:26 |          |  |
|                     | 20:28 | 21 06:40 (LAR03) | 19:49  | 27   | 19:26 (LAR12) | 18:56            | 18:07   |                  | 16:34    | 16:34 |          |  |
| 25                  | 05:47 | 06:20 (LAR03)    | 06:18  |      | 18:58 (LAR12) | 06:50            | 06:24   |                  | 07:01    | 07:26 |          |  |
|                     | 20:27 | 17 06:37 (LAR03) | 19:47  | 27   | 19:25 (LAR12) | 18:55            | 17:06   |                  | 16:34    | 16:35 |          |  |
| 26                  | 05:48 | 06:23 (LAR03)    | 06:19  |      | 18:58 (LAR12) | 06:51            | 06:25   |                  | 07:02    | 07:27 |          |  |
|                     | 20:26 | 12 06:35 (LAR03) | 19:46  | 25   | 19:23 (LAR12) | 18:53            | 17:04   |                  | 16:33    | 16:35 |          |  |
| 27                  | 05:49 |                  | 06:20  |      | 18:57 (LAR12) | 06:52            | 06:26   |                  | 07:03    | 07:27 |          |  |
|                     | 20:25 |                  | 19:44  | 25   | 19:22 (LAR12) | 18:51            | 17:03   |                  | 16:33    | 16:36 |          |  |
| 28                  | 05:50 |                  | 06:21  |      | 18:57 (LAR12) | 06:53            | 06:27   |                  | 07:05    | 07:28 |          |  |
|                     | 20:24 |                  | 19:42  | 23   | 19:20 (LAR12) | 18:49            | 17:02   |                  | 16:32    | 16:37 |          |  |
| 29                  | 05:51 |                  | 06:22  |      | 18:57 (LAR12) | 06:54            | 06:28   |                  | 07:06    | 07:28 |          |  |
|                     | 20:23 |                  | 19:41  | 22   | 19:19 (LAR12) | 18:48            | 17:00   |                  | 16:32    | 16:37 |          |  |
| 30                  | 05:52 |                  | 06:23  |      | 18:57 (LAR12) | 06:56            | 06:30   |                  | 07:07    | 07:28 |          |  |
|                     | 20:22 |                  | 19:39  | 20   | 19:17 (LAR12) | 18:46            | 16:59   |                  | 16:31    | 16:38 |          |  |
| 31                  | 05:53 |                  | 06:24  |      | 18:57 (LAR12) |                  | 06:31   |                  |          | 07:28 |          |  |
|                     | 20:21 |                  | 19:38  | 18   | 19:15 (LAR12) |                  | 16:58   |                  |          | 16:39 |          |  |
| Potential sun hours | 462   |                  | 429    |      | 375           |                  | 344     |                  | 296      | 285   |          |  |
| Total, worst case   |       | 922              |        | 315  |               | 58               |         | 239              |          |       |          |  |
| Sun reduction       |       | 0,61             |        | 0,67 |               | 0,58             |         | 0,44             |          |       |          |  |
| Oper. time red.     |       | 0,70             |        | 0,70 |               | 0,70             |         | 0,70             |          |       |          |  |
| Wind dir. red.      |       | 0,57             |        | 0,63 |               | 0,63             |         | 0,56             |          |       |          |  |
| Total reduction     |       | 0,24             |        | 0,29 |               | 0,26             |         | 0,17             |          |       |          |  |
| Total, real         |       | 221              |        | 93   |               | 15               |         | 41               |          |       |          |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R9 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| January             |       | February      |       | March |    | April         |       | May           |       | June  |  |
|---------------------|-------|---------------|-------|-------|----|---------------|-------|---------------|-------|-------|--|
| 1                   | 07:28 | 08:02 (LAR04) | 07:14 | 06:37 |    | 06:45         |       | 17:23 (LAR01) | 05:58 | 05:29 |  |
|                     | 16:40 | 08:22 (LAR04) | 07:15 | 06:37 |    | 17:25         | 73    | 18:36 (LAR01) | 19:58 | 20:29 |  |
| 2                   | 07:29 | 08:02 (LAR04) | 07:13 | 06:36 |    | 06:44         |       | 17:23 (LAR01) | 05:57 | 05:28 |  |
|                     | 16:41 | 08:23 (LAR04) | 07:16 | 06:37 |    | 17:26         | 73    | 18:36 (LAR01) | 19:59 | 20:29 |  |
| 3                   | 07:29 | 08:03 (LAR04) | 07:12 | 06:34 |    | 06:42         |       | 17:23 (LAR01) | 05:56 | 05:28 |  |
|                     | 16:42 | 08:23 (LAR04) | 07:17 | 06:37 |    | 17:27         | 73    | 18:36 (LAR01) | 20:00 | 20:30 |  |
| 4                   | 07:29 | 08:03 (LAR04) | 07:11 | 06:33 |    | 06:40         |       | 17:23 (LAR01) | 05:55 | 05:27 |  |
|                     | 16:43 | 08:23 (LAR04) | 07:19 | 06:37 |    | 17:29         | 72    | 18:35 (LAR01) | 20:02 | 20:31 |  |
| 5                   | 07:29 | 08:04 (LAR04) | 07:10 | 06:31 |    | 06:39         |       | 17:23 (LAR01) | 05:53 | 05:27 |  |
|                     | 16:43 | 08:24 (LAR04) | 07:20 | 06:37 |    | 17:30         | 71    | 18:34 (LAR01) | 20:03 | 20:32 |  |
| 6                   | 07:29 | 08:05 (LAR04) | 07:09 | 06:29 |    | 06:37         |       | 17:24 (LAR01) | 05:52 | 05:27 |  |
|                     | 16:44 | 08:24 (LAR04) | 07:21 | 06:37 |    | 17:31         | 70    | 18:34 (LAR01) | 20:04 | 20:32 |  |
| 7                   | 07:29 | 08:06 (LAR04) | 07:08 | 06:28 |    | 17:05 (LAR01) | 06:35 | 17:24 (LAR01) | 05:51 | 05:26 |  |
|                     | 16:45 | 08:24 (LAR04) | 07:23 | 06:37 | 3  | 17:08 (LAR01) | 19:32 | 18:33 (LAR01) | 20:05 | 20:33 |  |
| 8                   | 07:28 | 08:07 (LAR04) | 07:07 | 06:26 |    | 16:55 (LAR01) | 06:34 | 17:24 (LAR01) | 05:50 | 05:26 |  |
|                     | 16:46 | 08:24 (LAR04) | 07:24 | 06:37 | 22 | 17:17 (LAR01) | 19:33 | 18:32 (LAR01) | 20:06 | 20:34 |  |
| 9                   | 07:28 | 08:07 (LAR04) | 07:06 | 06:24 |    | 16:50 (LAR01) | 06:32 | 17:25 (LAR01) | 05:48 | 05:26 |  |
|                     | 16:47 | 08:23 (LAR04) | 07:25 | 06:37 | 30 | 17:20 (LAR01) | 19:34 | 18:32 (LAR01) | 20:07 | 20:34 |  |
| 10                  | 07:28 | 08:09 (LAR04) | 07:04 | 06:23 |    | 16:47 (LAR01) | 06:30 | 17:25 (LAR01) | 05:47 | 05:26 |  |
|                     | 16:48 | 08:23 (LAR04) | 07:26 | 06:37 | 37 | 17:24 (LAR01) | 19:35 | 18:30 (LAR01) | 20:08 | 20:35 |  |
| 11                  | 07:28 | 08:10 (LAR04) | 07:03 | 06:21 |    | 16:44 (LAR01) | 06:29 | 17:25 (LAR01) | 05:46 | 05:25 |  |
|                     | 16:50 | 08:23 (LAR04) | 07:28 | 06:37 | 42 | 17:26 (LAR01) | 19:36 | 18:29 (LAR01) | 20:09 | 20:35 |  |
| 12                  | 07:28 | 08:11 (LAR04) | 07:02 | 06:19 |    | 16:42 (LAR01) | 06:27 | 17:27 (LAR01) | 05:45 | 05:25 |  |
|                     | 16:51 | 08:22 (LAR04) | 07:29 | 06:37 | 46 | 17:28 (LAR01) | 19:37 | 18:28 (LAR01) | 20:10 | 20:36 |  |
| 13                  | 07:27 | 08:13 (LAR04) | 07:01 | 06:18 |    | 16:40 (LAR01) | 06:25 | 17:27 (LAR01) | 05:44 | 05:25 |  |
|                     | 16:52 | 08:21 (LAR04) | 07:30 | 06:37 | 50 | 17:30 (LAR01) | 19:39 | 18:27 (LAR01) | 20:11 | 20:36 |  |
| 14                  | 07:27 | 08:17 (LAR04) | 06:59 | 06:16 |    | 16:38 (LAR01) | 06:24 | 17:29 (LAR01) | 05:43 | 05:25 |  |
|                     | 16:53 | 08:19 (LAR04) | 07:32 | 06:37 | 53 | 17:31 (LAR01) | 19:40 | 18:26 (LAR01) | 20:12 | 20:37 |  |
| 15                  | 07:26 |               | 06:58 | 06:14 |    | 16:36 (LAR01) | 06:22 | 17:29 (LAR01) | 05:42 | 05:25 |  |
|                     | 16:54 |               | 17:33 | 18:06 | 56 | 17:32 (LAR01) | 19:41 | 18:25 (LAR01) | 20:13 | 20:37 |  |
| 16                  | 07:26 |               | 06:57 | 06:13 |    | 16:35 (LAR01) | 06:21 | 17:31 (LAR01) | 05:41 | 05:25 |  |
|                     | 16:55 |               | 17:34 | 18:07 | 59 | 17:34 (LAR01) | 19:42 | 18:24 (LAR01) | 20:14 | 20:38 |  |
| 17                  | 07:26 |               | 06:55 | 06:11 |    | 16:33 (LAR01) | 06:19 | 17:31 (LAR01) | 05:40 | 05:25 |  |
|                     | 16:56 |               | 17:35 | 18:09 | 61 | 17:34 (LAR01) | 19:43 | 18:22 (LAR01) | 20:15 | 20:38 |  |
| 18                  | 07:25 |               | 06:54 | 06:09 |    | 16:32 (LAR01) | 06:18 | 17:32 (LAR01) | 05:39 | 05:25 |  |
|                     | 16:57 |               | 17:37 | 18:10 | 63 | 17:35 (LAR01) | 19:44 | 18:20 (LAR01) | 20:16 | 20:38 |  |
| 19                  | 07:25 |               | 06:52 | 06:08 |    | 16:30 (LAR01) | 06:16 | 17:34 (LAR01) | 05:38 | 05:25 |  |
|                     | 16:59 |               | 17:38 | 18:11 | 65 | 17:35 (LAR01) | 19:45 | 18:18 (LAR01) | 20:17 | 20:39 |  |
| 20                  | 07:24 |               | 06:51 | 06:06 |    | 16:30 (LAR01) | 06:14 | 17:35 (LAR01) | 05:37 | 05:25 |  |
|                     | 17:00 |               | 17:39 | 18:12 | 66 | 17:36 (LAR01) | 19:46 | 18:16 (LAR01) | 20:18 | 20:39 |  |
| 21                  | 07:23 |               | 06:50 | 06:04 |    | 16:29 (LAR01) | 06:13 | 17:38 (LAR01) | 05:36 | 05:26 |  |
|                     | 17:01 |               | 17:40 | 18:13 | 68 | 17:37 (LAR01) | 19:47 | 18:14 (LAR01) | 20:19 | 20:39 |  |
| 22                  | 07:23 |               | 06:48 | 06:03 |    | 16:27 (LAR01) | 06:11 | 17:40 (LAR01) | 05:35 | 05:26 |  |
|                     | 17:02 |               | 17:42 | 18:14 | 70 | 17:37 (LAR01) | 19:48 | 18:11 (LAR01) | 20:20 | 20:39 |  |
| 23                  | 07:22 |               | 06:47 | 06:01 |    | 16:27 (LAR01) | 06:10 | 17:43 (LAR01) | 05:35 | 05:26 |  |
|                     | 17:04 |               | 17:43 | 18:15 | 71 | 17:38 (LAR01) | 19:50 | 18:09 (LAR01) | 20:21 | 20:40 |  |
| 24                  | 07:21 |               | 06:45 | 05:59 |    | 16:26 (LAR01) | 06:08 | 17:47 (LAR01) | 05:34 | 05:26 |  |
|                     | 17:05 |               | 17:44 | 18:16 | 72 | 17:38 (LAR01) | 19:51 | 18:05 (LAR01) | 20:22 | 20:40 |  |
| 25                  | 07:21 |               | 06:44 | 05:57 |    | 16:25 (LAR01) | 06:07 |               | 05:33 | 05:27 |  |
|                     | 17:06 |               | 17:45 | 18:18 | 72 | 17:37 (LAR01) | 19:52 |               | 20:23 | 20:40 |  |
| 26                  | 07:20 |               | 06:42 | 05:56 |    | 16:25 (LAR01) | 06:05 |               | 05:32 | 05:27 |  |
|                     | 17:07 |               | 17:46 | 18:19 | 72 | 17:37 (LAR01) | 19:53 |               | 20:24 | 20:40 |  |
| 27                  | 07:19 |               | 06:41 | 05:54 |    | 16:25 (LAR01) | 06:04 |               | 05:32 | 05:27 |  |
|                     | 17:09 |               | 17:48 | 18:20 | 73 | 17:38 (LAR01) | 19:54 |               | 20:25 | 20:40 |  |
| 28                  | 07:18 |               | 06:39 | 05:52 |    | 16:24 (LAR01) | 06:03 |               | 05:31 | 05:28 |  |
|                     | 17:10 |               | 17:49 | 18:21 | 73 | 17:37 (LAR01) | 19:55 |               | 20:25 | 20:40 |  |
| 29                  | 07:17 |               |       | 06:51 |    | 17:23 (LAR01) | 06:01 |               | 05:30 | 05:28 |  |
|                     | 17:11 |               |       | 19:22 | 74 | 18:37 (LAR01) | 19:56 |               | 20:26 | 20:40 |  |
| 30                  | 07:16 |               |       | 06:49 |    | 17:24 (LAR01) | 06:00 |               | 05:30 | 05:29 |  |
|                     | 17:12 |               |       | 19:23 | 73 | 18:37 (LAR01) | 19:57 |               | 20:27 | 20:40 |  |
| 31                  | 07:15 |               |       | 06:47 |    | 17:23 (LAR01) |       |               | 05:29 |       |  |
|                     | 17:14 |               |       | 19:24 | 74 | 18:37 (LAR01) |       |               | 20:28 |       |  |
| Potential sun hours | 295   |               | 296   | 369   |    | 400           |       | 450           | 455   |       |  |
| Total, worst case   | 219   |               |       | 1445  |    | 1347          |       |               |       |       |  |
| Sun reduction       | 0,44  |               |       | 0,44  |    | 0,48          |       |               |       |       |  |
| Oper. time red.     | 0,70  |               |       | 0,70  |    | 0,70          |       |               |       |       |  |
| Wind dir. red.      | 0,67  |               |       | 0,59  |    | 0,59          |       |               |       |       |  |
| Total reduction     | 0,21  |               |       | 0,18  |    | 0,20          |       |               |       |       |  |
| Total, real         | 46    |               |       | 264   |    | 268           |       |               |       |       |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R9 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August         | September              | October                        | November       | December                       |
|---------------------|----------------|----------------|------------------------|--------------------------------|----------------|--------------------------------|
| 1                   | 05:29<br>20:40 | 05:54<br>20:20 | 06:25<br>19:36         | 17:25 (LAR01)<br>18:29 (LAR01) | 06:57<br>18:44 | 17:20 (LAR01)<br>18:08 (LAR01) |
| 2                   | 05:29<br>20:40 | 05:55<br>20:19 | 06:27<br>19:34         | 17:24 (LAR01)<br>18:29 (LAR01) | 06:58<br>18:43 | 17:22 (LAR01)<br>18:05 (LAR01) |
| 3                   | 05:30<br>20:40 | 05:56<br>20:18 | 06:28<br>19:33         | 17:23 (LAR01)<br>18:30 (LAR01) | 06:59<br>18:41 | 17:24 (LAR01)<br>18:03 (LAR01) |
| 4                   | 05:31<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31         | 17:22 (LAR01)<br>18:30 (LAR01) | 07:00<br>18:39 | 17:26 (LAR01)<br>18:00 (LAR01) |
| 5                   | 05:31<br>20:39 | 05:58<br>20:16 | 06:30<br>19:29         | 17:21 (LAR01)<br>18:30 (LAR01) | 07:01<br>18:37 | 17:29 (LAR01)<br>17:56 (LAR01) |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:28         | 17:20 (LAR01)<br>18:30 (LAR01) | 07:02<br>18:36 | 17:34 (LAR01)<br>16:50         |
| 7                   | 05:32<br>20:39 | 06:00<br>20:13 | 06:32<br>19:26         | 17:18 (LAR01)<br>18:29 (LAR01) | 07:03<br>18:34 | 16:50<br>16:49                 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24         | 17:17 (LAR01)<br>18:29 (LAR01) | 07:04<br>18:32 | 16:41<br>16:48                 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:10 | 06:34<br>19:22         | 17:17 (LAR01)<br>18:29 (LAR01) | 07:05<br>18:31 | 16:42<br>16:47                 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21         | 17:16 (LAR01)<br>18:29 (LAR01) | 07:06<br>18:29 | 16:43<br>16:46                 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19         | 17:15 (LAR01)<br>18:28 (LAR01) | 07:08<br>18:27 | 16:44<br>16:45                 |
| 12                  | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17         | 17:15 (LAR01)<br>18:28 (LAR01) | 07:09<br>18:26 | 16:46<br>16:44                 |
| 13                  | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:16         | 17:14 (LAR01)<br>18:28 (LAR01) | 07:10<br>18:24 | 16:47<br>16:43                 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14         | 17:14 (LAR01)<br>18:27 (LAR01) | 07:11<br>18:23 | 16:48<br>16:42                 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12         | 17:13 (LAR01)<br>18:27 (LAR01) | 07:12<br>18:21 | 16:49<br>16:41                 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10         | 17:13 (LAR01)<br>18:26 (LAR01) | 07:13<br>18:19 | 16:50<br>16:40                 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:09         | 17:13 (LAR01)<br>18:25 (LAR01) | 07:14<br>18:18 | 16:52<br>16:39                 |
| 18                  | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07         | 17:13 (LAR01)<br>18:25 (LAR01) | 07:15<br>18:16 | 16:53<br>16:38                 |
| 19                  | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05         | 17:13 (LAR01)<br>18:24 (LAR01) | 07:17<br>18:15 | 16:54<br>16:38                 |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03         | 17:13 (LAR01)<br>18:23 (LAR01) | 07:18<br>18:13 | 16:55<br>16:37                 |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:02         | 17:13 (LAR01)<br>18:22 (LAR01) | 07:19<br>18:12 | 16:56<br>16:36                 |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00         | 17:14 (LAR01)<br>18:22 (LAR01) | 07:20<br>18:10 | 16:58<br>16:36                 |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58         | 17:14 (LAR01)<br>18:21 (LAR01) | 07:21<br>18:09 | 16:59<br>16:35                 |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56         | 17:14 (LAR01)<br>18:20 (LAR01) | 07:22<br>18:07 | 17:00<br>16:34                 |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55         | 17:15 (LAR01)<br>18:18 (LAR01) | 06:24<br>17:06 | 16:34<br>16:35                 |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53         | 17:15 (LAR01)<br>18:17 (LAR01) | 06:25<br>17:04 | 16:35<br>16:33                 |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51         | 17:16 (LAR01)<br>18:16 (LAR01) | 06:26<br>17:03 | 16:36<br>16:33                 |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49         | 17:17 (LAR01)<br>18:14 (LAR01) | 06:27<br>17:02 | 16:37<br>16:32                 |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48         | 17:18 (LAR01)<br>18:12 (LAR01) | 06:28<br>17:00 | 16:38<br>16:32                 |
| 30                  | 05:52<br>20:22 | 06:23<br>19:39 | 06:56<br>18:46         | 17:19 (LAR01)<br>18:10 (LAR01) | 06:30<br>16:59 | 16:39<br>16:31                 |
| 31                  | 05:53<br>20:21 | 06:24<br>19:38 | 06:57<br>18:28 (LAR01) |                                | 06:31<br>16:58 | 16:38<br>16:39                 |
| Potential sun hours | 462            | 429            | 375                    | 344                            | 296            | 285                            |
| Total, worst case   |                | 595            | 2033                   | 207                            |                | 631                            |
| Sun reduction       |                | 0,67           | 0,58                   | 0,44                           |                | 0,36                           |
| Oper. time red.     |                | 0,70           | 0,70                   | 0,70                           |                | 0,70                           |
| Wind dir. red.      |                | 0,59           | 0,59                   | 0,59                           |                | 0,67                           |
| Total reduction     |                | 0,28           | 0,24                   | 0,18                           |                | 0,17                           |
| Total, real         |                | 165            | 488                    | 37                             | 4              | 108                            |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|

### SHADOW - Calendar

Shadow receptor: R90 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (73)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March                          | April          | May                            | June           |                                |                |                     |                                |
|---------------------|----------------|----------------|--------------------------------|----------------|--------------------------------|----------------|--------------------------------|----------------|---------------------|--------------------------------|
| 1                   | 07:29<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50                 | 06:45<br>19:25 | 18:36 (LAR12)<br>18:56 (LAR12) | 05:58<br>19:58 | 06:46 (LAR03)<br>07:38 (LAR03) | 05:29<br>20:29 | 45<br>07:33 (LAR03) | 06:48 (LAR03)<br>07:33 (LAR03) |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51                 | 06:44<br>19:26 | 18:36 (LAR12)<br>18:54 (LAR12) | 05:57<br>19:59 | 06:45 (LAR03)<br>07:39 (LAR03) | 05:28<br>20:30 | 44<br>07:33 (LAR03) | 06:49 (LAR03)<br>07:33 (LAR03) |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52                 | 06:42<br>19:28 | 18:39 (LAR12)<br>18:52 (LAR12) | 05:56<br>20:00 | 06:44 (LAR03)<br>07:39 (LAR03) | 05:28<br>20:30 | 43<br>07:33 (LAR03) | 06:50 (LAR03)<br>07:33 (LAR03) |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:54                 | 06:40<br>19:29 | 18:42 (LAR12)<br>18:47 (LAR12) | 05:54<br>20:02 | 06:44 (LAR03)<br>07:39 (LAR03) | 05:27<br>20:31 | 42<br>07:32 (LAR03) | 06:50 (LAR03)<br>07:32 (LAR03) |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55                 | 06:39<br>19:30 |                                | 05:53<br>20:03 | 06:43 (LAR03)<br>07:39 (LAR03) | 05:27<br>20:32 | 41<br>07:32 (LAR03) | 06:51 (LAR03)<br>07:32 (LAR03) |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56                 | 06:37<br>19:31 |                                | 05:52<br>20:04 | 06:43 (LAR03)<br>07:40 (LAR03) | 05:27<br>20:32 | 40<br>07:32 (LAR03) | 06:52 (LAR03)<br>07:32 (LAR03) |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57                 | 06:35<br>19:32 |                                | 05:51<br>20:05 | 06:43 (LAR03)<br>07:40 (LAR03) | 05:26<br>20:33 | 39<br>07:31 (LAR03) | 06:52 (LAR03)<br>07:31 (LAR03) |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58                 | 06:34<br>19:33 |                                | 05:50<br>20:06 | 06:43 (LAR03)<br>07:40 (LAR03) | 05:26<br>20:34 | 38<br>07:31 (LAR03) | 06:53 (LAR03)<br>07:31 (LAR03) |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59                 | 06:32<br>19:34 |                                | 05:48<br>20:07 | 06:42 (LAR03)<br>07:39 (LAR03) | 05:26<br>20:34 | 38<br>07:31 (LAR03) | 06:53 (LAR03)<br>07:31 (LAR03) |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 16:58 (LAR13)<br>17:03 (LAR13) | 06:23<br>18:01 |                                | 05:47<br>20:08 | 06:42 (LAR03)<br>07:39 (LAR03) | 05:26<br>20:35 | 37<br>07:31 (LAR03) | 06:54 (LAR03)<br>07:31 (LAR03) |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 16:57 (LAR13)<br>17:05 (LAR13) | 06:21<br>18:02 |                                | 05:46<br>20:09 | 06:42 (LAR03)<br>07:39 (LAR03) | 05:25<br>20:35 | 36<br>07:31 (LAR03) | 06:55 (LAR03)<br>07:31 (LAR03) |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 16:56 (LAR13)<br>17:06 (LAR13) | 06:19<br>18:03 |                                | 05:45<br>20:10 | 06:42 (LAR03)<br>07:39 (LAR03) | 05:25<br>20:36 | 36<br>07:31 (LAR03) | 06:55 (LAR03)<br>07:31 (LAR03) |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 16:54 (LAR13)<br>17:07 (LAR13) | 06:18<br>18:04 |                                | 05:44<br>20:11 | 06:42 (LAR03)<br>07:39 (LAR03) | 05:25<br>20:36 | 35<br>07:31 (LAR03) | 06:56 (LAR03)<br>07:31 (LAR03) |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 16:54 (LAR13)<br>17:09 (LAR13) | 06:16<br>18:05 |                                | 05:43<br>20:12 | 06:42 (LAR03)<br>07:39 (LAR03) | 05:25<br>20:37 | 34<br>07:31 (LAR03) | 06:57 (LAR03)<br>07:31 (LAR03) |
| 15                  | 07:27<br>16:54 | 06:58<br>17:33 | 16:54 (LAR13)<br>17:10 (LAR13) | 06:14<br>18:06 |                                | 05:42<br>20:13 | 06:42 (LAR03)<br>07:38 (LAR03) | 05:25<br>20:37 | 34<br>07:31 (LAR03) | 06:57 (LAR03)<br>07:31 (LAR03) |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 16:53 (LAR13)<br>17:11 (LAR13) | 06:13<br>18:07 |                                | 05:41<br>20:14 | 06:42 (LAR03)<br>07:38 (LAR03) | 05:25<br>20:38 | 34<br>07:31 (LAR03) | 06:57 (LAR03)<br>07:31 (LAR03) |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 16:54 (LAR13)<br>17:13 (LAR13) | 06:11<br>18:09 |                                | 05:40<br>20:15 | 06:42 (LAR03)<br>07:38 (LAR03) | 05:25<br>20:38 | 33<br>07:31 (LAR03) | 06:58 (LAR03)<br>07:31 (LAR03) |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 16:53 (LAR13)<br>17:14 (LAR13) | 06:09<br>18:10 |                                | 05:39<br>20:16 | 06:43 (LAR03)<br>07:38 (LAR03) | 05:25<br>20:38 | 33<br>07:31 (LAR03) | 06:58 (LAR03)<br>07:31 (LAR03) |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 16:54 (LAR13)<br>17:14 (LAR13) | 06:08<br>18:11 | 17:46 (LAR12)<br>17:49 (LAR12) | 06:16<br>19:45 | 07:06 (LAR03)<br>07:23 (LAR03) | 05:38<br>20:17 | 55<br>20:39         | 06:58 (LAR03)<br>07:30 (LAR03) |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 16:54 (LAR13)<br>17:13 (LAR13) | 06:06<br>18:12 | 17:43 (LAR12)<br>17:51 (LAR12) | 06:14<br>19:46 | 07:02 (LAR03)<br>07:26 (LAR03) | 05:37<br>20:18 | 55<br>20:39         | 06:58 (LAR03)<br>07:30 (LAR03) |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 16:55 (LAR13)<br>17:13 (LAR13) | 06:04<br>18:13 | 17:40 (LAR12)<br>17:52 (LAR12) | 06:13<br>19:47 | 06:59 (LAR03)<br>07:29 (LAR03) | 05:36<br>20:19 | 54<br>20:39         | 06:58 (LAR03)<br>07:30 (LAR03) |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 16:57 (LAR13)<br>17:12 (LAR13) | 06:03<br>18:14 | 17:38 (LAR12)<br>17:53 (LAR12) | 06:11<br>19:48 | 06:57 (LAR03)<br>07:30 (LAR03) | 05:35<br>20:20 | 52<br>20:39         | 06:59 (LAR03)<br>07:31 (LAR03) |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 16:58 (LAR13)<br>17:10 (LAR13) | 06:01<br>18:15 | 17:38 (LAR12)<br>17:55 (LAR12) | 06:10<br>19:50 | 06:55 (LAR03)<br>07:32 (LAR03) | 05:34<br>20:21 | 52<br>20:40         | 06:59 (LAR03)<br>07:31 (LAR03) |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 17:01 (LAR13)<br>17:05 (LAR13) | 05:59<br>18:16 | 17:36 (LAR12)<br>17:55 (LAR12) | 06:08<br>19:51 | 06:54 (LAR03)<br>07:34 (LAR03) | 05:34<br>20:22 | 51<br>20:40         | 06:59 (LAR03)<br>07:31 (LAR03) |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 |                                | 05:57<br>18:18 | 17:35 (LAR12)<br>17:56 (LAR12) | 06:07<br>19:52 | 06:52 (LAR03)<br>07:34 (LAR03) | 05:33<br>20:23 | 51<br>20:40         | 06:59 (LAR03)<br>07:32 (LAR03) |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 |                                | 05:56<br>18:19 | 17:34 (LAR12)<br>17:57 (LAR12) | 06:05<br>19:53 | 06:51 (LAR03)<br>07:36 (LAR03) | 05:32<br>20:24 | 50<br>20:40         | 07:00 (LAR03)<br>07:33 (LAR03) |
| 27                  | 07:19<br>17:08 | 06:41<br>17:48 |                                | 05:54<br>18:20 | 17:35 (LAR12)<br>17:59 (LAR12) | 06:04<br>19:54 | 06:49 (LAR03)<br>07:36 (LAR03) | 05:32<br>20:25 | 49<br>20:40         | 06:59 (LAR03)<br>07:33 (LAR03) |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 |                                | 05:52<br>18:21 | 17:34 (LAR12)<br>18:00 (LAR12) | 06:03<br>19:55 | 06:48 (LAR03)<br>07:37 (LAR03) | 05:31<br>20:25 | 48<br>20:40         | 07:00 (LAR03)<br>07:34 (LAR03) |
| 29                  | 07:17<br>17:11 |                |                                | 06:51<br>19:22 | 18:34 (LAR12)<br>18:59 (LAR12) | 06:01<br>19:56 | 06:47 (LAR03)<br>07:38 (LAR03) | 05:30<br>20:26 | 48<br>20:40         | 06:59 (LAR03)<br>07:34 (LAR03) |
| 30                  | 07:16<br>17:12 |                |                                | 06:49<br>19:23 | 18:35 (LAR12)<br>18:59 (LAR12) | 06:00<br>19:57 | 06:46 (LAR03)<br>07:38 (LAR03) | 05:30<br>20:27 | 47<br>20:40         | 06:59 (LAR03)<br>07:34 (LAR03) |
| 31                  | 07:15<br>17:14 |                |                                | 06:47<br>19:24 | 18:35 (LAR12)<br>18:57 (LAR12) | 05:59<br>20:28 | 06:46 (LAR03)<br>07:34 (LAR03) | 05:29<br>20:34 | 46<br>20:40         | 07:00 (LAR03)<br>07:34 (LAR03) |
| Potential sun hours | 295            | 296            | 369                            | 400            |                                | 451            |                                |                | 455                 |                                |
| Total, worst case   |                | 213            | 239                            | 523            |                                | 1666           |                                |                | 1078                |                                |
| Sun reduction       |                | 0,46           | 0,44                           | 0,48           |                                | 0,47           |                                |                | 0,54                |                                |
| Oper. time red.     |                | 0,70           | 0,70                           | 0,70           |                                | 0,70           |                                |                | 0,70                |                                |
| Wind dir. red.      |                | 0,57           | 0,61                           | 0,58           |                                | 0,58           |                                |                | 0,58                |                                |
| Total reduction     |                | 0,18           | 0,19                           | 0,19           |                                | 0,19           |                                |                | 0,22                |                                |
| Total, real         |                | 38             | 45                             | 102            |                                | 314            |                                |                | 235                 |                                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

**Shadow receptor:** R90 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (73)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  |                  | August |                  | September       |                  | October       |                  | November |  | December |     |
|---------------------|-------|------------------|--------|------------------|-----------------|------------------|---------------|------------------|----------|--|----------|-----|
| 1                   | 05:29 | 06:59 (LAR03)    | 05:54  | 06:52 (LAR03)    | 06:25           | 06:57            | 06:32         | 16:29 (LAR13)    | 07:08    |  |          |     |
|                     | 20:40 | 36 07:35 (LAR03) | 20:20  | 58 07:50 (LAR03) | 19:36           | 18:44            | 16:56         | 3 16:32 (LAR13)  | 16:31    |  |          |     |
| 2                   | 05:29 | 06:58 (LAR03)    | 05:55  | 06:52 (LAR03)    | 06:26           | 06:58            | 06:33         |                  | 07:09    |  |          |     |
|                     | 20:40 | 37 07:35 (LAR03) | 20:19  | 58 07:50 (LAR03) | 19:34           | 18:42            | 16:55         |                  | 16:31    |  |          |     |
| 3                   | 05:30 | 06:59 (LAR03)    | 05:56  | 06:52 (LAR03)    | 06:28           | 06:59            | 06:34         |                  | 07:10    |  |          |     |
|                     | 20:40 | 37 07:36 (LAR03) | 20:18  | 58 07:50 (LAR03) | 19:33           | 18:41            | 16:54         |                  | 16:30    |  |          |     |
| 4                   | 05:31 | 06:59 (LAR03)    | 05:57  | 06:52 (LAR03)    | 06:29           | 07:00            | 06:36         |                  | 07:11    |  |          |     |
|                     | 20:39 | 38 07:37 (LAR03) | 20:17  | 58 07:50 (LAR03) | 19:31           | 18:39            | 16:53         |                  | 16:30    |  |          |     |
| 5                   | 05:31 | 06:58 (LAR03)    | 05:58  | 06:53 (LAR03)    | 06:30           | 07:01            | 06:37         |                  | 07:12    |  |          |     |
|                     | 20:39 | 39 07:37 (LAR03) | 20:16  | 57 07:50 (LAR03) | 19:29           | 18:37            | 16:51         |                  | 16:30    |  |          |     |
| 6                   | 05:32 | 06:58 (LAR03)    | 05:59  | 06:53 (LAR03)    | 06:31           | 07:02            | 06:38         |                  | 07:13    |  |          |     |
|                     | 20:39 | 40 07:38 (LAR03) | 20:14  | 56 07:49 (LAR03) | 19:28           | 18:36            | 16:50         |                  | 16:30    |  |          |     |
| 7                   | 05:32 | 06:58 (LAR03)    | 06:00  | 06:53 (LAR03)    | 06:32           | 07:03            | 06:39         |                  | 07:14    |  |          |     |
|                     | 20:39 | 40 07:38 (LAR03) | 20:13  | 56 07:49 (LAR03) | 19:26           | 18:34            | 16:49         |                  | 16:30    |  |          |     |
| 8                   | 05:33 | 06:58 (LAR03)    | 06:01  | 06:53 (LAR03)    | 06:33           | 18:37 (LAR12)    | 07:04         | 06:41            | 07:15    |  |          |     |
|                     | 20:38 | 41 07:39 (LAR03) | 20:12  | 56 07:49 (LAR03) | 19:24           | 4 18:41 (LAR12)  | 18:32         | 16:48            | 16:30    |  |          |     |
| 9                   | 05:34 | 06:58 (LAR03)    | 06:02  | 06:53 (LAR03)    | 06:34           | 18:32 (LAR12)    | 07:05         | 06:42            | 07:16    |  |          |     |
|                     | 20:38 | 42 07:40 (LAR03) | 20:11  | 56 07:49 (LAR03) | 19:22           | 13 18:45 (LAR12) | 18:31         | 16:47            | 16:30    |  |          |     |
| 10                  | 05:34 | 06:57 (LAR03)    | 06:03  | 06:54 (LAR03)    | 06:35           | 18:30 (LAR12)    | 07:06         | 06:43            | 07:17    |  |          |     |
|                     | 20:37 | 43 07:40 (LAR03) | 20:09  | 54 07:48 (LAR03) | 19:21           | 17 18:47 (LAR12) | 18:29         | 16:46            | 16:30    |  |          |     |
| 11                  | 05:35 | 06:57 (LAR03)    | 06:04  | 06:54 (LAR03)    | 06:36           | 18:28 (LAR12)    | 07:08         | 06:44            | 07:18    |  |          |     |
|                     | 20:37 | 44 07:41 (LAR03) | 20:08  | 54 07:48 (LAR03) | 19:19           | 20 18:48 (LAR12) | 18:27         | 16:45            | 16:30    |  |          |     |
| 12                  | 05:36 | 06:57 (LAR03)    | 06:05  | 06:54 (LAR03)    | 06:37           | 18:26 (LAR12)    | 07:09         | 06:46            | 07:18    |  |          |     |
|                     | 20:37 | 45 07:42 (LAR03) | 20:07  | 53 07:47 (LAR03) | 19:17           | 22 18:48 (LAR12) | 18:26         | 16:44            | 16:30    |  |          |     |
| 13                  | 05:37 | 06:56 (LAR03)    | 06:06  | 06:55 (LAR03)    | 06:38           | 18:25 (LAR12)    | 07:10         | 06:47            | 07:19    |  |          |     |
|                     | 20:36 | 46 07:42 (LAR03) | 20:05  | 51 07:46 (LAR03) | 19:16           | 24 18:49 (LAR12) | 18:24         | 16:43            | 16:30    |  |          |     |
| 14                  | 05:37 | 06:56 (LAR03)    | 06:07  | 06:55 (LAR03)    | 06:39           | 18:24 (LAR12)    | 07:11         | 06:48            | 07:20    |  |          |     |
|                     | 20:35 | 47 07:43 (LAR03) | 20:04  | 50 07:45 (LAR03) | 19:14           | 25 18:49 (LAR12) | 18:23         | 16:42            | 16:30    |  |          |     |
| 15                  | 05:38 | 06:56 (LAR03)    | 06:08  | 06:56 (LAR03)    | 06:40           | 18:24 (LAR12)    | 07:12         | 06:49            | 07:21    |  |          |     |
|                     | 20:35 | 47 07:43 (LAR03) | 20:02  | 49 07:45 (LAR03) | 19:12           | 25 18:49 (LAR12) | 18:21         | 16:41            | 16:30    |  |          |     |
| 16                  | 05:39 | 06:56 (LAR03)    | 06:09  | 06:57 (LAR03)    | 06:41           | 18:23 (LAR12)    | 07:13         | 06:50            | 07:21    |  |          |     |
|                     | 20:34 | 48 07:44 (LAR03) | 20:01  | 46 07:43 (LAR03) | 19:10           | 24 18:47 (LAR12) | 18:19         | 16:40            | 16:31    |  |          |     |
| 17                  | 05:40 | 06:56 (LAR03)    | 06:10  | 06:58 (LAR03)    | 06:42           | 18:23 (LAR12)    | 07:14         | 06:52            | 07:22    |  |          |     |
|                     | 20:34 | 49 07:45 (LAR03) | 19:59  | 44 07:42 (LAR03) | 19:09           | 23 18:46 (LAR12) | 18:18         | 16:39            | 16:31    |  |          |     |
| 18                  | 05:41 | 06:55 (LAR03)    | 06:11  | 06:59 (LAR03)    | 06:43           | 18:22 (LAR12)    | 07:15         | 06:53            | 07:23    |  |          |     |
|                     | 20:33 | 50 07:45 (LAR03) | 19:58  | 42 07:41 (LAR03) | 19:07           | 22 18:44 (LAR12) | 18:16         | 8 17:39 (LAR13)  | 16:31    |  |          |     |
| 19                  | 05:41 | 06:54 (LAR03)    | 06:12  | 07:00 (LAR03)    | 06:44           | 18:22 (LAR12)    | 07:17         | 17:29 (LAR13)    | 06:54    |  |          |     |
|                     | 20:32 | 51 07:45 (LAR03) | 19:57  | 39 07:39 (LAR03) | 19:05           | 20 18:42 (LAR12) | 18:15         | 13 17:42 (LAR13) | 16:38    |  |          |     |
| 20                  | 05:42 | 06:54 (LAR03)    | 06:13  | 07:01 (LAR03)    | 06:45           | 18:23 (LAR12)    | 07:18         | 17:27 (LAR13)    | 06:55    |  |          |     |
|                     | 20:31 | 52 07:46 (LAR03) | 19:55  | 37 07:38 (LAR03) | 19:03           | 17 18:40 (LAR12) | 18:13         | 16 17:43 (LAR13) | 16:37    |  |          |     |
| 21                  | 05:43 | 06:54 (LAR03)    | 06:14  | 07:03 (LAR03)    | 06:46           | 18:23 (LAR12)    | 07:19         | 17:25 (LAR13)    | 06:56    |  |          |     |
|                     | 20:31 | 53 07:47 (LAR03) | 19:53  | 33 07:36 (LAR03) | 19:02           | 15 18:38 (LAR12) | 18:12         | 19 17:44 (LAR13) | 16:36    |  |          |     |
| 22                  | 05:44 | 06:54 (LAR03)    | 06:15  | 07:05 (LAR03)    | 06:47           | 18:25 (LAR12)    | 07:20         | 17:24 (LAR13)    | 06:58    |  |          |     |
|                     | 20:30 | 53 07:47 (LAR03) | 19:52  | 28 07:33 (LAR03) | 19:00           | 13 18:38 (LAR12) | 18:10         | 20 17:44 (LAR13) | 16:35    |  |          |     |
| 23                  | 05:45 | 06:54 (LAR03)    | 06:16  | 07:07 (LAR03)    | 06:48           | 18:26 (LAR12)    | 07:21         | 17:23 (LAR13)    | 06:59    |  |          |     |
|                     | 20:29 | 54 07:48 (LAR03) | 19:50  | 23 07:30 (LAR03) | 18:58           | 10 18:36 (LAR12) | 18:09         | 21 17:44 (LAR13) | 16:35    |  |          |     |
| 24                  | 05:46 | 06:54 (LAR03)    | 06:17  | 07:11 (LAR03)    | 06:49           | 18:29 (LAR12)    | 07:22         | 17:24 (LAR13)    | 07:00    |  |          |     |
|                     | 20:28 | 54 07:48 (LAR03) | 19:49  | 15 07:26 (LAR03) | 18:56           | 5 18:34 (LAR12)  | 18:07         | 20 17:44 (LAR13) | 16:34    |  |          |     |
| 25                  | 05:47 | 06:53 (LAR03)    | 06:18  | 06:50 (LAR03)    | 06:50           | 06:24            | 16:23 (LAR13) | 07:01            | 07:26    |  |          |     |
|                     | 20:27 | 55 07:48 (LAR03) | 19:47  | 18:55            | 17:06           | 19 16:42 (LAR13) | 16:34         |                  | 16:35    |  |          |     |
| 26                  | 05:48 | 06:53 (LAR03)    | 06:19  | 06:51 (LAR03)    | 06:51           | 06:25            | 16:23 (LAR13) | 07:02            | 07:27    |  |          |     |
|                     | 20:26 | 55 07:48 (LAR03) | 19:46  | 18:53            | 17:04           | 17 16:40 (LAR13) | 16:33         |                  | 16:35    |  |          |     |
| 27                  | 05:49 | 06:53 (LAR03)    | 06:20  | 06:52 (LAR03)    | 06:52           | 06:26            | 16:24 (LAR13) | 07:03            | 07:27    |  |          |     |
|                     | 20:25 | 56 07:49 (LAR03) | 19:44  | 18:51            | 17:03           | 16 16:40 (LAR13) | 16:33         |                  | 16:36    |  |          |     |
| 28                  | 05:50 | 06:53 (LAR03)    | 06:21  | 06:53 (LAR03)    | 06:53           | 06:27            | 16:24 (LAR13) | 07:05            | 07:28    |  |          |     |
|                     | 20:24 | 56 07:49 (LAR03) | 19:42  | 18:49            | 17:02           | 14 16:38 (LAR13) | 16:32         |                  | 16:37    |  |          |     |
| 29                  | 05:51 | 06:52 (LAR03)    | 06:22  | 06:54 (LAR03)    | 06:54           | 06:28            | 16:24 (LAR13) | 07:06            | 07:28    |  |          |     |
|                     | 20:23 | 57 07:49 (LAR03) | 19:41  | 18:48            | 17:00           | 12 16:36 (LAR13) | 16:32         |                  | 16:37    |  |          |     |
| 30                  | 05:52 | 06:52 (LAR03)    | 06:23  | 06:56 (LAR03)    | 06:56           | 06:30            | 16:25 (LAR13) | 07:07            | 07:28    |  |          |     |
|                     | 20:22 | 57 07:49 (LAR03) | 19:39  | 18:46            | 16:59           | 10 16:35 (LAR13) | 16:31         |                  | 16:38    |  |          |     |
| 31                  | 05:53 | 06:52 (LAR03)    | 06:24  | 06:31            | 06:31           | 06:31            | 16:27 (LAR13) |                  | 07:28    |  |          |     |
|                     | 20:21 | 58 07:50 (LAR03) | 19:38  | 16:58            | 7 16:34 (LAR13) |                  |               |                  | 16:39    |  |          |     |
| Potential sun hours | 462   |                  | 429    |                  | 375             |                  | 344           |                  | 296      |  |          | 285 |
| Total, worst case   | 1480  |                  | 1131   |                  | 299             |                  | 212           |                  | 3        |  |          |     |
| Sun reduction       | 0,61  |                  | 0,67   |                  | 0,58            |                  | 0,44          |                  | 0,41     |  |          |     |
| Oper. time red.     | 0,70  |                  | 0,70   |                  | 0,70            |                  | 0,70          |                  | 0,70     |  |          |     |
| Wind dir. red.      | 0,58  |                  | 0,58   |                  | 0,61            |                  | 0,57          |                  | 0,57     |  |          |     |
| Total reduction     | 0,24  |                  | 0,27   |                  | 0,25            |                  | 0,17          |                  | 0,16     |  |          |     |
| Total, real         | 362   |                  | 305    |                  | 74              |                  | 37            |                  | 0        |  |          |     |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R91 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (74)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March                  | April                                   | May                    | June                   |                                |
|---------------------|----------------|----------------|------------------------|---|------------------------|------------------------|--------------------------------|
| 1                   | 07:29<br>16:40 | 07:14<br>17:15 | 16:47 (LAR13)<br>17:50 | 06:37<br>19:25                          | 07:42 (LAR03)<br>19:58 | 05:58<br>19:27 (LAR02) | 18:50 (LAR02)<br>19:42 (LAR02) |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 16:46 (LAR13)<br>17:51 | 06:36<br>19:26                          | 07:40 (LAR03)<br>19:59 | 05:57<br>19:29 (LAR02) | 18:50 (LAR02)<br>19:42 (LAR02) |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 16:45 (LAR13)<br>17:52 | 06:34<br>19:28                          | 07:40 (LAR03)<br>20:00 | 05:56<br>19:30 (LAR02) | 18:51 (LAR02)<br>19:43 (LAR02) |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 16:43 (LAR13)<br>17:54 | 06:33<br>19:29                          | 07:39 (LAR03)<br>20:02 | 05:54<br>19:32 (LAR02) | 18:51 (LAR02)<br>19:42 (LAR02) |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 16:43 (LAR13)<br>17:55 | 06:31<br>19:30                          | 07:37 (LAR03)<br>20:03 | 05:53<br>19:33 (LAR02) | 18:51 (LAR02)<br>19:43 (LAR02) |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 16:42 (LAR13)<br>17:56 | 06:29<br>19:31                          | 07:37 (LAR03)<br>20:04 | 05:52<br>19:35 (LAR02) | 18:52 (LAR02)<br>19:43 (LAR02) |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 16:42 (LAR13)<br>17:57 | 06:28<br>19:32                          | 07:36 (LAR03)<br>20:05 | 05:51<br>19:36 (LAR02) | 18:52 (LAR02)<br>19:42 (LAR02) |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 16:43 (LAR13)<br>17:58 | 06:26<br>17:31 (LAR12)<br>17:37 (LAR12) | 06:34<br>19:33         | 05:50<br>19:37 (LAR02) | 18:52 (LAR02)<br>19:42 (LAR02) |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 16:43 (LAR13)<br>17:59 | 06:24<br>17:38 (LAR12)<br>17:38 (LAR12) | 06:32<br>19:34         | 05:48<br>19:37 (LAR02) | 18:53 (LAR02)<br>19:43 (LAR02) |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 16:43 (LAR13)<br>18:01 | 06:23<br>17:39 (LAR12)<br>17:39 (LAR12) | 06:30<br>19:35         | 05:47<br>19:37 (LAR02) | 18:53 (LAR02)<br>19:43 (LAR02) |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 16:43 (LAR13)<br>18:02 | 06:21<br>17:40 (LAR12)<br>17:40 (LAR12) | 06:29<br>19:36         | 05:46<br>19:38 (LAR02) | 18:54 (LAR02)<br>19:43 (LAR02) |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 16:44 (LAR13)<br>18:03 | 06:19<br>17:41 (LAR12)<br>17:41 (LAR12) | 06:27<br>19:37         | 05:45<br>19:39 (LAR02) | 18:54 (LAR02)<br>19:43 (LAR02) |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 16:45 (LAR13)<br>18:04 | 06:18<br>17:43 (LAR12)<br>17:43 (LAR12) | 06:25<br>19:39         | 05:44<br>19:39 (LAR02) | 18:54 (LAR02)<br>19:43 (LAR02) |
| 14                  | 07:27<br>16:53 | 06:59<br>17:32 | 16:46 (LAR13)<br>18:05 | 06:16<br>17:44 (LAR12)<br>17:44 (LAR12) | 06:24<br>19:40         | 05:43<br>19:40 (LAR02) | 18:55 (LAR02)<br>19:44 (LAR02) |
| 15                  | 07:27<br>16:54 | 06:58<br>17:33 | 16:49 (LAR13)<br>18:06 | 06:14<br>17:45 (LAR12)<br>17:45 (LAR12) | 06:22<br>19:41         | 05:42<br>19:41 (LAR02) | 18:55 (LAR02)<br>19:44 (LAR02) |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07         | 06:21<br>17:46 (LAR12)<br>17:46 (LAR12) | 06:21<br>19:42         | 05:41<br>19:40 (LAR02) | 18:55 (LAR02)<br>19:44 (LAR02) |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09         | 06:19<br>17:45 (LAR12)<br>17:45 (LAR12) | 06:19<br>19:43         | 05:40<br>19:40 (LAR02) | 18:55 (LAR02)<br>19:44 (LAR02) |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 06:09<br>18:10         | 06:17<br>17:44 (LAR12)<br>17:44 (LAR12) | 06:17<br>19:44         | 05:39<br>19:41 (LAR02) | 18:56 (LAR02)<br>19:44 (LAR02) |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11         | 06:16<br>17:43 (LAR12)<br>17:43 (LAR12) | 06:16<br>19:45         | 05:38<br>19:41 (LAR02) | 18:56 (LAR02)<br>19:44 (LAR02) |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12         | 06:14<br>17:42 (LAR12)<br>17:42 (LAR12) | 06:14<br>19:46         | 05:37<br>19:41 (LAR02) | 18:56 (LAR02)<br>19:44 (LAR02) |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 06:04<br>18:13         | 06:13<br>17:45 (LAR12)<br>17:45 (LAR12) | 06:13<br>19:47         | 05:36<br>19:41 (LAR02) | 18:56 (LAR02)<br>19:44 (LAR02) |
| 22                  | 07:23<br>17:02 | 06:48<br>17:42 | 06:03<br>18:14         | 06:11<br>07:05 (LAR03)<br>17:37 (LAR12) | 06:11<br>19:48         | 05:35<br>19:41 (LAR02) | 18:57 (LAR02)<br>19:45 (LAR02) |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15         | 06:10<br>07:01 (LAR03)<br>07:25 (LAR03) | 06:10<br>19:50         | 05:34<br>19:42 (LAR02) | 18:57 (LAR02)<br>19:45 (LAR02) |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16         | 06:08<br>06:57 (LAR03)<br>07:28 (LAR03) | 06:08<br>19:51         | 05:34<br>19:42 (LAR02) | 18:57 (LAR02)<br>19:45 (LAR02) |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:18         | 06:07<br>06:54 (LAR03)<br>07:30 (LAR03) | 06:07<br>19:52         | 05:33<br>19:42 (LAR02) | 18:57 (LAR02)<br>19:45 (LAR02) |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19         | 06:05<br>06:51 (LAR03)<br>07:31 (LAR03) | 06:05<br>19:53         | 05:32<br>19:42 (LAR02) | 18:57 (LAR02)<br>19:46 (LAR02) |
| 27                  | 07:19<br>17:08 | 06:41<br>17:48 | 05:54<br>18:20         | 06:04<br>06:50 (LAR03)<br>07:34 (LAR03) | 06:04<br>19:54         | 05:32<br>19:42 (LAR02) | 18:57 (LAR02)<br>19:46 (LAR02) |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21         | 06:03<br>06:48 (LAR03)<br>07:34 (LAR03) | 06:03<br>19:55         | 05:31<br>19:42 (LAR02) | 18:58 (LAR02)<br>19:47 (LAR02) |
| 29                  | 07:17<br>17:11 |                | 06:51<br>19:22         | 06:01<br>07:46 (LAR03)<br>08:35 (LAR03) | 06:01<br>19:56         | 05:30<br>19:42 (LAR02) | 18:58 (LAR02)<br>19:47 (LAR02) |
| 30                  | 07:16<br>17:12 |                | 06:49<br>19:23         | 06:00<br>07:44 (LAR03)<br>08:36 (LAR03) | 06:00<br>19:57         | 05:29<br>19:42 (LAR02) | 18:58 (LAR02)<br>19:47 (LAR02) |
| 31                  | 07:15<br>17:14 |                | 06:47<br>19:24         | 06:00<br>07:43 (LAR03)<br>08:37 (LAR03) | 06:00<br>19:57         | 05:28<br>19:42 (LAR02) | 18:58 (LAR02)<br>19:47 (LAR02) |
| Potential sun hours | 295            | 296            | 369                    | 400                                     | 451                    | 455                    | 1482                           |
| Total, worst case   |                | 205            | 652                    | 1671                                    | 1540                   |                        | 1482                           |
| Sun reduction       |                | 0,46           | 0,44                   | 0,48                                    | 0,47                   |                        | 0,54                           |
| Oper. time red.     |                | 0,70           | 0,70                   | 0,70                                    | 0,70                   |                        | 0,70                           |
| Wind dir. red.      |                | 0,57           | 0,61                   | 0,63                                    | 0,64                   |                        | 0,65                           |
| Total reduction     |                | 0,18           | 0,19                   | 0,21                                    | 0,21                   |                        | 0,24                           |
| Total, real         |                | 37             | 123                    | 350                                     | 323                    |                        | 360                            |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R91 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (74)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July  |                  | August |                  | September |                  | October |                  | November |                  | December |  |
|---------------------|-------|------------------|--------|------------------|-----------|------------------|---------|------------------|----------|------------------|----------|--|
| 1                   | 05:29 | 18:58 (LAR02)    | 05:54  | 19:01 (LAR02)    | 06:25     | 07:34 (LAR03)    | 06:57   | 18:03 (LAR12)    | 06:32    | 16:12 (LAR13)    | 07:08    |  |
|                     | 20:40 | 49 19:47 (LAR02) | 20:20  | 48 19:49 (LAR02) | 19:36     | 63 08:37 (LAR03) | 18:44   | 18 18:21 (LAR12) | 16:56    | 20 16:32 (LAR13) | 16:31    |  |
| 2                   | 05:29 | 18:57 (LAR02)    | 05:55  | 19:01 (LAR02)    | 06:26     | 07:34 (LAR03)    | 06:58   | 18:03 (LAR12)    | 06:33    | 16:12 (LAR13)    | 07:09    |  |
|                     | 20:40 | 50 19:47 (LAR02) | 20:19  | 47 19:48 (LAR02) | 19:34     | 62 08:36 (LAR03) | 18:42   | 17 18:20 (LAR12) | 16:55    | 19 16:31 (LAR13) | 16:31    |  |
| 3                   | 05:30 | 18:58 (LAR02)    | 05:56  | 19:02 (LAR02)    | 06:28     | 07:34 (LAR03)    | 06:59   | 18:03 (LAR12)    | 06:34    | 16:12 (LAR13)    | 07:10    |  |
|                     | 20:40 | 50 19:48 (LAR02) | 20:18  | 46 19:48 (LAR02) | 19:33     | 62 08:36 (LAR03) | 18:41   | 15 18:18 (LAR12) | 16:54    | 18 16:30 (LAR13) | 16:30    |  |
| 4                   | 05:30 | 18:58 (LAR02)    | 05:57  | 19:03 (LAR02)    | 06:29     | 07:33 (LAR03)    | 07:00   | 18:05 (LAR12)    | 06:36    | 16:12 (LAR13)    | 07:11    |  |
|                     | 20:39 | 51 19:49 (LAR02) | 20:17  | 44 19:47 (LAR02) | 19:31     | 63 08:36 (LAR03) | 18:39   | 11 18:16 (LAR12) | 16:53    | 17 16:29 (LAR13) | 16:30    |  |
| 5                   | 05:31 | 18:58 (LAR02)    | 05:58  | 19:04 (LAR02)    | 06:30     | 07:33 (LAR03)    | 07:01   | 18:06 (LAR12)    | 06:37    | 16:12 (LAR13)    | 07:12    |  |
|                     | 20:39 | 50 19:48 (LAR02) | 20:16  | 42 19:46 (LAR02) | 19:29     | 62 08:35 (LAR03) | 18:37   | 8 18:14 (LAR12)  | 16:51    | 15 16:27 (LAR13) | 16:30    |  |
| 6                   | 05:32 | 18:58 (LAR02)    | 05:59  | 19:04 (LAR02)    | 06:31     | 07:32 (LAR03)    | 07:02   | 18:11 (LAR12)    | 06:38    | 16:13 (LAR13)    | 07:13    |  |
|                     | 20:39 | 51 19:49 (LAR02) | 20:14  | 41 19:45 (LAR02) | 19:28     | 62 08:34 (LAR03) | 18:36   | 1 18:12 (LAR12)  | 16:50    | 13 16:26 (LAR13) | 16:30    |  |
| 7                   | 05:32 | 18:58 (LAR02)    | 06:00  | 19:05 (LAR02)    | 06:32     | 07:32 (LAR03)    | 07:03   |                  | 06:39    | 16:14 (LAR13)    | 07:14    |  |
|                     | 20:39 | 51 19:49 (LAR02) | 20:13  | 39 19:44 (LAR02) | 19:26     | 61 08:33 (LAR03) | 18:34   |                  | 16:49    | 11 16:25 (LAR13) | 16:30    |  |
| 8                   | 05:33 | 18:58 (LAR02)    | 06:01  | 19:06 (LAR02)    | 06:33     | 07:33 (LAR03)    | 07:04   |                  | 06:41    | 16:15 (LAR13)    | 07:15    |  |
|                     | 20:38 | 51 19:49 (LAR02) | 20:12  | 37 19:43 (LAR02) | 19:24     | 59 08:32 (LAR03) | 18:32   |                  | 16:48    | 9 16:24 (LAR13)  | 16:30    |  |
| 9                   | 05:34 | 18:58 (LAR02)    | 06:02  | 08:02 (LAR03)    | 06:34     | 07:33 (LAR03)    | 07:05   |                  | 06:42    | 16:16 (LAR13)    | 07:16    |  |
|                     | 20:38 | 52 19:50 (LAR02) | 20:11  | 45 19:41 (LAR02) | 19:22     | 59 08:32 (LAR03) | 18:31   |                  | 16:47    | 6 16:22 (LAR13)  | 16:30    |  |
| 10                  | 05:34 | 18:58 (LAR02)    | 06:03  | 07:58 (LAR03)    | 06:35     | 07:33 (LAR03)    | 07:06   |                  | 06:43    | 16:19 (LAR13)    | 07:17    |  |
|                     | 20:37 | 52 19:50 (LAR02) | 20:09  | 50 19:39 (LAR02) | 19:21     | 58 08:31 (LAR03) | 18:29   |                  | 16:46    | 3 16:22 (LAR13)  | 16:30    |  |
| 11                  | 05:35 | 18:58 (LAR02)    | 06:04  | 07:55 (LAR03)    | 06:36     | 07:34 (LAR03)    | 07:08   |                  | 06:44    |                  | 07:18    |  |
|                     | 20:37 | 52 19:50 (LAR02) | 20:08  | 52 19:37 (LAR02) | 19:19     | 56 08:30 (LAR03) | 18:27   |                  | 16:45    |                  | 16:30    |  |
| 12                  | 05:36 | 18:58 (LAR02)    | 06:05  | 07:53 (LAR03)    | 06:37     | 07:34 (LAR03)    | 07:09   |                  | 06:46    |                  | 07:18    |  |
|                     | 20:37 | 53 19:51 (LAR02) | 20:07  | 52 19:35 (LAR02) | 19:17     | 54 08:28 (LAR03) | 18:26   |                  | 16:44    |                  | 16:30    |  |
| 13                  | 05:37 | 18:58 (LAR02)    | 06:06  | 07:51 (LAR03)    | 06:38     | 07:35 (LAR03)    | 07:10   |                  | 06:47    |                  | 07:19    |  |
|                     | 20:36 | 52 19:50 (LAR02) | 20:05  | 48 19:31 (LAR02) | 19:16     | 52 08:27 (LAR03) | 18:24   |                  | 16:43    |                  | 16:30    |  |
| 14                  | 05:37 | 18:58 (LAR02)    | 06:07  | 07:49 (LAR03)    | 06:39     | 07:36 (LAR03)    | 07:11   |                  | 06:48    |                  | 07:20    |  |
|                     | 20:35 | 53 19:51 (LAR02) | 20:04  | 38 08:27 (LAR03) | 19:14     | 50 08:26 (LAR03) | 18:23   |                  | 16:42    |                  | 16:30    |  |
| 15                  | 05:38 | 18:58 (LAR02)    | 06:08  | 07:48 (LAR03)    | 06:40     | 07:37 (LAR03)    | 07:12   |                  | 06:49    |                  | 07:21    |  |
|                     | 20:35 | 53 19:51 (LAR02) | 20:02  | 40 08:28 (LAR03) | 19:12     | 47 08:24 (LAR03) | 18:21   |                  | 16:41    |                  | 16:30    |  |
| 16                  | 05:39 | 18:58 (LAR02)    | 06:09  | 07:46 (LAR03)    | 06:41     | 07:38 (LAR03)    | 07:13   |                  | 06:50    |                  | 07:21    |  |
|                     | 20:34 | 53 19:51 (LAR02) | 20:01  | 43 08:29 (LAR03) | 19:10     | 44 08:22 (LAR03) | 18:19   |                  | 16:40    |                  | 16:31    |  |
| 17                  | 05:40 | 18:59 (LAR02)    | 06:10  | 07:45 (LAR03)    | 06:42     | 07:39 (LAR03)    | 07:14   |                  | 06:52    |                  | 07:22    |  |
|                     | 20:34 | 53 19:52 (LAR02) | 19:59  | 45 08:30 (LAR03) | 19:09     | 41 08:20 (LAR03) | 18:18   |                  | 16:39    |                  | 16:31    |  |
| 18                  | 05:41 | 18:58 (LAR02)    | 06:11  | 07:44 (LAR03)    | 06:43     | 07:41 (LAR03)    | 07:15   |                  | 06:53    |                  | 07:23    |  |
|                     | 20:33 | 53 19:51 (LAR02) | 19:58  | 47 08:31 (LAR03) | 19:07     | 37 08:18 (LAR03) | 18:16   |                  | 16:38    |                  | 16:31    |  |
| 19                  | 05:41 | 18:58 (LAR02)    | 06:12  | 07:43 (LAR03)    | 06:44     | 07:43 (LAR03)    | 07:17   |                  | 06:54    |                  | 07:23    |  |
|                     | 20:32 | 53 19:51 (LAR02) | 19:57  | 49 08:32 (LAR03) | 19:05     | 32 08:15 (LAR03) | 18:15   |                  | 16:38    |                  | 16:32    |  |
| 20                  | 05:42 | 18:58 (LAR02)    | 06:13  | 07:42 (LAR03)    | 06:45     | 07:45 (LAR03)    | 07:18   |                  | 06:55    |                  | 07:24    |  |
|                     | 20:31 | 54 19:52 (LAR02) | 19:55  | 51 08:33 (LAR03) | 19:03     | 27 08:12 (LAR03) | 18:13   |                  | 16:37    |                  | 16:32    |  |
| 21                  | 05:43 | 18:58 (LAR02)    | 06:14  | 07:41 (LAR03)    | 06:46     | 07:49 (LAR03)    | 07:19   |                  | 06:56    |                  | 07:25    |  |
|                     | 20:31 | 54 19:52 (LAR02) | 19:53  | 53 08:34 (LAR03) | 19:02     | 26 18:21 (LAR12) | 18:12   |                  | 16:36    |                  | 16:32    |  |
| 22                  | 05:44 | 18:59 (LAR02)    | 06:15  | 07:40 (LAR03)    | 06:47     | 18:11 (LAR12)    | 07:20   |                  | 06:58    |                  | 07:25    |  |
|                     | 20:30 | 53 19:52 (LAR02) | 19:52  | 54 08:34 (LAR03) | 19:00     | 14 18:25 (LAR12) | 18:10   |                  | 16:35    |                  | 16:33    |  |
| 23                  | 05:45 | 18:59 (LAR02)    | 06:16  | 07:39 (LAR03)    | 06:48     | 18:08 (LAR12)    | 07:21   |                  | 06:59    |                  | 07:26    |  |
|                     | 20:29 | 53 19:52 (LAR02) | 19:50  | 56 08:35 (LAR03) | 18:58     | 18 18:26 (LAR12) | 18:09   |                  | 16:35    |                  | 16:33    |  |
| 24                  | 05:46 | 18:59 (LAR02)    | 06:17  | 07:38 (LAR03)    | 06:49     | 18:07 (LAR12)    | 07:22   |                  | 07:00    |                  | 07:26    |  |
|                     | 20:28 | 53 19:52 (LAR02) | 19:49  | 58 08:36 (LAR03) | 18:56     | 20 18:27 (LAR12) | 18:07   |                  | 16:34    |                  | 16:34    |  |
| 25                  | 05:47 | 18:58 (LAR02)    | 06:18  | 07:37 (LAR03)    | 06:50     | 18:05 (LAR12)    | 06:24   |                  | 07:01    |                  | 07:26    |  |
|                     | 20:27 | 53 19:51 (LAR02) | 19:47  | 59 08:36 (LAR03) | 18:55     | 22 18:27 (LAR12) | 17:06   |                  | 16:34    |                  | 16:35    |  |
| 26                  | 05:48 | 18:59 (LAR02)    | 06:19  | 07:37 (LAR03)    | 06:51     | 18:04 (LAR12)    | 06:25   |                  | 07:02    |                  | 07:27    |  |
|                     | 20:26 | 52 19:51 (LAR02) | 19:46  | 59 08:36 (LAR03) | 18:53     | 24 18:28 (LAR12) | 17:04   |                  | 16:33    |                  | 16:35    |  |
| 27                  | 05:49 | 18:59 (LAR02)    | 06:20  | 07:36 (LAR03)    | 06:52     | 18:04 (LAR12)    | 06:26   | 16:18 (LAR13)    | 07:03    |                  | 07:27    |  |
|                     | 20:25 | 52 19:51 (LAR02) | 19:44  | 60 08:36 (LAR03) | 18:51     | 23 18:27 (LAR12) | 17:03   | 10 16:28 (LAR13) | 16:33    |                  | 16:36    |  |
| 28                  | 05:50 | 18:59 (LAR02)    | 06:21  | 07:36 (LAR03)    | 06:53     | 18:03 (LAR12)    | 06:27   | 16:16 (LAR13)    | 07:05    |                  | 07:28    |  |
|                     | 20:24 | 52 19:51 (LAR02) | 19:42  | 61 08:37 (LAR03) | 18:49     | 24 18:27 (LAR12) | 17:02   | 13 16:29 (LAR13) | 16:32    |                  | 16:37    |  |
| 29                  | 05:51 | 19:00 (LAR02)    | 06:22  | 07:35 (LAR03)    | 06:54     | 18:03 (LAR12)    | 06:28   | 16:14 (LAR13)    | 07:06    |                  | 07:28    |  |
|                     | 20:23 | 50 19:50 (LAR02) | 19:41  | 62 08:37 (LAR03) | 18:48     | 22 18:25 (LAR12) | 17:00   | 16 16:30 (LAR13) | 16:32    |                  | 16:37    |  |
| 30                  | 05:52 | 19:00 (LAR02)    | 06:23  | 07:35 (LAR03)    | 06:56     | 18:03 (LAR12)    | 06:30   | 16:13 (LAR13)    | 07:07    |                  | 07:28    |  |
|                     | 20:22 | 50 19:50 (LAR02) | 19:39  | 62 08:37 (LAR03) | 18:46     | 20 18:23 (LAR12) | 16:59   | 18 16:31 (LAR13) | 16:31    |                  | 16:38    |  |
| 31                  | 05:53 | 19:00 (LAR02)    | 06:24  | 07:34 (LAR03)    |           |                  | 06:31   | 16:13 (LAR13)    |          |                  | 07:28    |  |
|                     | 20:21 | 50 19:50 (LAR02) | 19:38  | 63 08:37 (LAR03) |           |                  | 16:58   | 19 16:32 (LAR13) |          |                  | 16:39    |  |
| Potential sun hours | 462   |                  | 429    |                  | 375       |                  | 344     |                  | 296      |                  | 285      |  |
| Total, worst case   | 1608  |                  | 1551   |                  | 1264      |                  | 146     |                  | 131      |                  |          |  |
| Sun reduction       | 0,61  |                  | 0,67   |                  | 0,58      |                  | 0,44    |                  | 0,41     |                  |          |  |
| Oper. time red.     | 0,70  |                  | 0,70   |                  | 0,70      |                  | 0,70    |                  | 0,70     |                  |          |  |
| Wind dir. red.      | 0,65  |                  | 0,63   |                  | 0,62      |                  | 0,58    |                  | 0,57     |                  |          |  |
| Total reduction     | 0,27  |                  | 0,29   |                  | 0,25      |                  | 0,18    |                  | 0,16     |                  |          |  |
| Total, real         | 439   |                  | 457    |                  | 317       |                  | 26      |                  | 21       |                  |          |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R92 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (75)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January |       |               | February |  |  | March |  |  | April |  |      | May |  |  | June |     |  |
|---------------------|---------|-------|---------------|----------|--|--|-------|--|--|-------|--|------|-----|--|--|------|-----|--|
| 1                   | 07:29   | 07:14 | 06:37         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:40   | 17:15 | 17:50         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 2                   | 07:29   | 07:13 | 06:36         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:41   | 17:16 | 17:51         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 3                   | 07:29   | 07:12 | 06:34         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:42   | 17:17 | 17:52         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 4                   | 07:29   | 07:11 | 06:33         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:42   | 17:19 | 17:54         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 5                   | 07:29   | 07:10 | 06:31         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:43   | 17:20 | 17:55         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 6                   | 07:29   | 07:09 | 06:29         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:44   | 17:21 | 17:56         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 7                   | 07:29   | 07:08 | 06:28         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:45   | 17:23 | 17:57         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 8                   | 07:28   | 07:07 | 06:26         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:46   | 17:24 | 17:58         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 9                   | 07:28   | 07:06 | 06:24         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:47   | 17:25 | 17:59         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 10                  | 07:28   | 07:04 | 06:23         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:48   | 17:26 | 18:01         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 11                  | 07:28   | 07:03 | 06:21         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:49   | 17:28 | 18:02         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 12                  | 07:28   | 07:02 | 06:19         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:51   | 17:29 | 18:03         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 13                  | 07:27   | 07:01 | 06:18         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:52   | 17:30 | 18:04         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 14                  | 07:27   | 06:59 | 06:16         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:53   | 17:32 | 18:05         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 15                  | 07:27   | 06:58 | 06:14         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:54   | 17:33 | 18:06         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 16                  | 07:26   | 06:57 | 06:13         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:55   | 17:34 | 18:07         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 17                  | 07:26   | 06:55 | 06:11         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:56   | 17:35 | 18:09         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 18                  | 07:25   | 06:54 | 06:09         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:57   | 17:37 | 18:10         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 19                  | 07:25   | 06:52 | 06:08         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 16:59   | 17:38 | 18:11         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 20                  | 07:24   | 06:51 | 06:06         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 17:00   | 17:39 | 18:12         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 21                  | 07:23   | 06:50 | 06:04         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 17:01   | 17:40 | 18:13         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 22                  | 07:23   | 06:48 | 06:03         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 17:02   | 17:41 | 18:14         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 23                  | 07:22   | 06:47 | 06:01         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 17:03   | 17:43 | 18:15         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 24                  | 07:21   | 06:45 | 05:59         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 17:05   | 17:44 | 18:16         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 25                  | 07:21   | 06:44 | 05:57         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 17:06   | 17:45 | 18:18         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 26                  | 07:20   | 06:42 | 05:56         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 17:07   | 17:46 | 18:19         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 27                  | 07:19   | 06:41 | 05:54         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 17:08   | 17:48 | 18:20         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 28                  | 07:18   | 06:39 | 05:52         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 17:10   | 17:49 | 18:21         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 29                  | 07:17   |       | 06:51         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 17:11   |       | 19:22         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 30                  | 07:16   |       | 06:49         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 17:12   |       | 19:23         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| 31                  | 07:15   |       | 06:47         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     | 17:14   |       | 19:24         |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
|                     |         |       | 09:10 (LAR03) |          |  |  |       |  |  |       |  |      |     |  |  |      |     |  |
| Potential sun hours | 295     | 296   | 369           |          |  |  |       |  |  |       |  | 400  |     |  |  |      | 455 |  |
| Total, worst case   |         |       |               |          |  |  | 1612  |  |  |       |  | 1396 |     |  |  | 1078 |     |  |
| Sun reduction       |         |       |               |          |  |  | 0,44  |  |  |       |  | 0,48 |     |  |  | 0,47 |     |  |
| Oper. time red.     |         |       |               |          |  |  | 0,70  |  |  |       |  | 0,70 |     |  |  | 0,70 |     |  |
| Wind dir. red.      |         |       |               |          |  |  | 0,62  |  |  |       |  | 0,63 |     |  |  | 0,63 |     |  |
| Total reduction     |         |       |               |          |  |  | 0,19  |  |  |       |  | 0,21 |     |  |  | 0,21 |     |  |
| Total, real         |         |       |               |          |  |  | 310   |  |  |       |  | 295  |     |  |  | 222  |     |  |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm) | Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | (WTG causing flicker first time) | (WTG causing flicker last time) |
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
|--------------|------------------|-----------------|----------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|

## SHADOW - Calendar

**Shadow receptor:** R92 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (75)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| July                |       | August           |               | September     |               | October       |               | November |       | December |     |
|---------------------|-------|------------------|---------------|---------------|---------------|---------------|---------------|----------|-------|----------|-----|
| 1                   | 05:29 | 05:54            | 18:41 (LAR02) | 06:25         | 08:12 (LAR03) | 06:57         | 08:02 (LAR03) | 06:32    | 07:08 |          |     |
|                     | 20:40 | 20:20            | 19:27 (LAR02) | 19:36         | 18:44         | 18:44         | 18:16 (LAR12) | 16:56    | 16:31 |          |     |
| 2                   | 05:29 | 05:55            | 18:41 (LAR02) | 06:26         | 08:11 (LAR03) | 06:58         | 08:03 (LAR03) | 06:33    | 07:09 |          |     |
|                     | 20:40 | 20:19            | 19:27 (LAR02) | 19:34         | 18:42         | 18:42         | 18:16 (LAR12) | 16:55    | 16:31 |          |     |
| 3                   | 05:30 | 05:56            | 18:40 (LAR02) | 06:28         | 08:09 (LAR03) | 06:59         | 08:05 (LAR03) | 06:34    | 07:10 |          |     |
|                     | 20:40 | 20:18            | 19:28 (LAR02) | 19:33         | 18:41         | 18:41         | 18:16 (LAR12) | 16:54    | 16:30 |          |     |
| 4                   | 05:30 | 05:57            | 18:40 (LAR02) | 06:29         | 08:08 (LAR03) | 07:00         | 08:06 (LAR03) | 06:36    | 07:11 |          |     |
|                     | 20:39 | 20:17            | 19:28 (LAR02) | 19:31         | 18:39         | 18:39         | 18:16 (LAR12) | 16:53    | 16:30 |          |     |
| 5                   | 05:31 | 05:58            | 18:39 (LAR02) | 06:30         | 08:06 (LAR03) | 07:01         | 08:09 (LAR03) | 06:37    | 07:12 |          |     |
|                     | 20:39 | 20:16            | 19:28 (LAR02) | 19:29         | 18:37         | 18:37         | 18:14 (LAR12) | 16:51    | 16:30 |          |     |
| 6                   | 05:32 | 05:59            | 18:39 (LAR02) | 06:31         | 08:05 (LAR03) | 07:02         | 08:12 (LAR03) | 06:38    | 07:13 |          |     |
|                     | 20:39 | 20:14            | 19:28 (LAR02) | 19:28         | 18:36         | 18:36         | 18:12 (LAR12) | 16:50    | 16:30 |          |     |
| 7                   | 05:32 | 06:00            | 18:39 (LAR02) | 06:32         | 08:04 (LAR03) | 07:03         | 08:18 (LAR03) | 06:39    | 07:14 |          |     |
|                     | 20:39 | 20:13            | 19:28 (LAR02) | 19:26         | 18:34         | 18:34         | 18:11 (LAR12) | 16:49    | 16:30 |          |     |
| 8                   | 05:33 | 06:01            | 18:38 (LAR02) | 06:33         | 08:03 (LAR03) | 07:04         | 08:03 (LAR03) | 06:41    | 07:15 |          |     |
|                     | 20:38 | 20:12            | 19:28 (LAR02) | 19:24         | 18:32         | 18:32         | 18:10 (LAR12) | 16:48    | 16:30 |          |     |
| 9                   | 05:34 | 06:02            | 18:38 (LAR02) | 06:34         | 08:02 (LAR03) | 07:05         | 17:55 (LAR12) | 06:42    | 07:16 |          |     |
|                     | 20:38 | 20:11            | 19:28 (LAR02) | 19:22         | 18:31         | 18:31         | 18:08 (LAR12) | 16:47    | 16:30 |          |     |
| 10                  | 05:34 | 06:03            | 18:38 (LAR02) | 06:35         | 08:01 (LAR03) | 07:06         | 17:56 (LAR12) | 06:43    | 07:17 |          |     |
|                     | 20:37 | 20:09            | 19:28 (LAR02) | 19:21         | 18:29         | 18:29         | 18:06 (LAR12) | 16:46    | 16:30 |          |     |
| 11                  | 05:35 | 06:04            | 18:38 (LAR02) | 06:36         | 08:00 (LAR03) | 07:08         | 18:00 (LAR12) | 06:44    | 07:18 |          |     |
|                     | 20:37 | 20:08            | 19:28 (LAR02) | 19:19         | 18:27         | 18:27         | 18:04 (LAR12) | 16:45    | 16:30 |          |     |
| 12                  | 05:36 | 06:05            | 18:38 (LAR02) | 06:37         | 07:59 (LAR03) | 07:09         | 07:59 (LAR03) | 06:46    | 07:18 |          |     |
|                     | 20:37 | 20:07            | 19:28 (LAR02) | 19:17         | 18:26         | 18:26         |               | 16:44    | 16:30 |          |     |
| 13                  | 05:36 | 06:06            | 18:37 (LAR02) | 06:38         | 07:59 (LAR03) | 07:10         |               | 06:47    | 07:19 |          |     |
|                     | 20:36 | 20:05            | 19:28 (LAR02) | 19:16         | 18:24         | 18:24         |               | 16:43    | 16:30 |          |     |
| 14                  | 05:37 | 06:07            | 18:37 (LAR02) | 06:39         | 07:58 (LAR03) | 07:11         |               | 06:48    | 07:20 |          |     |
|                     | 20:35 | 20:04            | 19:27 (LAR02) | 19:14         | 18:23         | 18:23         |               | 16:42    | 16:30 |          |     |
| 15                  | 05:38 | 19:02 (LAR02)    | 06:08         | 18:38 (LAR02) | 06:40         | 07:58 (LAR03) | 07:12         | 06:49    | 07:21 |          |     |
|                     | 20:35 | 4 19:06 (LAR02)  | 20:02         | 19:27 (LAR02) | 19:12         | 18:21         | 18:21         | 16:41    | 16:30 |          |     |
| 16                  | 05:39 | 18:58 (LAR02)    | 06:09         | 18:38 (LAR02) | 06:41         | 07:57 (LAR03) | 07:13         | 06:50    | 07:21 |          |     |
|                     | 20:34 | 12 19:10 (LAR02) | 20:01         | 19:26 (LAR02) | 19:10         | 18:19         | 18:19         | 16:40    | 16:31 |          |     |
| 17                  | 05:40 | 18:56 (LAR02)    | 06:10         | 18:38 (LAR02) | 06:42         | 07:57 (LAR03) | 07:14         | 06:52    | 07:22 |          |     |
|                     | 20:34 | 17 19:13 (LAR02) | 19:59         | 19:26 (LAR02) | 19:09         | 18:18         | 18:18         | 16:39    | 16:31 |          |     |
| 18                  | 05:41 | 18:53 (LAR02)    | 06:11         | 18:38 (LAR02) | 06:43         | 07:57 (LAR03) | 07:15         | 06:53    | 07:23 |          |     |
|                     | 20:33 | 21 19:14 (LAR02) | 19:58         | 19:25 (LAR02) | 19:07         | 18:16         | 18:16         | 16:38    | 16:31 |          |     |
| 19                  | 05:41 | 18:52 (LAR02)    | 06:12         | 18:38 (LAR02) | 06:44         | 07:57 (LAR03) | 07:17         | 06:54    | 07:23 |          |     |
|                     | 20:32 | 23 19:15 (LAR02) | 19:57         | 19:24 (LAR02) | 19:05         | 18:15         | 18:15         | 16:38    | 16:32 |          |     |
| 20                  | 05:42 | 18:51 (LAR02)    | 06:13         | 18:39 (LAR02) | 06:45         | 07:56 (LAR03) | 07:18         | 06:55    | 07:24 |          |     |
|                     | 20:31 | 26 19:17 (LAR02) | 19:55         | 19:23 (LAR02) | 19:03         | 18:13         | 18:13         | 16:37    | 16:32 |          |     |
| 21                  | 05:43 | 18:50 (LAR02)    | 06:14         | 18:40 (LAR02) | 06:46         | 07:56 (LAR03) | 07:19         | 06:56    | 07:25 |          |     |
|                     | 20:31 | 28 19:18 (LAR02) | 19:53         | 19:22 (LAR02) | 19:02         | 18:12         | 18:12         | 16:36    | 16:32 |          |     |
| 22                  | 05:44 | 18:49 (LAR02)    | 06:15         | 18:40 (LAR02) | 06:47         | 07:57 (LAR03) | 07:20         | 06:58    | 07:25 |          |     |
|                     | 20:30 | 31 19:20 (LAR02) | 19:52         | 19:21 (LAR02) | 19:00         | 18:10         | 18:10         | 16:35    | 16:33 |          |     |
| 23                  | 05:45 | 18:48 (LAR02)    | 06:16         | 18:41 (LAR02) | 06:48         | 07:57 (LAR03) | 07:21         | 06:59    | 07:26 |          |     |
|                     | 20:29 | 33 19:21 (LAR02) | 19:50         | 19:19 (LAR02) | 18:58         | 18:09         | 18:09         | 16:35    | 16:33 |          |     |
| 24                  | 05:46 | 18:47 (LAR02)    | 06:17         | 18:42 (LAR02) | 06:49         | 07:58 (LAR03) | 07:22         | 07:00    | 07:26 |          |     |
|                     | 20:28 | 35 19:22 (LAR02) | 19:49         | 19:18 (LAR02) | 18:56         | 18:07         | 18:07         | 16:34    | 16:34 |          |     |
| 25                  | 05:47 | 18:46 (LAR02)    | 06:18         | 18:43 (LAR02) | 06:50         | 07:58 (LAR03) | 06:24         | 07:01    | 07:26 |          |     |
|                     | 20:27 | 36 19:22 (LAR02) | 19:47         | 19:16 (LAR02) | 18:55         | 17:06         | 17:06         | 16:34    | 16:35 |          |     |
| 26                  | 05:48 | 18:45 (LAR02)    | 06:19         | 08:30 (LAR03) | 06:51         | 07:58 (LAR03) | 06:25         | 07:02    | 07:27 |          |     |
|                     | 20:26 | 38 19:23 (LAR02) | 19:46         | 19:14 (LAR02) | 18:53         | 17:04         | 17:04         | 16:33    | 16:35 |          |     |
| 27                  | 05:49 | 18:44 (LAR02)    | 06:20         | 08:25 (LAR03) | 06:52         | 07:59 (LAR03) | 06:26         | 07:03    | 07:27 |          |     |
|                     | 20:25 | 40 19:24 (LAR02) | 19:44         | 19:11 (LAR02) | 18:51         | 17:03         | 17:03         | 16:33    | 16:36 |          |     |
| 28                  | 05:50 | 18:43 (LAR02)    | 06:21         | 08:21 (LAR03) | 06:53         | 07:59 (LAR03) | 06:27         | 07:05    | 07:28 |          |     |
|                     | 20:24 | 41 19:24 (LAR02) | 19:42         | 19:08 (LAR02) | 18:49         | 17:02         | 17:02         | 16:32    | 16:37 |          |     |
| 29                  | 05:51 | 18:43 (LAR02)    | 06:22         | 08:19 (LAR03) | 06:54         | 08:00 (LAR03) | 06:28         | 07:06    | 07:28 |          |     |
|                     | 20:23 | 42 19:25 (LAR02) | 19:41         | 19:02 (LAR02) | 18:48         | 17:00         | 17:00         | 16:32    | 16:37 |          |     |
| 30                  | 05:52 | 18:42 (LAR02)    | 06:23         | 08:16 (LAR03) | 06:56         | 08:01 (LAR03) | 06:30         | 07:07    | 07:28 |          |     |
|                     | 20:22 | 44 19:26 (LAR02) | 19:39         | 08:52 (LAR03) | 18:46         | 16:59         | 16:59         | 16:31    | 16:38 |          |     |
| 31                  | 05:53 | 18:42 (LAR02)    | 06:24         | 08:14 (LAR03) |               | 06:31         |               |          | 07:28 |          |     |
|                     | 20:21 | 44 19:26 (LAR02) | 19:38         | 08:54 (LAR03) |               | 16:58         |               |          | 16:39 |          |     |
| Potential sun hours | 462   |                  | 430           |               | 375           |               | 344           |          | 296   |          | 285 |
| Total, worst case   |       | 515              | 1396          |               | 1805          |               | 424           |          |       |          |     |
| Sun reduction       |       | 0,61             | 0,67          |               | 0,58          |               | 0,44          |          |       |          |     |
| Oper. time red.     |       | 0,70             | 0,70          |               | 0,70          |               | 0,70          |          |       |          |     |
| Wind dir. red.      |       | 0,63             | 0,63          |               | 0,63          |               | 0,61          |          |       |          |     |
| Total reduction     |       | 0,27             | 0,29          |               | 0,25          |               | 0,19          |          |       |          |     |
| Total, real         |       | 138              | 412           |               | 460           |               | 79            |          |       |          |     |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



### SHADOW - Calendar

Shadow receptor: R93 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (76)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January                 | February                | March   | April                   | May   | June                    |
|---------------------|-------------------------|-------------------------|---|-------------------------|---|-------------------------|
| 1                   | 07:29<br>16:40<br>16:41 | 07:14<br>17:15<br>17:16 | 16:27 (LAR13)<br>16:44 (LAR13)<br>16:28 (LAR13) | 06:37<br>17:50<br>17:51 | 07:34 (LAR03)<br>17:29 (LAR12)<br>07:32 (LAR03) | 06:45<br>19:25<br>06:44 |
| 2                   | 07:29<br>16:42<br>16:42 | 07:13<br>17:16<br>17:17 | 16:29 (LAR13)<br>16:43 (LAR13)<br>16:29 (LAR13) | 06:34<br>17:52<br>17:52 | 07:30 (LAR03)<br>17:29 (LAR12)<br>07:30 (LAR03) | 06:42<br>19:26<br>06:42 |
| 3                   | 07:29<br>16:42<br>16:42 | 07:12<br>17:19<br>17:19 | 16:29 (LAR13)<br>16:43 (LAR13)<br>16:30 (LAR13) | 06:34<br>17:52<br>06:33 | 07:30 (LAR03)<br>17:29 (LAR12)<br>07:29 (LAR03) | 06:42<br>19:28<br>06:40 |
| 4                   | 07:29<br>16:42<br>16:42 | 07:11<br>17:19<br>17:20 | 16:30 (LAR13)<br>16:41 (LAR13)<br>16:33 (LAR13) | 06:33<br>17:54<br>17:55 | 07:29 (LAR03)<br>17:30 (LAR12)<br>07:27 (LAR03) | 06:40<br>19:29<br>06:39 |
| 5                   | 07:29<br>16:43<br>16:43 | 07:10<br>17:20<br>17:20 | 16:33 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:31<br>17:55<br>06:29 | 07:27 (LAR03)<br>17:29 (LAR12)<br>07:26 (LAR03) | 06:39<br>19:30<br>06:37 |
| 6                   | 07:29<br>16:44<br>16:44 | 07:09<br>17:21<br>17:21 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:29<br>17:55<br>17:56 | 07:26 (LAR03)<br>17:28 (LAR12)<br>17:28 (LAR12) | 06:37<br>19:31<br>19:31 |
| 7                   | 07:29<br>16:45<br>16:45 | 07:08<br>17:23<br>17:23 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:28<br>17:57<br>17:57 | 07:26 (LAR03)<br>17:28 (LAR12)<br>17:28 (LAR12) | 06:35<br>19:32<br>19:32 |
| 8                   | 07:28<br>16:46<br>16:46 | 07:07<br>17:24<br>17:24 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:26<br>17:58<br>17:58 | 07:24 (LAR03)<br>17:27 (LAR12)<br>17:27 (LAR12) | 06:34<br>19:33<br>19:33 |
| 9                   | 07:28<br>16:47<br>16:47 | 07:06<br>17:25<br>17:25 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:24<br>17:59<br>17:59 | 07:23 (LAR03)<br>17:25 (LAR12)<br>17:25 (LAR12) | 06:32<br>19:34<br>19:34 |
| 10                  | 07:28<br>16:48<br>16:48 | 07:04<br>17:26<br>17:26 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:23<br>18:01<br>18:01 | 07:23 (LAR03)<br>17:24 (LAR12)<br>17:24 (LAR12) | 06:30<br>19:35<br>19:35 |
| 11                  | 07:28<br>16:49<br>16:49 | 07:03<br>17:28<br>17:28 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:21<br>18:02<br>18:02 | 07:22 (LAR03)<br>17:21 (LAR12)<br>17:21 (LAR12) | 06:29<br>19:36<br>19:36 |
| 12                  | 07:28<br>16:50<br>16:50 | 07:02<br>17:29<br>17:29 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:19<br>18:03<br>18:03 | 07:22 (LAR03)<br>08:16 (LAR03)<br>08:16 (LAR03) | 06:27<br>19:37<br>19:37 |
| 13                  | 07:27<br>16:51<br>16:51 | 07:01<br>17:30<br>17:30 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:18<br>18:04<br>18:04 | 07:22 (LAR03)<br>08:16 (LAR03)<br>08:16 (LAR03) | 06:25<br>19:39<br>19:39 |
| 14                  | 07:27<br>16:52<br>16:52 | 06:59<br>17:32<br>17:32 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:16<br>18:05<br>18:05 | 07:21 (LAR03)<br>08:16 (LAR03)<br>08:16 (LAR03) | 06:24<br>19:40<br>19:40 |
| 15                  | 07:27<br>16:53<br>16:53 | 06:58<br>17:33<br>17:33 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:14<br>18:06<br>18:06 | 07:21 (LAR03)<br>08:15 (LAR03)<br>08:15 (LAR03) | 06:22<br>19:41<br>19:41 |
| 16                  | 07:26<br>16:54<br>16:54 | 06:57<br>17:34<br>17:34 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:13<br>18:07<br>18:07 | 07:21 (LAR03)<br>08:15 (LAR03)<br>08:15 (LAR03) | 06:21<br>19:42<br>19:42 |
| 17                  | 07:26<br>16:55<br>16:55 | 06:55<br>17:35<br>17:35 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:11<br>18:09<br>18:09 | 07:21 (LAR03)<br>08:14 (LAR03)<br>08:14 (LAR03) | 06:19<br>19:43<br>19:43 |
| 18                  | 07:25<br>16:56<br>16:56 | 06:54<br>17:36<br>17:36 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:09<br>18:10<br>18:10 | 07:21 (LAR03)<br>08:13 (LAR03)<br>08:13 (LAR03) | 06:17<br>19:44<br>19:44 |
| 19                  | 07:25<br>16:57<br>16:57 | 06:52<br>17:37<br>17:37 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:08<br>18:11<br>18:11 | 07:20 (LAR03)<br>08:12 (LAR03)<br>08:12 (LAR03) | 06:16<br>19:45<br>19:45 |
| 20                  | 07:24<br>16:58<br>16:58 | 06:51<br>17:38<br>17:38 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:06<br>18:12<br>18:12 | 07:21 (LAR03)<br>08:11 (LAR03)<br>08:11 (LAR03) | 06:14<br>19:46<br>19:46 |
| 21                  | 07:24<br>16:59<br>16:59 | 06:50<br>17:39<br>17:39 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:04<br>18:13<br>18:13 | 07:21 (LAR03)<br>08:10 (LAR03)<br>08:10 (LAR03) | 06:13<br>19:47<br>19:47 |
| 22                  | 07:23<br>17:00<br>17:00 | 06:49<br>17:40<br>17:40 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:03<br>18:14<br>18:14 | 07:22 (LAR03)<br>08:09 (LAR03)<br>08:09 (LAR03) | 06:11<br>19:48<br>19:48 |
| 23                  | 07:23<br>17:01<br>17:01 | 06:48<br>17:41<br>17:41 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:01<br>18:15<br>18:15 | 07:23 (LAR03)<br>08:08 (LAR03)<br>08:08 (LAR03) | 06:10<br>19:49<br>19:49 |
| 24                  | 07:23<br>17:02<br>17:02 | 06:47<br>17:42<br>17:42 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 06:00<br>18:16<br>18:16 | 07:23 (LAR03)<br>08:07 (LAR03)<br>08:07 (LAR03) | 06:08<br>19:50<br>19:50 |
| 25                  | 07:22<br>17:03<br>17:03 | 06:46<br>17:43<br>17:43 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 05:59<br>18:17<br>18:17 | 07:24 (LAR03)<br>08:06 (LAR03)<br>08:06 (LAR03) | 06:07<br>19:51<br>19:51 |
| 26                  | 07:22<br>17:04<br>17:04 | 06:45<br>17:44<br>17:44 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 05:58<br>18:18<br>18:18 | 07:24 (LAR03)<br>08:05 (LAR03)<br>08:05 (LAR03) | 06:07<br>19:52<br>19:52 |
| 27                  | 07:21<br>17:05<br>17:05 | 06:44<br>17:45<br>17:45 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 05:57<br>18:19<br>18:19 | 07:25 (LAR03)<br>08:04 (LAR03)<br>08:04 (LAR03) | 06:05<br>19:53<br>19:53 |
| 28                  | 07:21<br>17:06<br>17:06 | 06:43<br>17:46<br>17:46 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 05:56<br>18:20<br>18:20 | 07:25 (LAR03)<br>08:03 (LAR03)<br>08:03 (LAR03) | 06:05<br>19:54<br>19:54 |
| 29                  | 07:20<br>17:07<br>17:07 | 06:42<br>17:47<br>17:47 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 05:55<br>18:21<br>18:21 | 07:26 (LAR03)<br>08:02 (LAR03)<br>08:02 (LAR03) | 06:04<br>19:55<br>19:55 |
| 30                  | 07:20<br>17:08<br>17:08 | 06:41<br>17:48<br>17:48 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 05:54<br>18:22<br>18:22 | 07:27 (LAR03)<br>08:01 (LAR03)<br>08:01 (LAR03) | 06:04<br>19:56<br>19:56 |
| 31                  | 07:19<br>17:09<br>17:09 | 06:40<br>17:49<br>17:49 | 16:29 (LAR13)<br>16:38 (LAR13)<br>16:29 (LAR13) | 05:53<br>18:23<br>18:23 | 07:27 (LAR03)<br>08:00 (LAR03)<br>08:00 (LAR03) | 06:04<br>19:57<br>19:57 |
| Potential sun hours | 295                     | 296                     | 369   | 400                     | 451   | 455                     |
| Total, worst case   | 203                     | 233                     | 1603  | 1257                    | 776   | 455                     |
| Sun reduction       | 0,44                    | 0,46                    | 0,44  | 0,48                    | 0,47  | 0,47                    |
| Oper. time red.     | 0,70                    | 0,70                    | 0,70  | 0,70                    | 0,70  | 0,70                    |
| Wind dir. red.      | 0,56                    | 0,60                    | 0,64  | 0,63                    | 0,63  | 0,63                    |
| Total reduction     | 0,17                    | 0,19                    | 0,20  | 0,21                    | 0,20  | 0,20                    |
| Total, real         | 35                      | 45                      | 313   | 264                     | 159   | 204                     |

#### Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |



## SHADOW - Calendar

Shadow receptor: R93 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (76)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | July           | August                         | September                      | October                        | November                       | December                       |                |                |
|---------------------|----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|----------------|----------------|
| 1                   | 05:29<br>20:40 | 05:54<br>20:20                 | 18:25 (LAR02)<br>19:05 (LAR02) | 06:25<br>19:36                 | 18:16 (LAR02)<br>18:44         | 06:57<br>08:01 (LAR03)         | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                   | 05:29<br>20:40 | 05:55<br>20:19                 | 18:24 (LAR02)<br>19:06 (LAR02) | 06:26<br>19:34                 | 18:17 (LAR02)<br>18:42         | 06:58<br>08:01 (LAR03)         | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                   | 05:30<br>20:40 | 05:56<br>20:18                 | 18:23 (LAR02)<br>19:06 (LAR02) | 06:28<br>19:33                 | 18:19 (LAR02)<br>18:41         | 06:59<br>08:01 (LAR03)         | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                   | 05:30<br>20:39 | 05:57<br>20:17                 | 18:22 (LAR02)<br>19:07 (LAR02) | 06:29<br>19:31                 | 18:20 (LAR02)<br>18:39         | 07:00<br>08:01 (LAR03)         | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                   | 05:31<br>20:39 | 05:58<br>20:16                 | 18:21 (LAR02)<br>19:08 (LAR02) | 06:30<br>19:29                 | 18:22 (LAR02)<br>18:37         | 07:01<br>08:01 (LAR03)         | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14                 | 18:20 (LAR02)<br>19:09 (LAR02) | 06:31<br>19:28                 | 18:24 (LAR02)<br>18:36         | 07:02<br>08:01 (LAR03)         | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                   | 05:32<br>20:39 | 06:00<br>20:13                 | 18:19 (LAR02)<br>19:09 (LAR02) | 06:32<br>19:26                 | 18:28 (LAR02)<br>18:34         | 07:03<br>08:02 (LAR03)         | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12                 | 18:18 (LAR02)<br>19:10 (LAR02) | 06:33<br>19:24                 | 18:41 (LAR02)<br>18:32         | 07:04<br>08:03 (LAR03)         | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:11                 | 18:18 (LAR02)<br>19:10 (LAR02) | 06:34<br>19:22                 | 07:05<br>18:31                 | 08:03 (LAR03)<br>08:05 (LAR03) | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09                 | 18:17 (LAR02)<br>19:10 (LAR02) | 06:35<br>19:21                 | 07:06<br>18:29                 | 08:04 (LAR03)<br>08:04 (LAR03) | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08                 | 18:16 (LAR02)<br>19:11 (LAR02) | 06:36<br>19:19                 | 07:08<br>18:27                 | 08:05 (LAR03)<br>08:05 (LAR03) | 06:44<br>16:45 | 07:18<br>16:30 |
| 12                  | 05:36<br>20:37 | 06:05<br>20:07                 | 18:16 (LAR02)<br>19:11 (LAR02) | 06:37<br>19:17                 | 07:09<br>18:26                 | 08:06 (LAR03)<br>08:07 (LAR03) | 06:46<br>16:44 | 07:18<br>16:30 |
| 13                  | 05:37<br>20:36 | 06:06<br>20:05                 | 18:15 (LAR02)<br>19:11 (LAR02) | 06:38<br>19:16                 | 08:24 (LAR03)<br>08:41 (LAR03) | 07:10<br>18:24                 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04                 | 18:15 (LAR02)<br>19:11 (LAR02) | 06:39<br>19:14                 | 07:11<br>08:44 (LAR03)         | 08:20 (LAR03)<br>18:23         | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02                 | 18:14 (LAR02)<br>19:11 (LAR02) | 06:40<br>19:12                 | 08:18 (LAR03)<br>08:46 (LAR03) | 07:12<br>18:21                 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01                 | 18:14 (LAR02)<br>19:11 (LAR02) | 06:41<br>19:10                 | 08:15 (LAR03)<br>08:48 (LAR03) | 07:13<br>18:19                 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59                 | 18:13 (LAR02)<br>19:11 (LAR02) | 06:42<br>19:09                 | 08:13 (LAR03)<br>08:50 (LAR03) | 07:14<br>18:18                 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                  | 05:41<br>20:33 | 06:11<br>19:58                 | 18:13 (LAR02)<br>19:11 (LAR02) | 06:43<br>19:07                 | 08:11 (LAR03)<br>08:51 (LAR03) | 07:15<br>18:16                 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                  | 05:41<br>20:32 | 06:12<br>19:57                 | 18:13 (LAR02)<br>19:11 (LAR02) | 06:44<br>19:05                 | 08:10 (LAR03)<br>08:52 (LAR03) | 07:17<br>18:15                 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55                 | 18:13 (LAR02)<br>19:10 (LAR02) | 06:45<br>19:03                 | 08:08 (LAR03)<br>08:53 (LAR03) | 07:18<br>18:13                 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53                 | 18:13 (LAR02)<br>19:10 (LAR02) | 06:46<br>19:02                 | 08:07 (LAR03)<br>08:54 (LAR03) | 07:19<br>18:12                 | 06:56<br>16:36 | 07:25<br>16:32 |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52                 | 18:12 (LAR02)<br>19:09 (LAR02) | 06:47<br>19:00                 | 08:07 (LAR03)<br>08:55 (LAR03) | 07:20<br>18:10                 | 06:58<br>16:35 | 07:25<br>16:33 |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50                 | 18:12 (LAR02)<br>19:09 (LAR02) | 06:48<br>18:58                 | 08:06 (LAR03)<br>08:56 (LAR03) | 07:21<br>18:09                 | 06:59<br>16:35 | 07:26<br>16:33 |
| 24                  | 05:46<br>20:28 | 18:39 (LAR02)<br>06:17         | 18:12 (LAR02)<br>19:08 (LAR02) | 06:49<br>18:56                 | 08:05 (LAR03)<br>08:56 (LAR03) | 07:22<br>18:07                 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                  | 05:47<br>20:27 | 18:35 (LAR02)<br>18:54 (LAR02) | 06:18<br>19:47                 | 18:13 (LAR02)<br>19:08 (LAR02) | 06:50<br>18:55                 | 08:04 (LAR03)<br>08:56 (LAR03) | 06:24<br>17:06 | 07:27<br>16:35 |
| 26                  | 05:48<br>20:26 | 18:33 (LAR02)<br>18:56 (LAR02) | 06:19<br>19:46                 | 18:13 (LAR02)<br>19:07 (LAR02) | 06:51<br>18:53                 | 08:04 (LAR03)<br>08:56 (LAR03) | 06:25<br>17:04 | 07:27<br>16:35 |
| 27                  | 05:49<br>20:25 | 18:31 (LAR02)<br>18:58 (LAR02) | 06:20<br>19:44                 | 18:13 (LAR02)<br>19:06 (LAR02) | 06:52<br>18:51                 | 08:03 (LAR03)<br>08:56 (LAR03) | 06:26<br>17:03 | 07:27<br>16:36 |
| 28                  | 05:50<br>20:24 | 18:30 (LAR02)<br>19:00 (LAR02) | 06:21<br>19:42                 | 18:13 (LAR02)<br>19:05 (LAR02) | 06:53<br>18:49                 | 08:02 (LAR03)<br>08:56 (LAR03) | 06:27<br>17:02 | 07:28<br>16:37 |
| 29                  | 05:51<br>20:23 | 18:28 (LAR02)<br>19:01 (LAR02) | 06:22<br>19:41                 | 18:14 (LAR02)<br>19:04 (LAR02) | 06:54<br>18:48                 | 08:02 (LAR03)<br>08:56 (LAR03) | 06:28<br>17:00 | 07:28<br>16:37 |
| 30                  | 05:52<br>20:22 | 18:27 (LAR02)<br>19:02 (LAR02) | 06:23<br>19:39                 | 18:14 (LAR02)<br>19:02 (LAR02) | 06:56<br>18:46                 | 08:01 (LAR03)<br>08:56 (LAR03) | 06:30<br>16:59 | 07:28<br>16:38 |
| 31                  | 05:53<br>20:21 | 18:26 (LAR02)<br>19:04 (LAR02) | 06:24<br>19:38                 | 18:15 (LAR02)<br>19:01 (LAR02) | 06:56<br>18:46                 | 08:01 (LAR03)<br>08:56 (LAR03) | 06:31<br>16:58 | 07:28<br>16:39 |
| Potential sun hours | 462            | 430                            | 375                            | 344                            | 296                            | 272                            | 285            |                |
| Total, worst case   | 218            | 1625                           | 1000                           | 1018                           | 272                            | 0,41                           |                |                |
| Sun reduction       | 0,61           | 0,67                           | 0,58                           | 0,44                           | 0,70                           | 0,56                           |                |                |
| Oper. time red.     | 0,70           | 0,70                           | 0,70                           | 0,70                           | 0,16                           | 0,43                           |                |                |
| Wind dir. red.      | 0,63           | 0,63                           | 0,64                           | 0,62                           | 0,16                           | 0,43                           |                |                |
| Total reduction     | 0,27           | 0,29                           | 0,26                           | 0,19                           | 0,16                           | 0,43                           |                |                |
| Total, real         | 58             | 475                            | 260                            | 193                            | 43                             |                                |                |                |

Table layout: For each day in each month the following matrix apply

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

**Shadow receptor:** R98 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (77)

### Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                     | January        | February       | March         | April          | May            | June           |
|---------------------|----------------|----------------|---------------|----------------|----------------|----------------|
| 1                   | 07:29<br>16:40 | 07:14<br>17:15 | 16:03 (LAR02) | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 |
| 2                   | 07:29<br>16:41 | 07:13<br>17:16 | 16:03 (LAR02) | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 |
| 3                   | 07:29<br>16:42 | 07:12<br>17:17 | 16:04 (LAR02) | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 |
| 4                   | 07:29<br>16:42 | 07:11<br>17:19 | 16:04 (LAR02) | 06:33<br>17:54 | 06:40<br>19:29 | 05:54<br>20:02 |
| 5                   | 07:29<br>16:43 | 07:10<br>17:20 | 16:05 (LAR02) | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 |
| 6                   | 07:29<br>16:44 | 07:09<br>17:21 | 16:07 (LAR02) | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 |
| 7                   | 07:29<br>16:45 | 07:08<br>17:23 | 16:08 (LAR02) | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 |
| 8                   | 07:28<br>16:46 | 07:07<br>17:24 | 16:10 (LAR02) | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:06 |
| 9                   | 07:28<br>16:47 | 07:06<br>17:25 | 16:13 (LAR02) | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 |
| 10                  | 07:28<br>16:48 | 07:04<br>17:26 | 16:16 (LAR02) | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 |
| 11                  | 07:28<br>16:49 | 07:03<br>17:28 | 16:22 (LAR02) | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 |
| 12                  | 07:28<br>16:51 | 07:02<br>17:29 | 16:07 (LAR02) | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 |
| 13                  | 07:27<br>16:52 | 07:01<br>17:30 | 16:05 (LAR02) | 06:18<br>18:04 | 06:25<br>19:39 | 05:44<br>20:11 |
| 14                  | 07:27<br>16:53 | 06:59<br>17:31 | 16:20 (LAR02) | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 |
| 15                  | 07:27<br>16:54 | 06:58<br>17:33 | 16:03 (LAR02) | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 |
| 16                  | 07:26<br>16:55 | 06:57<br>17:34 | 16:23 (LAR02) | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 |
| 17                  | 07:26<br>16:56 | 06:55<br>17:35 | 16:03 (LAR02) | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 |
| 18                  | 07:25<br>16:57 | 06:54<br>17:37 | 16:02 (LAR02) | 06:10<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 |
| 19                  | 07:25<br>16:59 | 06:52<br>17:38 | 16:02 (LAR02) | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 |
| 20                  | 07:24<br>17:00 | 06:51<br>17:39 | 16:28 (LAR02) | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 |
| 21                  | 07:23<br>17:01 | 06:50<br>17:40 | 16:01 (LAR02) | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 |
| 22                  | 07:23<br>17:02 | 06:48<br>17:41 | 16:29 (LAR02) | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 |
| 23                  | 07:22<br>17:03 | 06:47<br>17:43 | 16:01 (LAR02) | 06:01<br>18:15 | 06:10<br>19:50 | 05:34<br>20:21 |
| 24                  | 07:21<br>17:05 | 06:45<br>17:44 | 16:31 (LAR02) | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 |
| 25                  | 07:21<br>17:06 | 06:44<br>17:45 | 16:01 (LAR02) | 05:57<br>18:18 | 06:07<br>19:52 | 05:33<br>20:23 |
| 26                  | 07:20<br>17:07 | 06:42<br>17:46 | 16:00 (LAR02) | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 |
| 27                  | 07:19<br>17:08 | 06:41<br>17:48 | 16:33 (LAR02) | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:25 |
| 28                  | 07:18<br>17:10 | 06:39<br>17:49 | 16:01 (LAR02) | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 |
| 29                  | 07:17<br>17:11 | 06:38<br>17:50 | 16:34 (LAR02) | 05:50<br>18:22 | 06:01<br>19:56 | 05:30<br>20:26 |
| 30                  | 07:16<br>17:12 | 06:37<br>17:51 | 16:02 (LAR02) | 05:49<br>18:23 | 06:00<br>19:57 | 05:30<br>20:27 |
| 31                  | 07:15<br>17:14 | 06:36<br>17:52 | 16:34 (LAR02) | 05:47<br>18:24 | 05:29<br>19:58 | 05:29<br>20:28 |
| Potential sun hours | 295            | 296            | 369           | 400            | 451            | 455            |
| Total, worst case   | 540            | 228            |               |                |                |                |
| Sun reduction       | 0,44           | 0,46           |               |                |                |                |
| Oper. time red.     | 0,70           | 0,70           |               |                |                |                |
| Wind dir. red.      | 0,56           | 0,56           |               |                |                |                |
| Total reduction     | 0,17           | 0,18           |               |                |                |                |
| Total, real         | 94             | 41             |               |                |                |                |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar

Shadow receptor: R98 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (77)

### Assumptions for shadow calculations

Sunshine probability S' (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

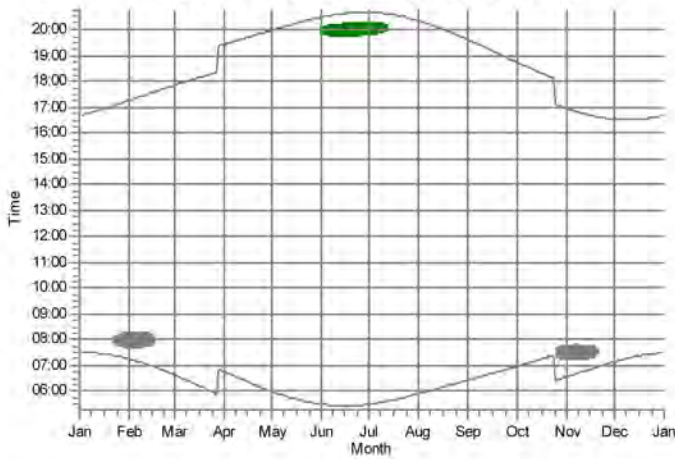
|                     | July           | August         | September      | October        | November       | December |  |
|---------------------|----------------|----------------|----------------|----------------|----------------|----------|--|
| 1                   | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 8        | 15:45 (LAR02)   07:08<br>15:53 (LAR02)   16:31 |
| 2                   | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 15       | 15:41 (LAR02)   07:09<br>15:56 (LAR02)   16:31 |
| 3                   | 05:30<br>20:40 | 05:55<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 18       | 15:40 (LAR02)   07:10<br>15:58 (LAR02)   16:30 |
| 4                   | 05:30<br>20:39 | 05:57<br>20:17 | 06:29<br>19:31 | 07:00<br>18:39 | 06:36<br>16:53 | 22       | 15:38 (LAR02)   07:11<br>16:00 (LAR02)   16:30 |
| 5                   | 05:31<br>20:39 | 05:58<br>20:16 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 25       | 15:36 (LAR02)   07:12<br>16:01 (LAR02)   16:30 |
| 6                   | 05:32<br>20:39 | 05:59<br>20:14 | 06:31<br>19:28 | 07:02<br>18:36 | 06:38<br>16:50 | 26       | 15:36 (LAR02)   07:13<br>16:02 (LAR02)   16:30 |
| 7                   | 05:32<br>20:39 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 28       | 15:35 (LAR02)   07:14<br>16:03 (LAR02)   16:30 |
| 8                   | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 29       | 15:34 (LAR02)   07:15<br>16:03 (LAR02)   16:30 |
| 9                   | 05:34<br>20:38 | 06:02<br>20:11 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 30       | 15:33 (LAR02)   07:16<br>16:03 (LAR02)   16:30 |
| 10                  | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 31       | 15:34 (LAR02)   07:17<br>16:05 (LAR02)   16:30 |
| 11                  | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:08<br>18:27 | 06:44<br>16:45 | 32       | 15:33 (LAR02)   07:18<br>16:05 (LAR02)   16:30 |
| 12                  | 05:36<br>20:37 | 06:05<br>20:07 | 06:37<br>19:17 | 07:09<br>18:26 | 06:46<br>16:44 | 32       | 15:33 (LAR02)   07:18<br>16:05 (LAR02)   16:30 |
| 13                  | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 32       | 15:34 (LAR02)   07:19<br>16:06 (LAR02)   16:30 |
| 14                  | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 32       | 15:33 (LAR02)   07:20<br>16:05 (LAR02)   16:30 |
| 15                  | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 32       | 15:33 (LAR02)   07:21<br>16:05 (LAR02)   16:30 |
| 16                  | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 32       | 15:34 (LAR02)   07:21<br>16:06 (LAR02)   16:31 |
| 17                  | 05:40<br>20:34 | 06:10<br>19:59 | 06:42<br>19:09 | 07:14<br>18:18 | 06:52<br>16:39 | 32       | 15:34 (LAR02)   07:22<br>16:06 (LAR02)   16:31 |
| 18                  | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 30       | 15:35 (LAR02)   07:23<br>16:05 (LAR02)   16:31 |
| 19                  | 05:41<br>20:32 | 06:12<br>19:57 | 06:44<br>19:05 | 07:17<br>18:15 | 06:54<br>16:38 | 30       | 15:36 (LAR02)   07:23<br>16:06 (LAR02)   16:32 |
| 20                  | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 30       | 15:36 (LAR02)   07:24<br>16:06 (LAR02)   16:32 |
| 21                  | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:02 | 07:19<br>18:12 | 06:56<br>16:36 | 28       | 15:37 (LAR02)   07:25<br>16:05 (LAR02)   16:32 |
| 22                  | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 28       | 15:37 (LAR02)   07:25<br>16:05 (LAR02)   16:33 |
| 23                  | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 26       | 15:39 (LAR02)   07:26<br>16:05 (LAR02)   16:33 |
| 24                  | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 25       | 15:39 (LAR02)   07:26<br>16:04 (LAR02)   16:34 |
| 25                  | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 06:24<br>17:06 | 07:01<br>16:34 | 24       | 15:40 (LAR02)   07:27<br>16:04 (LAR02)   16:35 |
| 26                  | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 06:25<br>17:04 | 07:02<br>16:33 | 22       | 15:41 (LAR02)   07:27<br>16:03 (LAR02)   16:35 |
| 27                  | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 20       | 15:42 (LAR02)   07:27<br>16:02 (LAR02)   16:36 |
| 28                  | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:05<br>16:32 | 18       | 15:44 (LAR02)   07:28<br>16:02 (LAR02)   16:36 |
| 29                  | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:06<br>16:32 | 15       | 15:46 (LAR02)   07:28<br>16:01 (LAR02)   16:37 |
| 30                  | 05:52<br>20:22 | 06:23<br>19:39 | 06:56<br>18:46 | 06:30<br>16:59 | 07:07<br>16:31 | 12       | 15:48 (LAR02)   07:28<br>16:00 (LAR02)   16:38 |
| 31                  | 05:53<br>20:21 | 06:24<br>19:38 |                | 06:31<br>16:58 |                |          | 07:28<br>16:39                                 |
| Potential sun hours | 462            | 430            | 375            | 344            | 296            |          | 285  |
| Total, worst case   |                |                |                |                | 764            |          | 8  |
| Sun reduction       |                |                |                |                | 0,41           |          | 0,36   |
| Oper. time red.     |                |                |                |                | 0,70           |          | 0,70   |
| Wind dir. red.      |                |                |                |                | 0,56           |          | 0,56   |
| Total reduction     |                |                |                |                | 0,16           |          | 0,14   |
| Total, real         |                |                |                |                | 121            |          | 1  |

Table layout: For each day in each month the following matrix apply

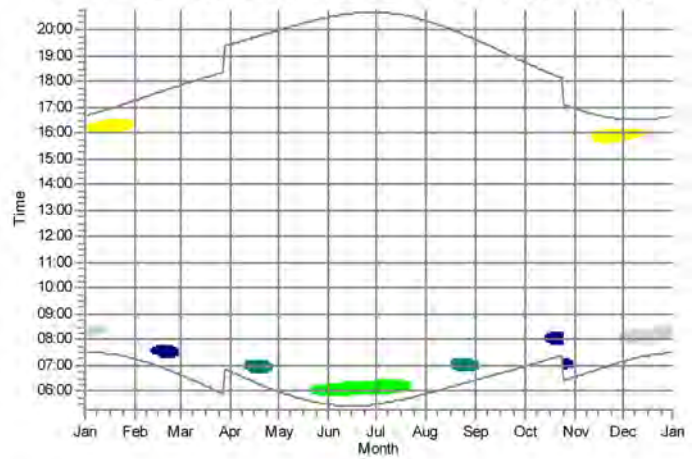
|              |                  |                      |                                 |                                  |
|--------------|------------------|----------------------|---------------------------------|----------------------------------|
| Day in month | Sun rise (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker | (WTG causing flicker first time) |
|              | Sun set (hh:mm)  |                      | Last time (hh:mm) with flicker  | (WTG causing flicker last time)  |

## SHADOW - Calendar, graphical

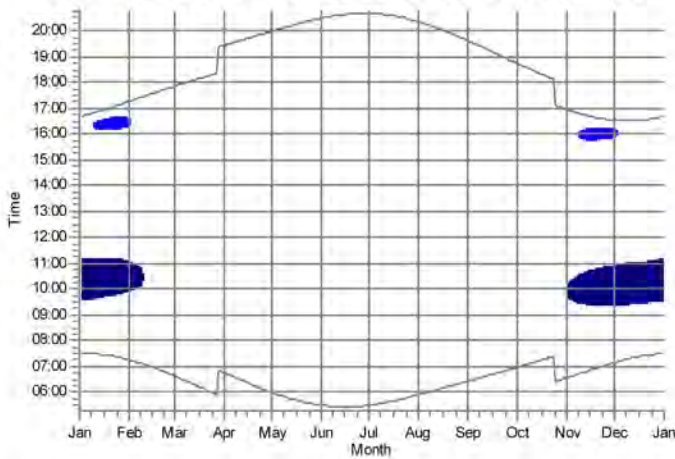
R10: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)



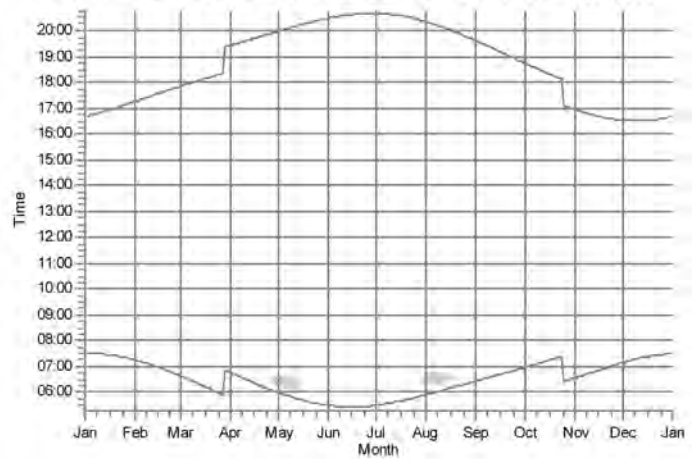
R100: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (78)



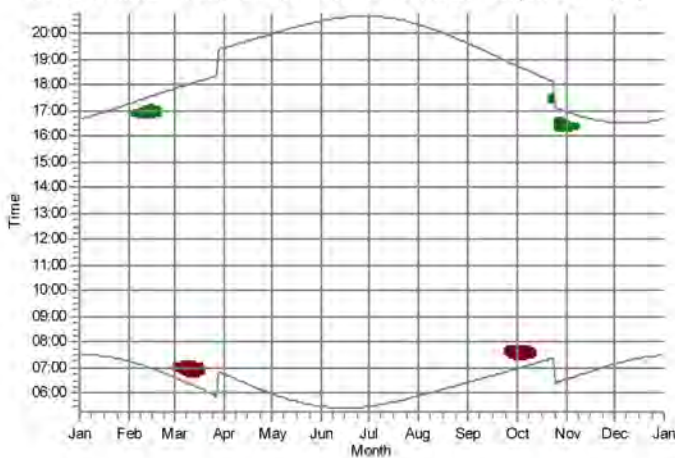
R101: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (79)



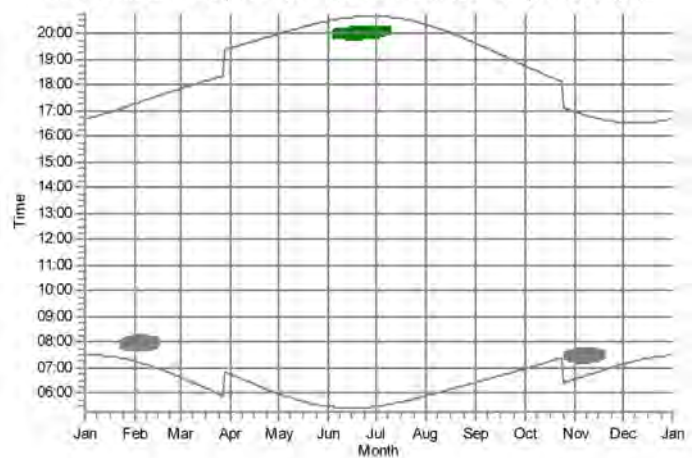
R107: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (80)



R109: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (81)



R11: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (6)



WTG:

LAR01: Siemens Gamesa SG 6.0-170-6200 170.0 I01 hub: 165.0 m (TOT: 250.0 m) (1)  
 LAR02: Siemens Gamesa SG 6.0-170-6200 170.0 I01 hub: 165.0 m (TOT: 250.0 m) (2)  
 LAR03: Siemens Gamesa SG 6.0-170-6200 170.0 I01 hub: 165.0 m (TOT: 250.0 m) (3)

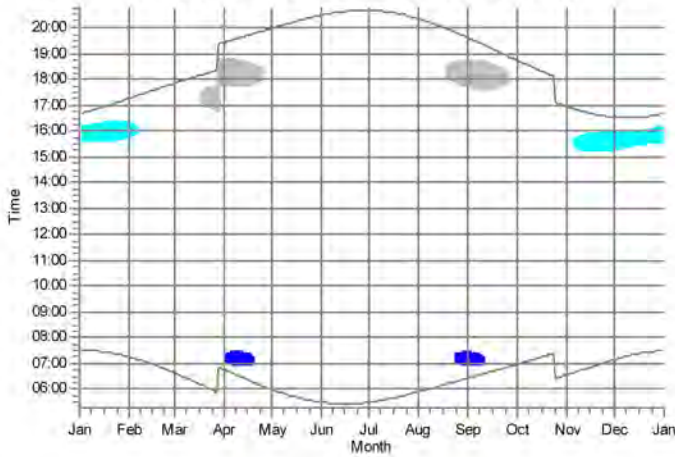
LAR04: Siemens Gamesa SG 6.0-170-6200 170.0 I01 hub: 165.0 m (TOT: 250.0 m) (4)  
 LAR06: Siemens Gamesa SG 6.0-170-6200 170.0 I01 hub: 165.0 m (TOT: 250.0 m) (6)  
 LAR07: Siemens Gamesa SG 6.0-170-6200 170.0 I01 hub: 165.0 m (TOT: 250.0 m) (7)

LAR08: Siemens Gamesa SG 6.0-170-6200 170.0 I01 hub: 165.0 m (TOT: 250.0 m) (8)  
 LAR09: Siemens Gamesa SG 6.0-170-6200 170.0 I01 hub: 165.0 m (TOT: 250.0 m) (9)  
 LAR14: Siemens Gamesa SG 6.0-170-6200 170.0 I01 hub: 165.0 m (TOT: 250.0 m) (14)

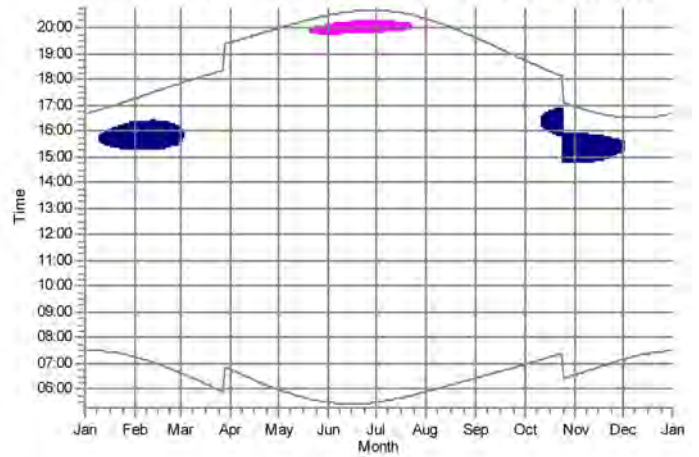


## SHADOW - Calendar, graphical

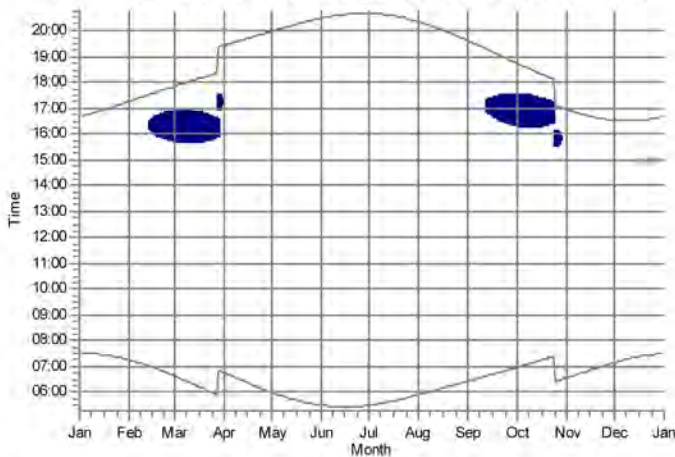
R110: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (82)



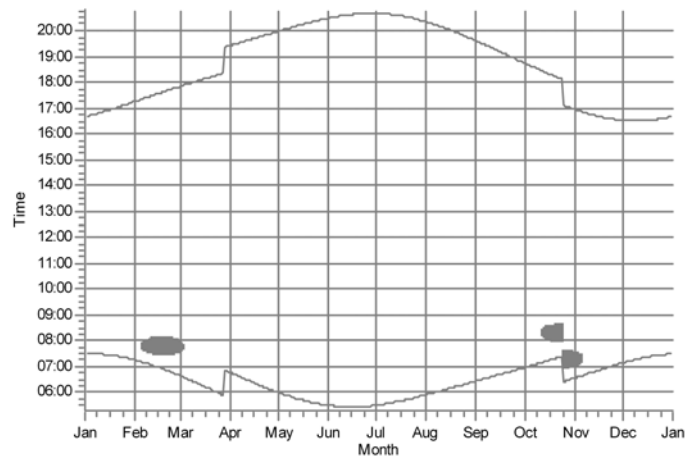
R112: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (83)



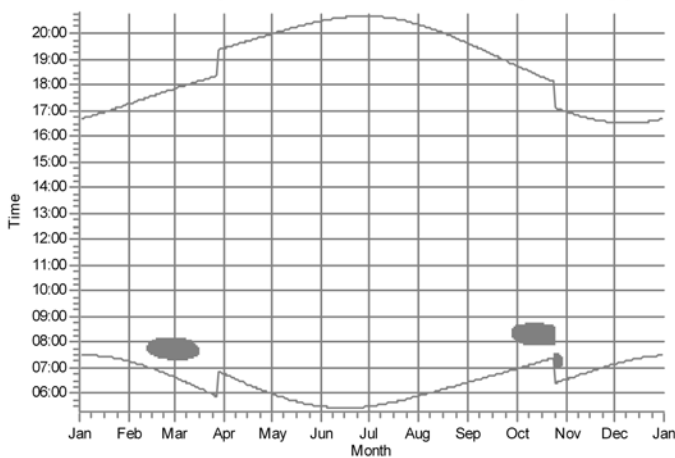
R113: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (84)



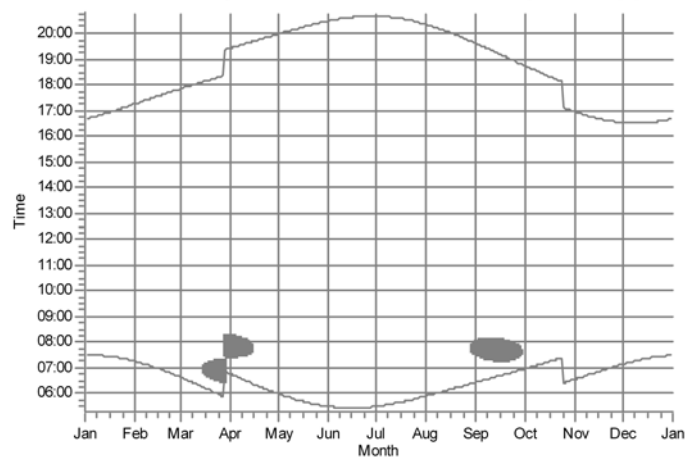
R12: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (7)



R13: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)



R14: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)



WTG1

■ LAR03: Siemens Gamesa SG 6.0-170-6200 170.0 IOR hub: 165.0 m (TOT: 250.0 m) (3)  
 ■ LAR04: Siemens Gamesa SG 6.0-170-6200 170.0 IOR hub: 165.0 m (TOT: 250.0 m) (4)

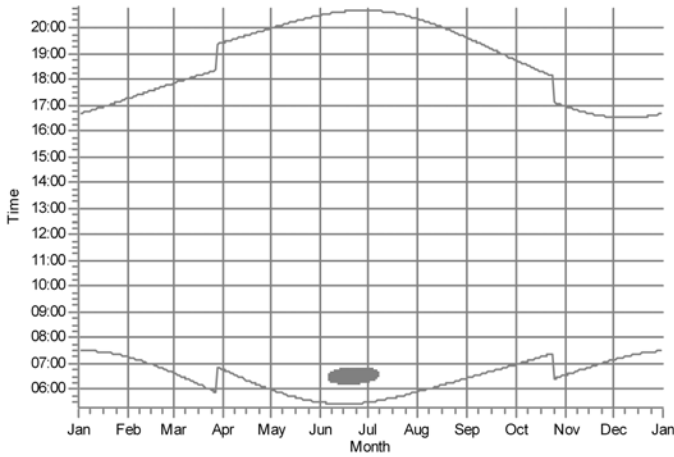
■ LAR05: Siemens Gamesa SG 6.0-170-6200 170.0 IOR hub: 165.0 m (TOT: 250.0 m) (5)  
 ■ LAR07: Siemens Gamesa SG 6.0-170-6200 170.0 IOR hub: 165.0 m (TOT: 250.0 m) (7)

■ LAR12: Siemens Gamesa SG 6.0-170-6200 170.0 IOR hub: 165.0 m (TOT: 250.0 m) (12)  
 ■ LAR13: Siemens Gamesa SG 6.0-170-6200 170.0 IOR hub: 165.0 m (TOT: 250.0 m) (13)

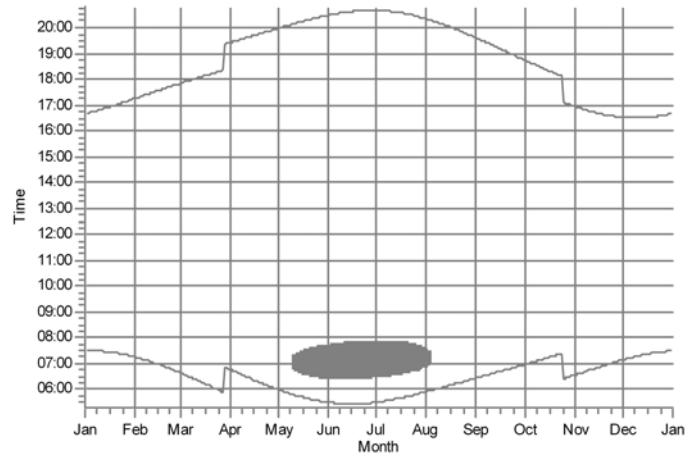
■ LAR14: Siemens Gamesa SG 6.0-170-6200 170.0 IOR hub: 165.0 m (TOT: 250.0 m) (14)

### SHADOW - Calendar, graphical

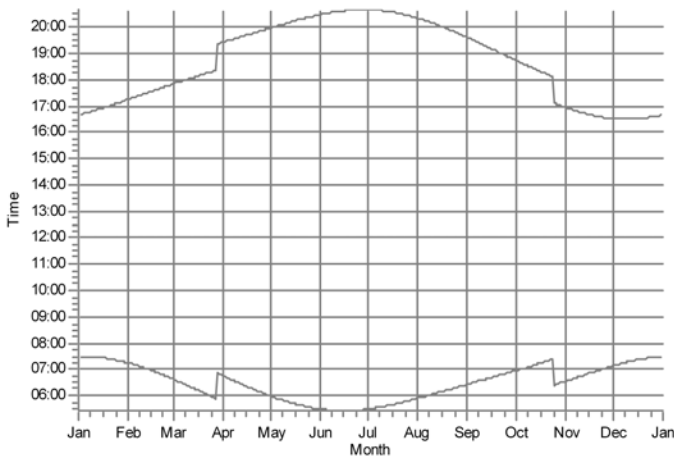
R15: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)



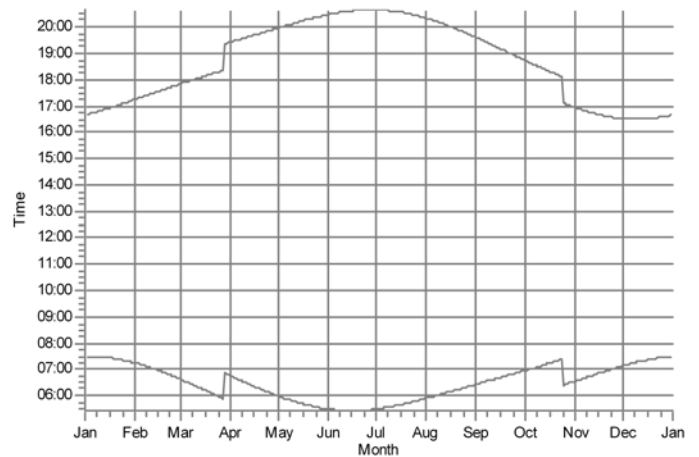
R16: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (11)



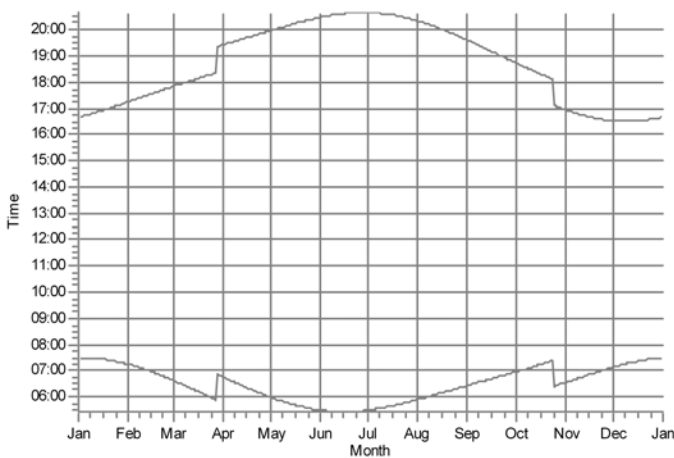
R17: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (12)



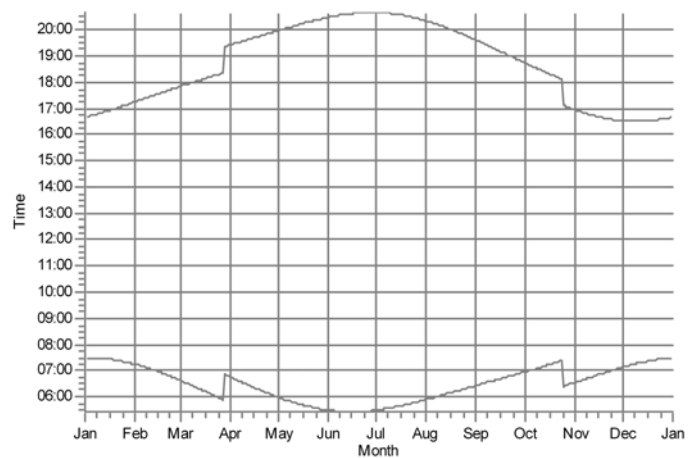
R18: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (13)



R19: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)



R20: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)



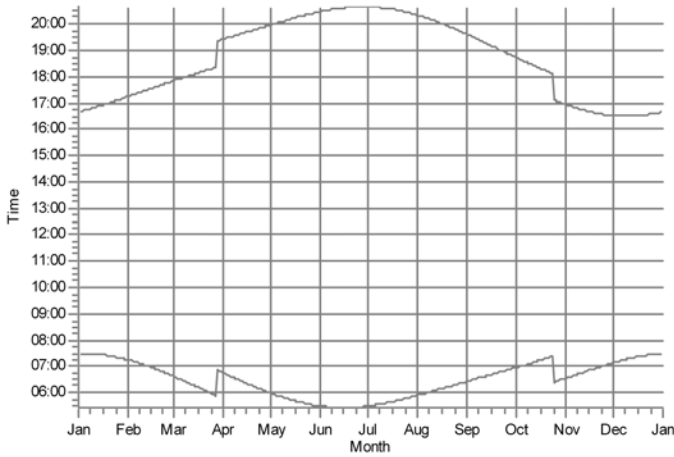
WTG1

LAR04: Siemens Gamesa SG 6.0-170 6200 170.0 101 hub: 165.0 m (TOT: 250.0 m) (4)

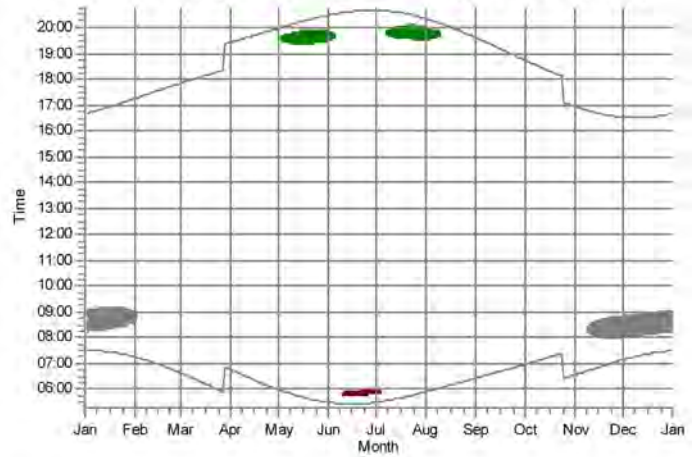


### SHADOW - Calendar, graphical

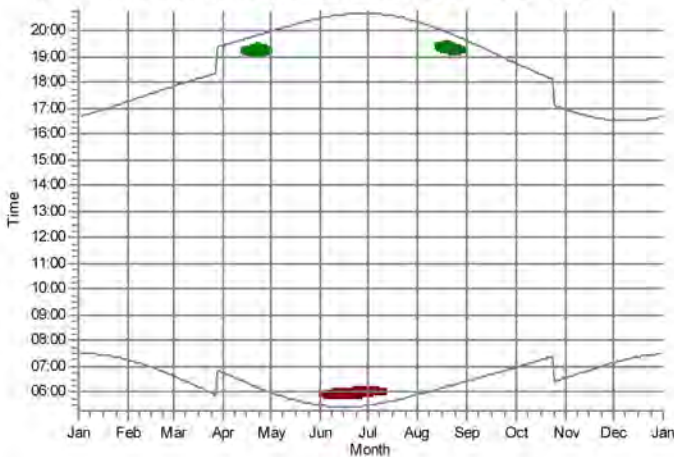
R21: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (16)



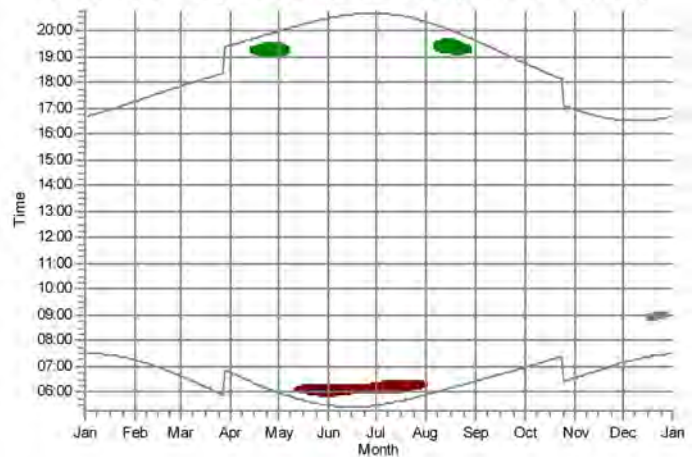
R22: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (17)



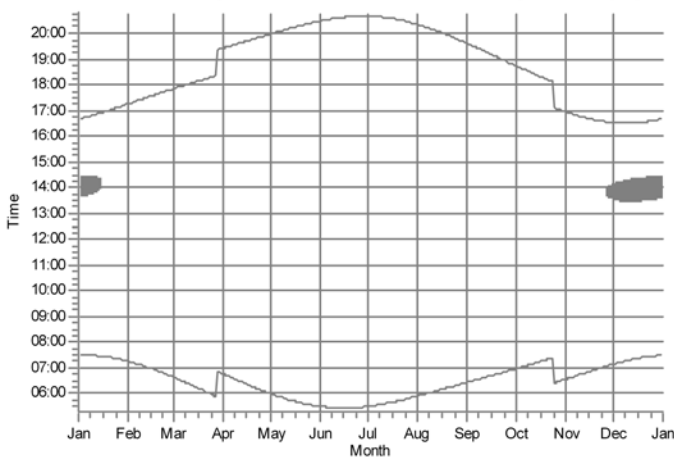
R25: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)



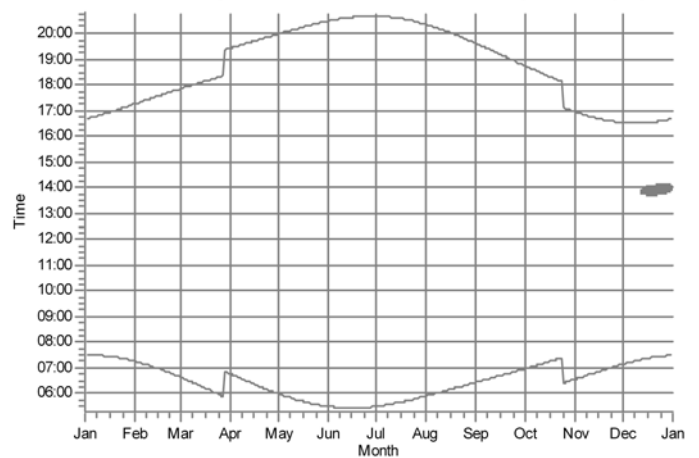
R26: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)



R26b: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (20)



R27: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)



WTG:

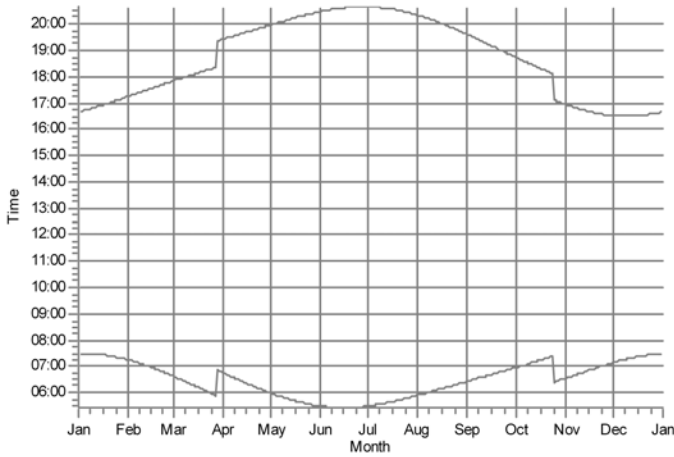
LAR01: Siemens Gamesa SG 6.0-170 6200 170.0 IOI hub: 165,0 m (TOT: 250,0 m) (1)

LAR04: Siemens Gamesa SG 6.0-170 6200 170.0 IOI hub: 165,0 m (TOT: 250,0 m) (4)

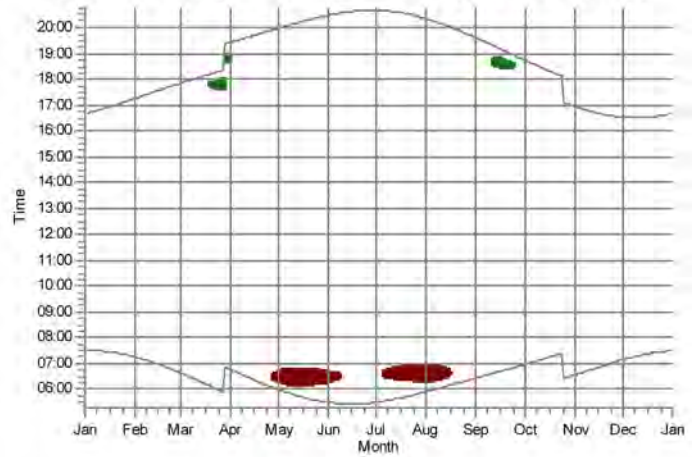
LAR08: Siemens Gamesa SG 6.0-170 6200 170.0 IOI hub: 165,0 m (TOT: 250,0 m) (8)

### SHADOW - Calendar, graphical

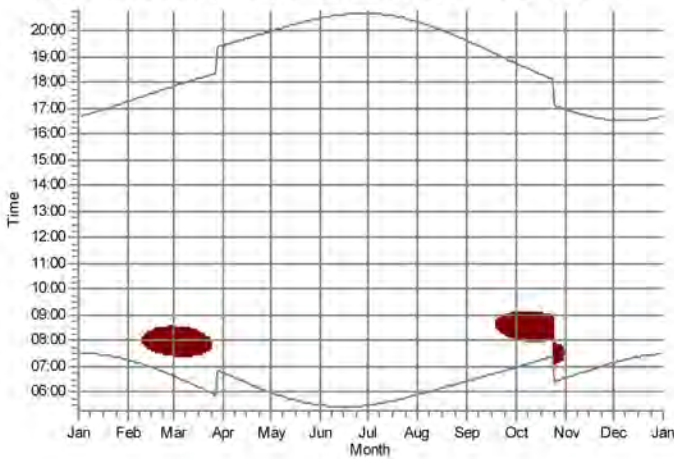
R29: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (22)



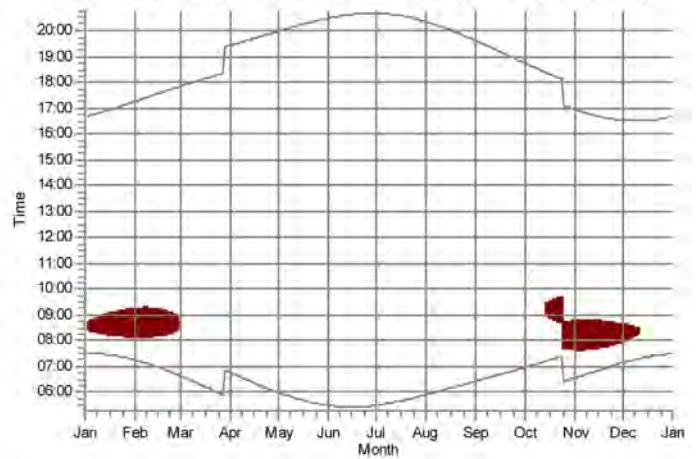
R31: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)



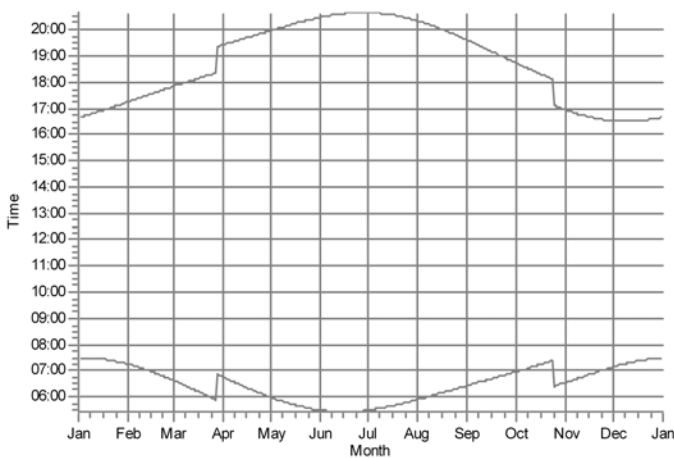
R33: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)



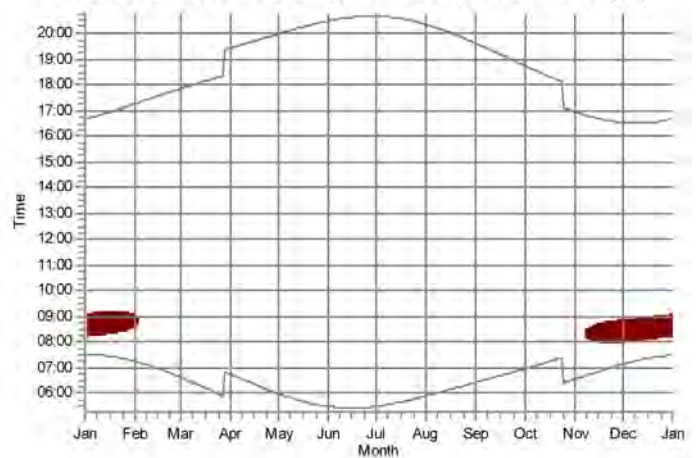
R34: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)



R35: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (26)



R36: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (27)

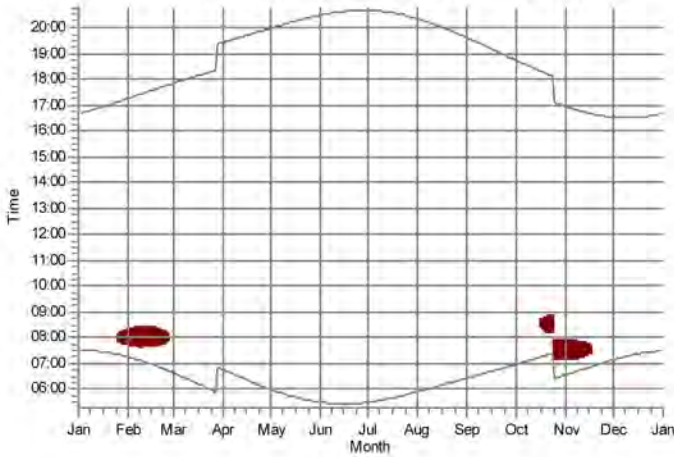


WTG:

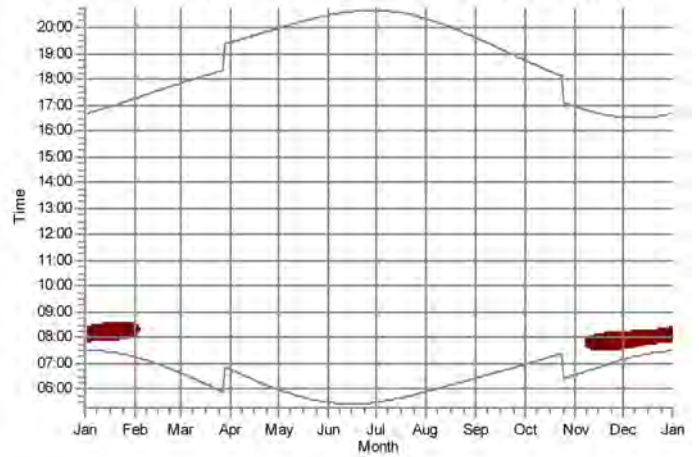
■ LAR01: Siemens Gamesa SG 6.0-170 6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (1)
 ■ LAR08: Siemens Gamesa SG 6.0-170 6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (8)

### SHADOW - Calendar, graphical

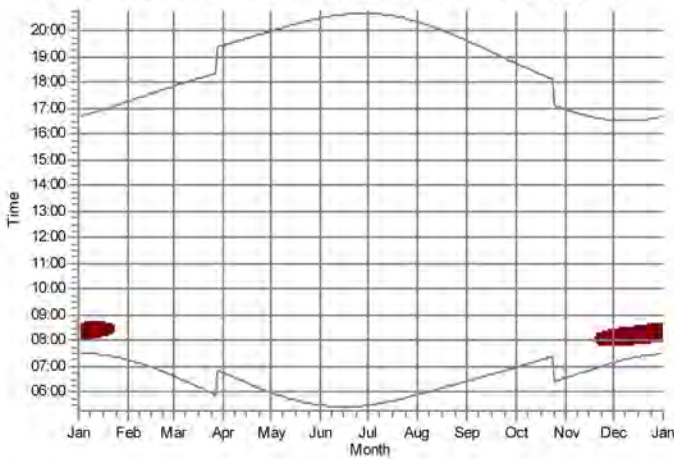
R37: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (28)



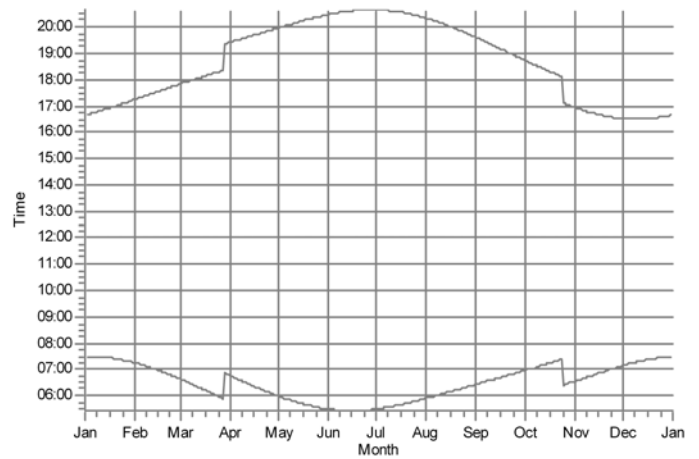
R37b: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (29)



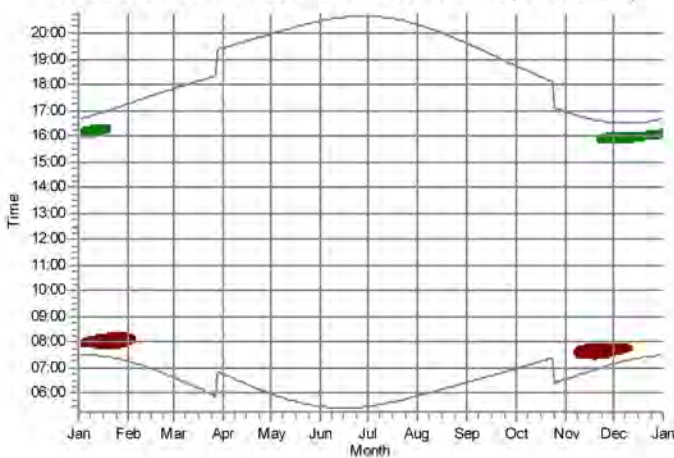
R38: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (30)



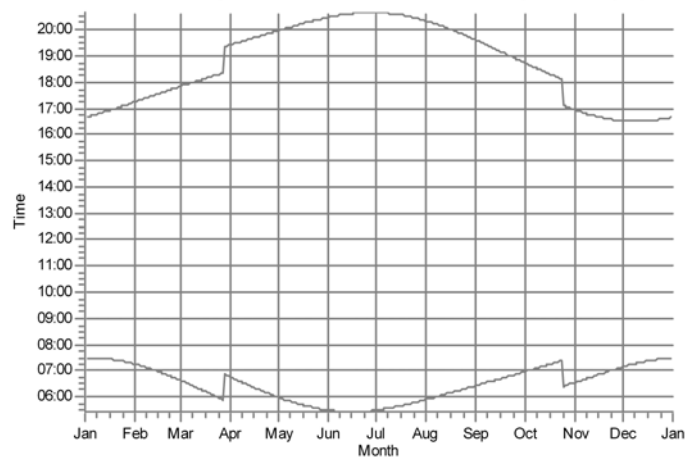
R4: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (1)



R40: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (31)



R42: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (32)



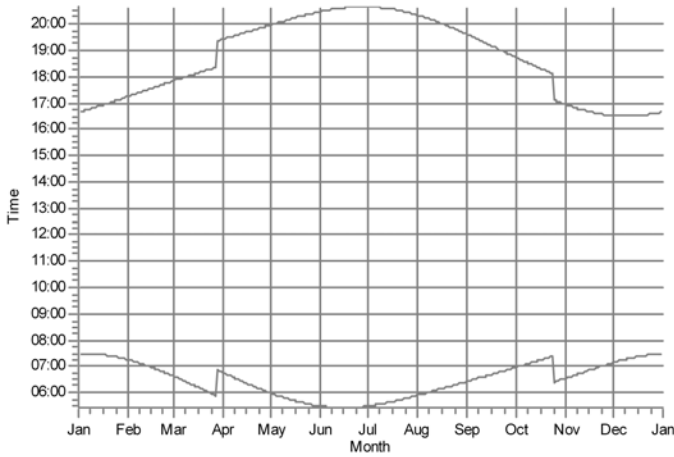
WTG:

■ LAR01: Siemens Gamesa SG 6.0-170 6200 170.0 I0I hub: 165,0 m (TOT: 250,0 m) (1)
 ■ LAR08: Siemens Gamesa SG 6.0-170 6200 170.0 I0I hub: 165,0 m (TOT: 250,0 m) (8)

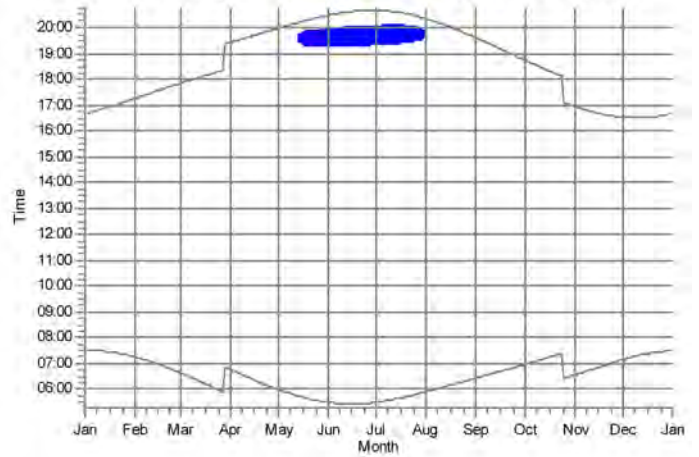


### SHADOW - Calendar, graphical

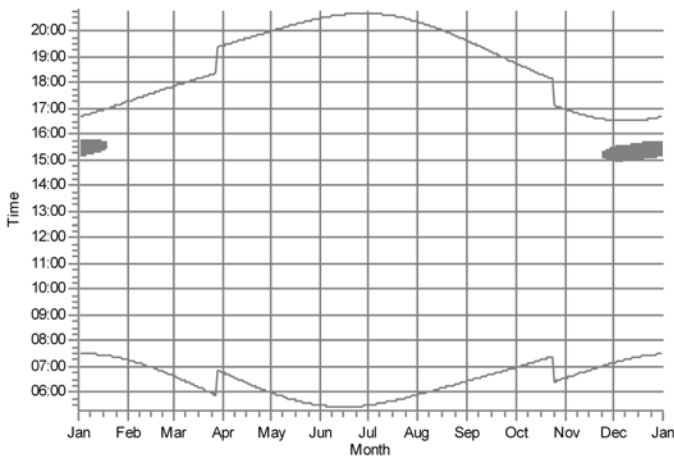
R43: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (33)



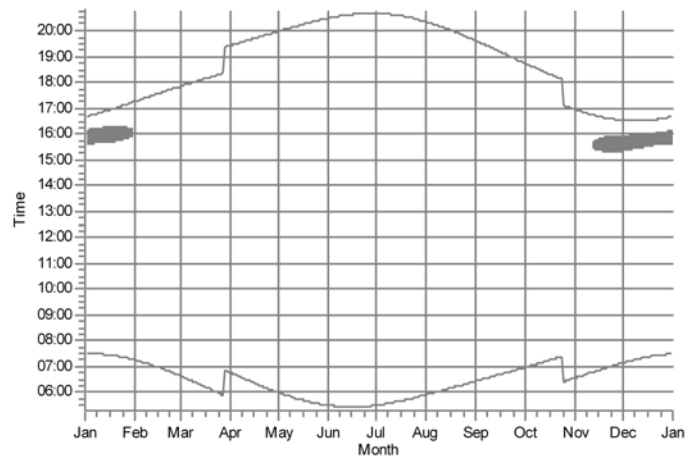
R44: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (34)



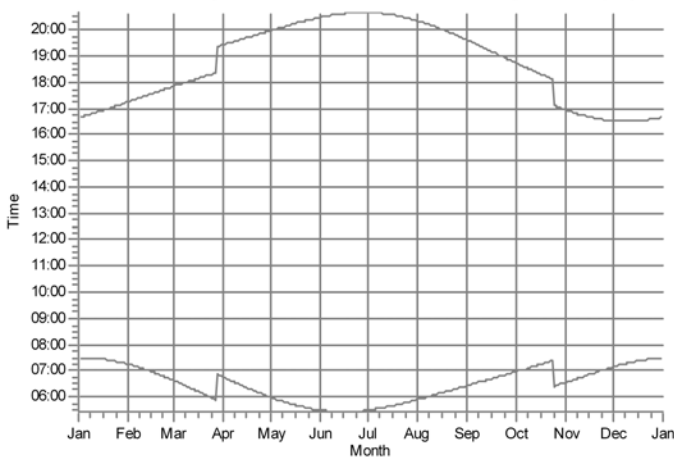
R45: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (35)



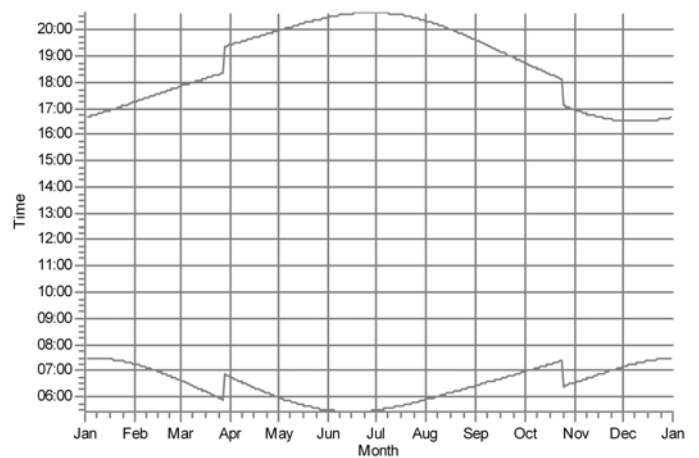
R46: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (36)



R47: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (37)



R48: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (38)

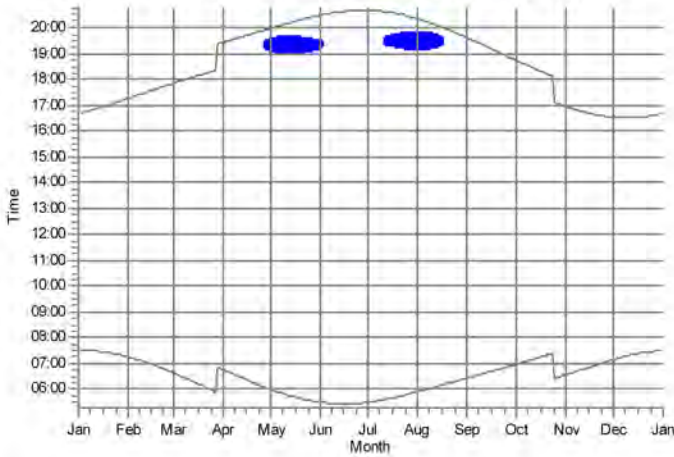


WTG1

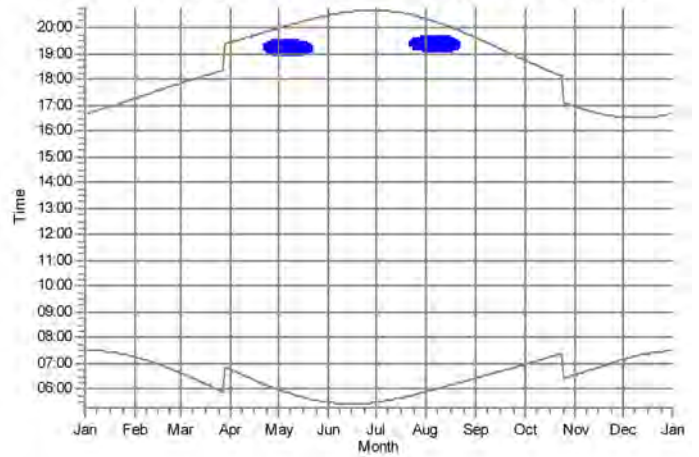
LAR03: Siemens Gamesa SG 6.0-170 6200 170.0 I01 hub: 165.0 m (TOT: 250.0 m) (3) LAR04: Siemens Gamesa SG 6.0-170 6200 170.0 I01 hub: 165.0 m (TOT: 250.0 m) (4)

### SHADOW - Calendar, graphical

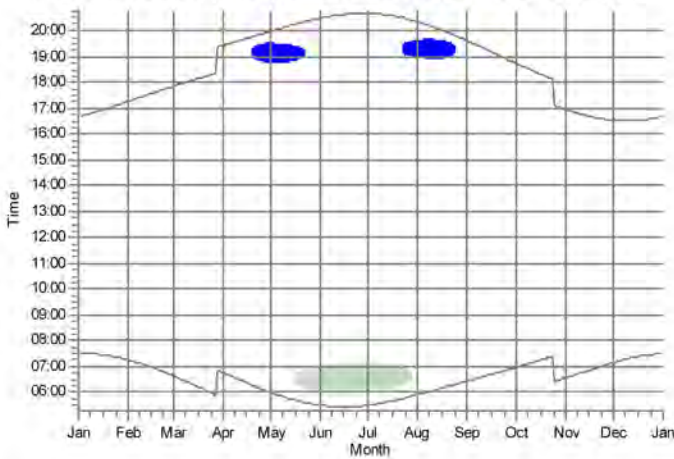
R50: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (39)



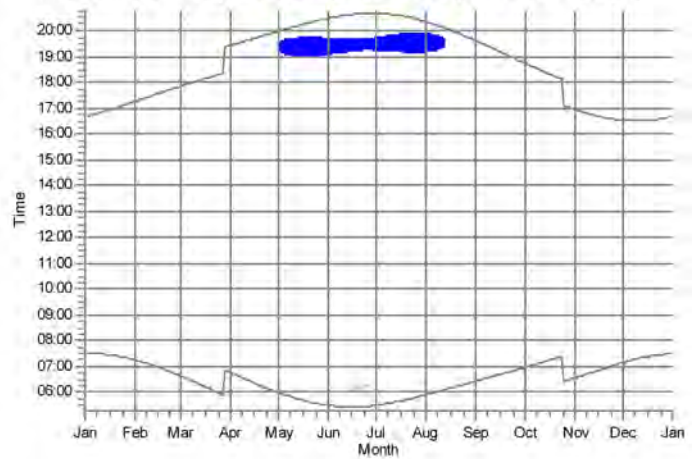
R51: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (40)



R53: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (41)



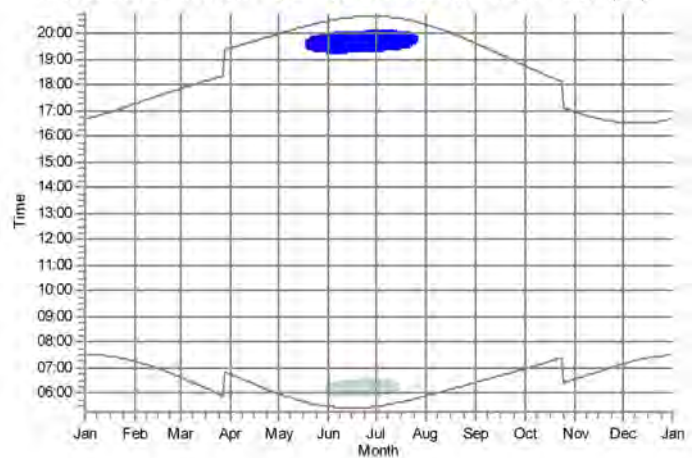
R54: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (42)



R55: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (43)



R59: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (44)

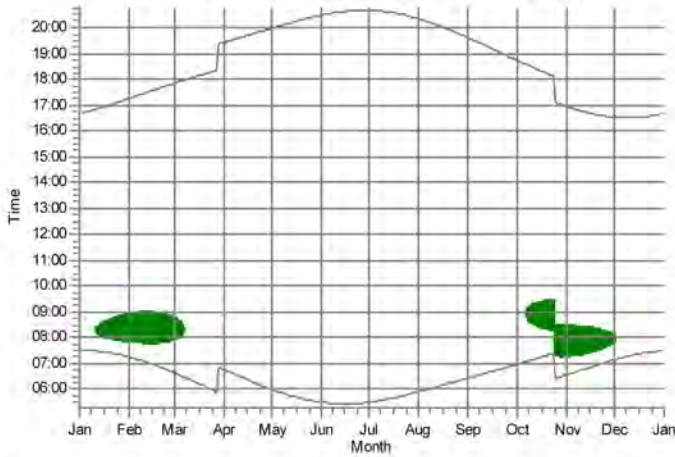


WTG1

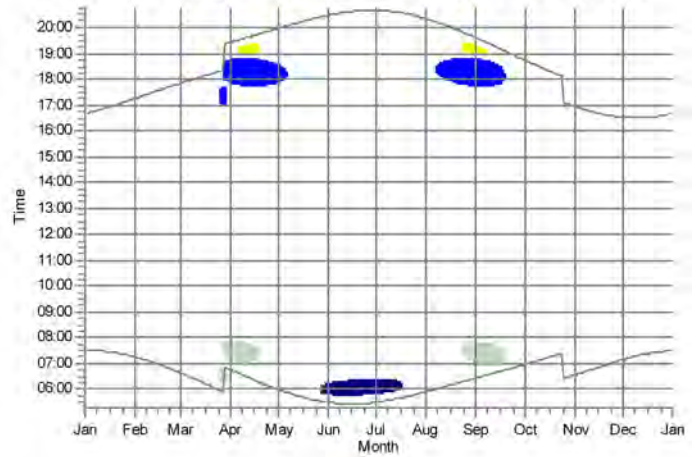
■ LAR03: Siemens Gamesa SG 6.0-170 6200 170.0 I0I hub: 165.0 m (TOT: 250.0 m) (3) ■ LAR14: Siemens Gamesa SG 6.0-170 6200 170.0 I0I hub: 165.0 m (TOT: 250.0 m) (14)

## SHADOW - Calendar, graphical

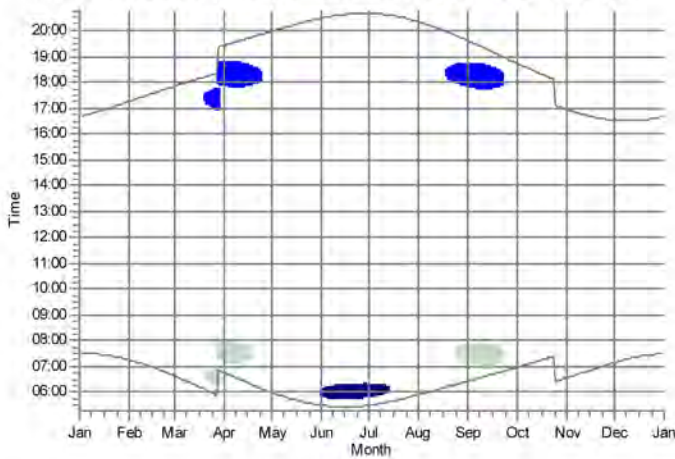
R6: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)



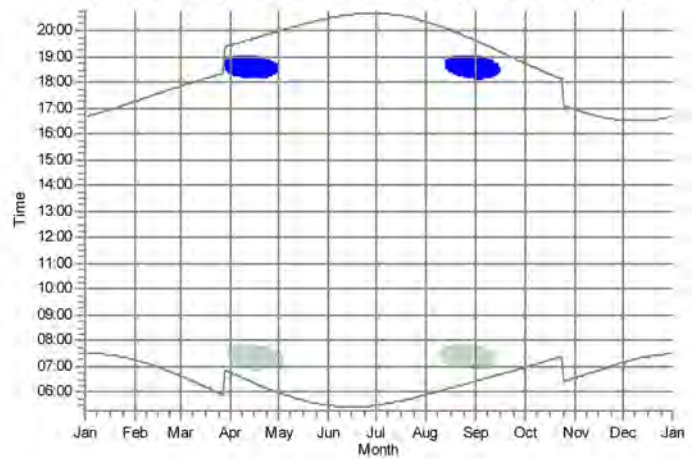
R60: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (45)



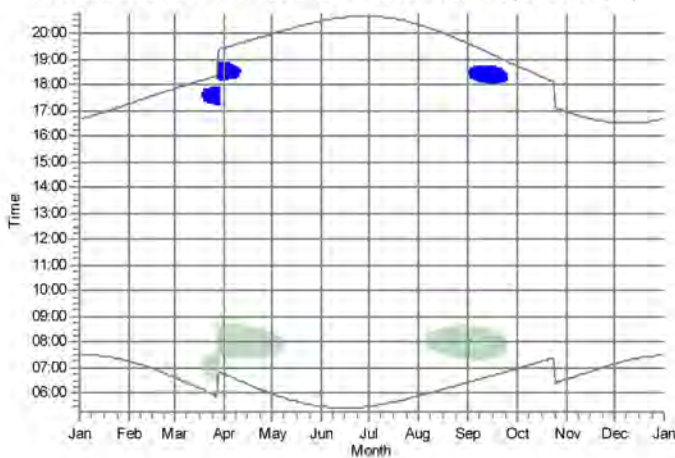
R61: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (46)



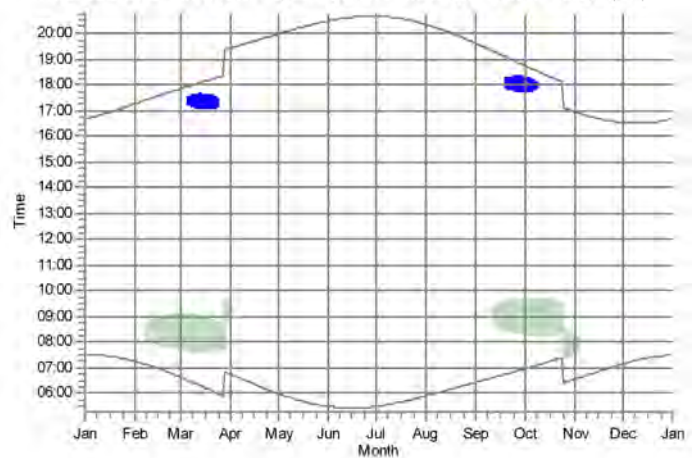
R62: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (47)



R63: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (48)



R64: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (49)



WTG:

LAR01: Siemens Gamesa SG 6.0-170-6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (1)  
 LAR02: Siemens Gamesa SG 6.0-170-6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (2)

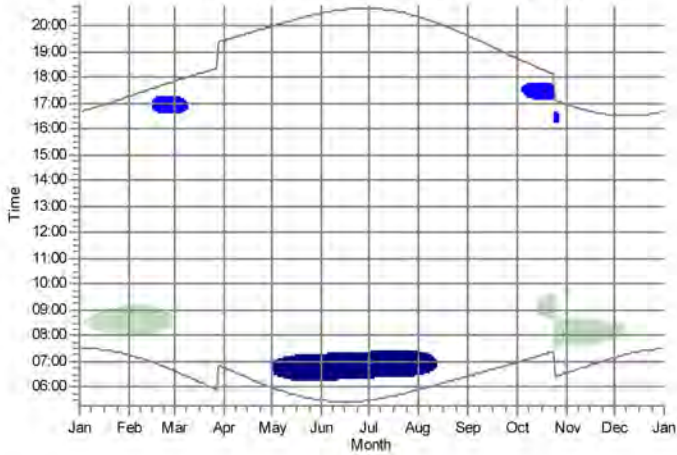
LAR03: Siemens Gamesa SG 6.0-170-6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (3)  
 LAR07: Siemens Gamesa SG 6.0-170-6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (7)

LAR14: Siemens Gamesa SG 6.0-170-6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (14)

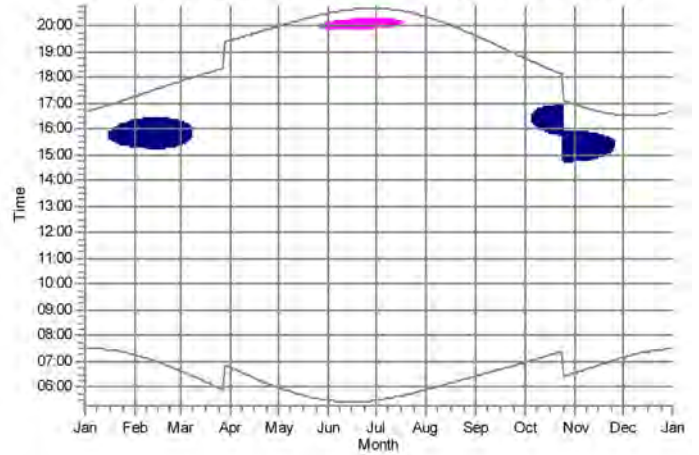


### SHADOW - Calendar, graphical

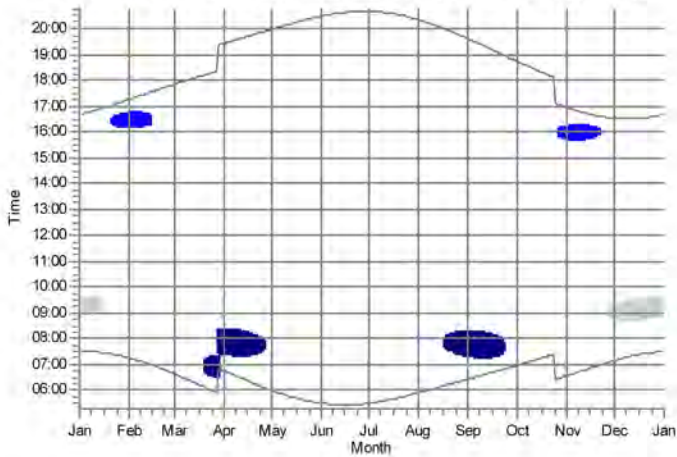
R65: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (50)



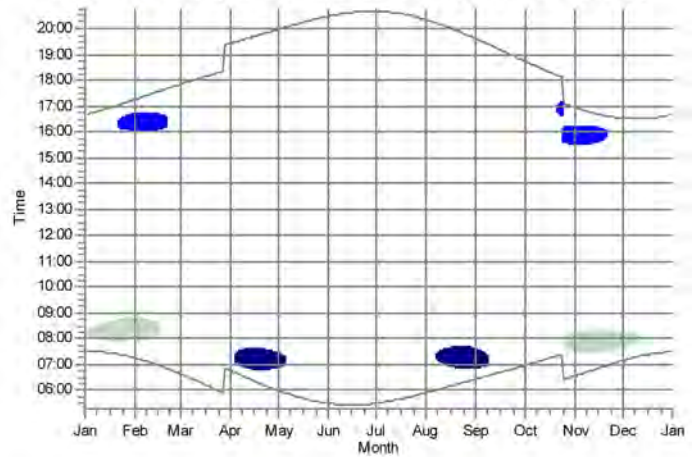
R66: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (51)



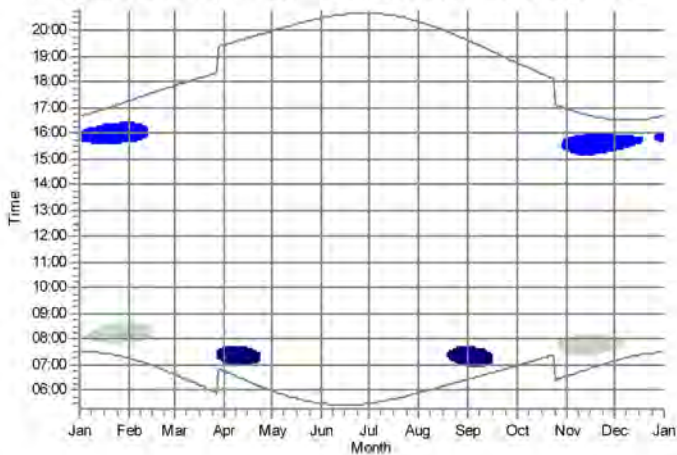
R67: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (52)



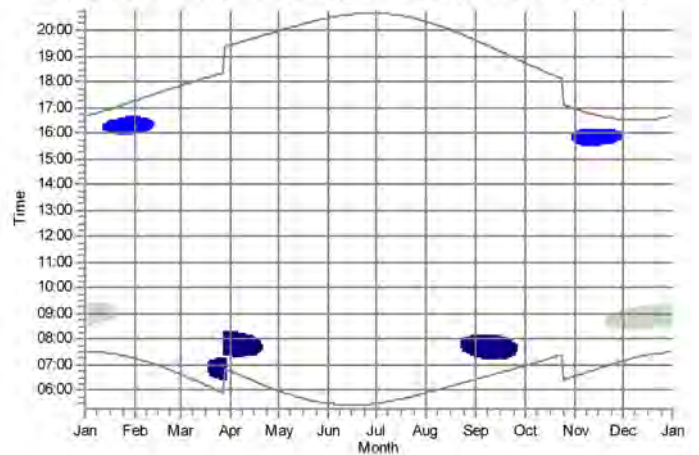
R68: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (53)



R69: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (54)



R70: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (55)



WTG1

■ LAR03: Siemens Gamaea SG 6.0-170 6200 170.0 IOI hub: 165.0 m (TOT: 250.0 m) (3)

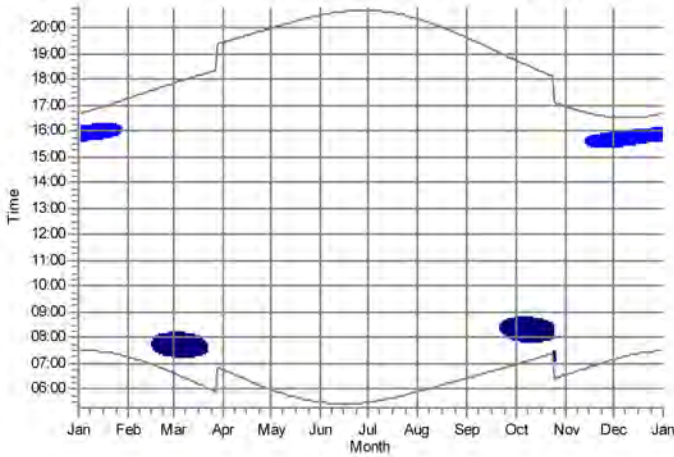
■ LAR05: Siemens Gamaea SG 6.0-170 6200 170.0 IOI hub: 165.0 m (TOT: 250.0 m) (5)

■ LAR07: Siemens Gamaea SG 6.0-170 6200 170.0 IOI hub: 165.0 m (TOT: 250.0 m) (7)

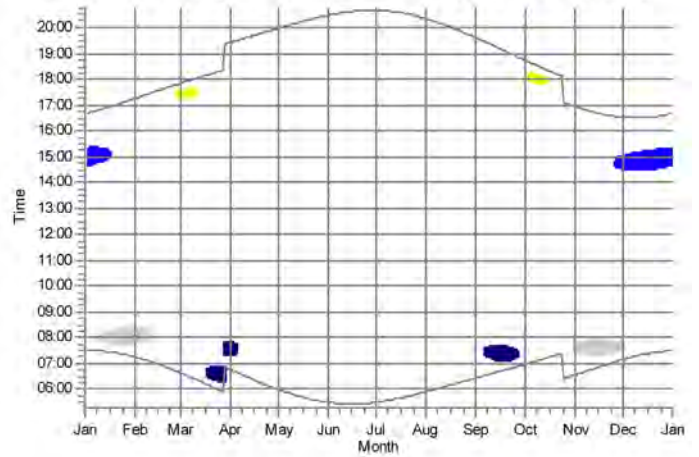
■ LAR14: Siemens Gamaea SG 6.0-170 6200 170.0 IOI hub: 165.0 m (TOT: 250.0 m) (14)

### SHADOW - Calendar, graphical

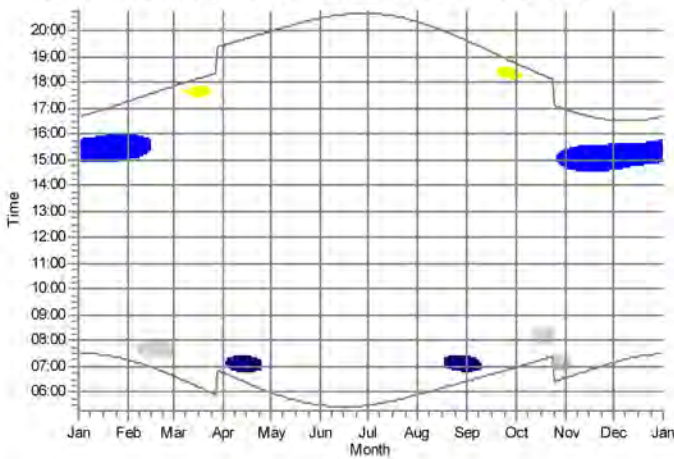
R71: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (56)



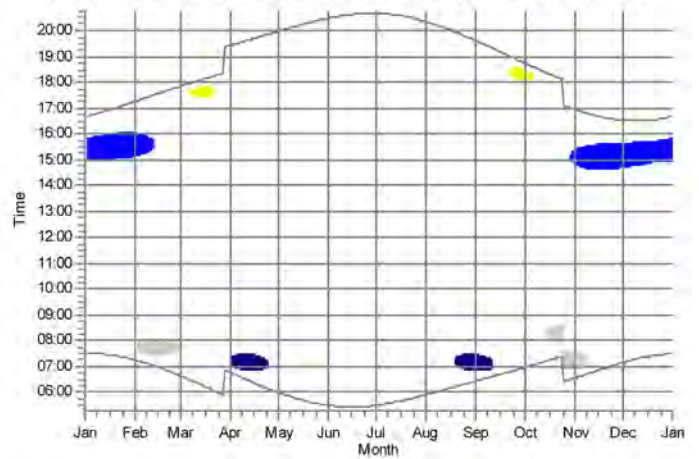
R72: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (57)



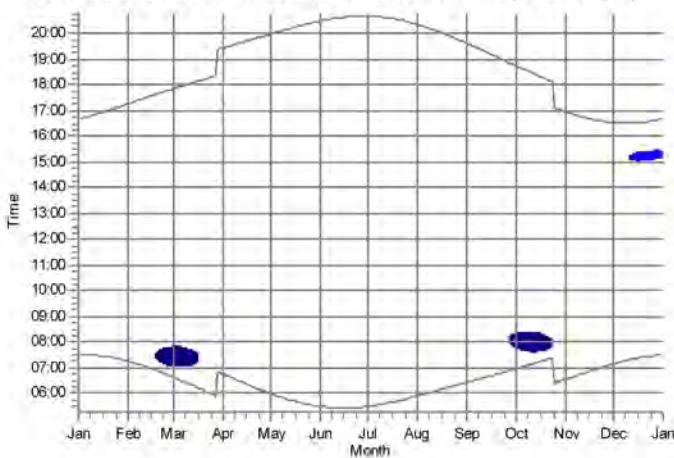
R73: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (58)



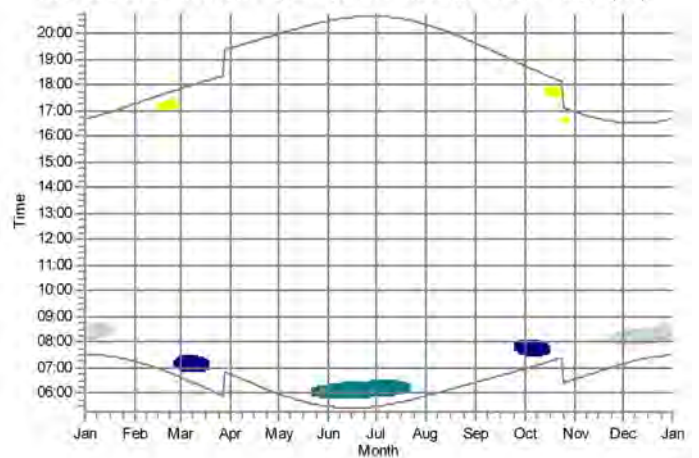
R74: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (59)



R76: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (60)



R77: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (61)



WTG:

■ LAR03: Siemens Gamesa SG 6.0-170-6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (2)  
■ LAR02: Siemens Gamesa SG 6.0-170-6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (3)

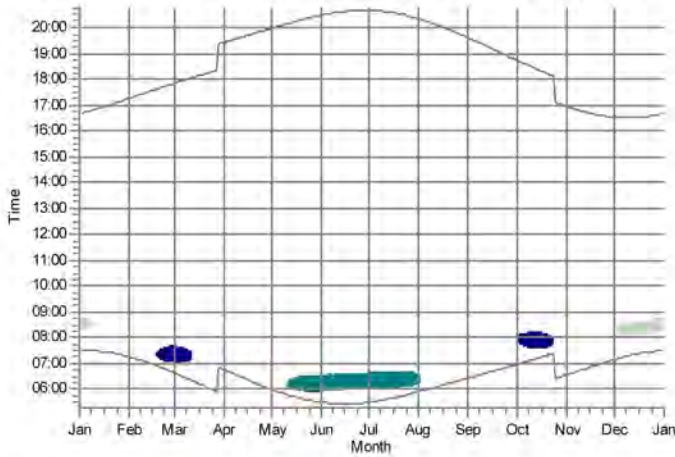
■ LAR06: Siemens Gamesa SG 6.0-170-6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (6)  
■ LAR07: Siemens Gamesa SG 6.0-170-6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (7)

■ LAR14: Siemens Gamesa SG 6.0-170-6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (14)

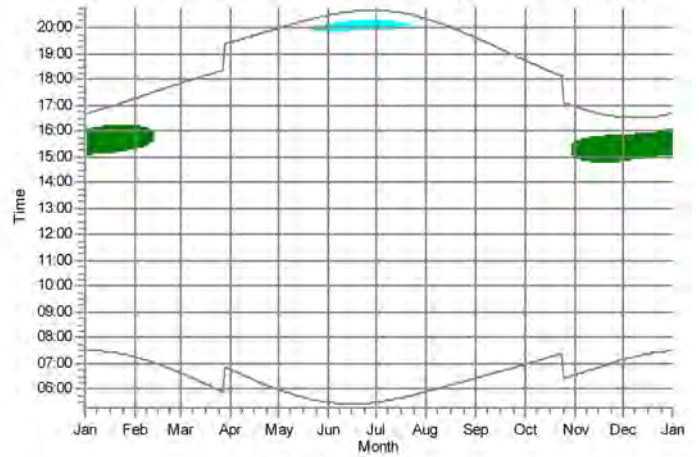


## SHADOW - Calendar, graphical

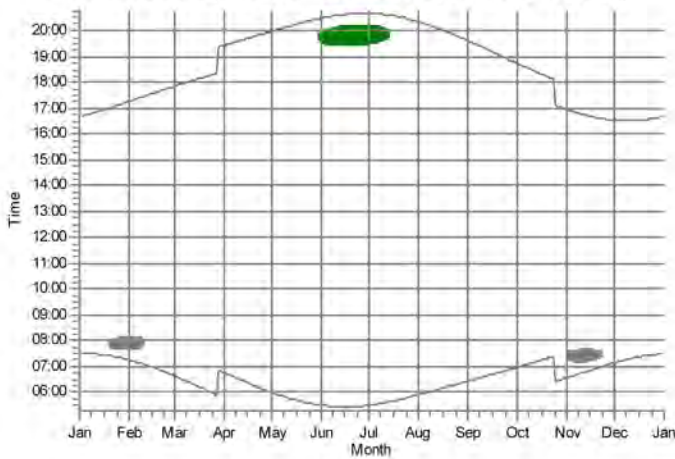
R78: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (62)



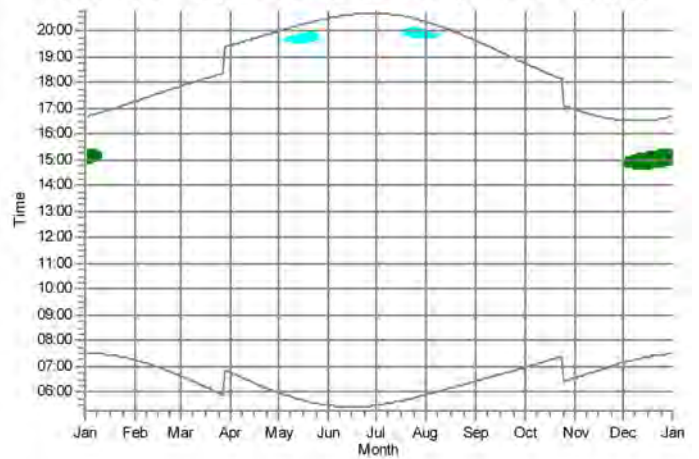
R79: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (63)



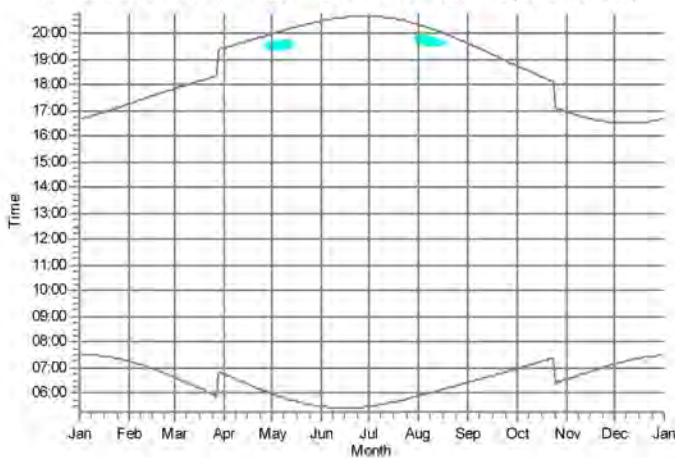
R8: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)



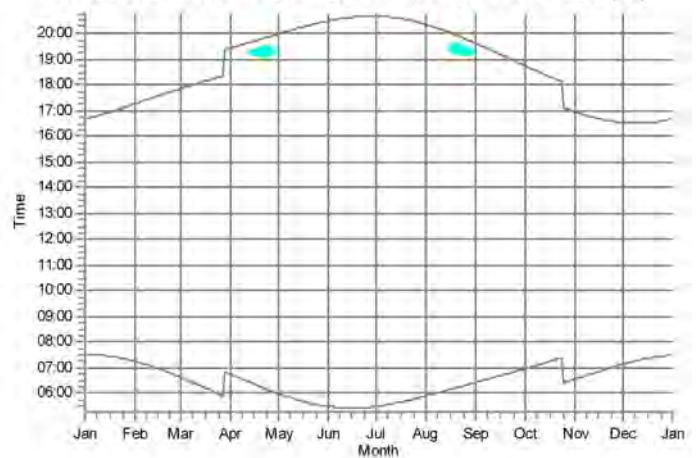
R80: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (64)



R81: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (65)



R82: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (66)



WTG:

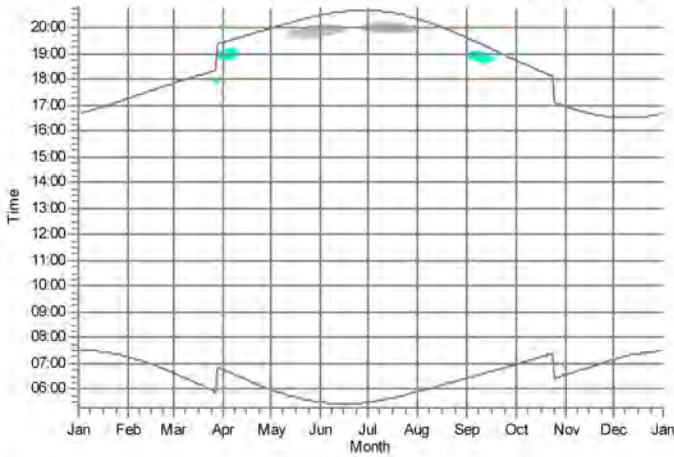
LAB01: Siemens Gamesa SG 6.0-110-6200 170.0 ICF hub: 165.0 m (TOT: 250.0 m) (1)  
LAB04: Siemens Gamesa SG 6.0-110-6200 170.0 ICF hub: 165.0 m (TOT: 250.0 m) (4)

LAB06: Siemens Gamesa SG 6.0-110-6200 170.0 ICF hub: 165.0 m (TOT: 250.0 m) (6)  
LAB07: Siemens Gamesa SG 6.0-110-6200 170.0 ICF hub: 165.0 m (TOT: 250.0 m) (7)

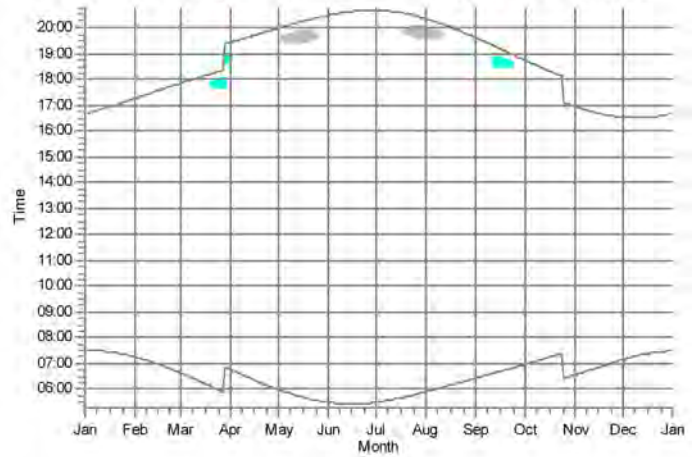
LAB13: Siemens Gamesa SG 6.0-110-6200 170.0 ICF hub: 165.0 m (TOT: 250.0 m) (13)  
LAB14: Siemens Gamesa SG 6.0-110-6200 170.0 ICF hub: 165.0 m (TOT: 250.0 m) (14)

### SHADOW - Calendar, graphical

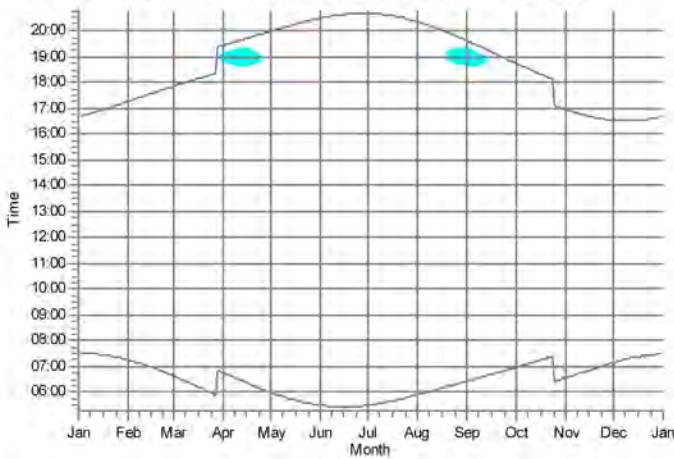
R83: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (67)



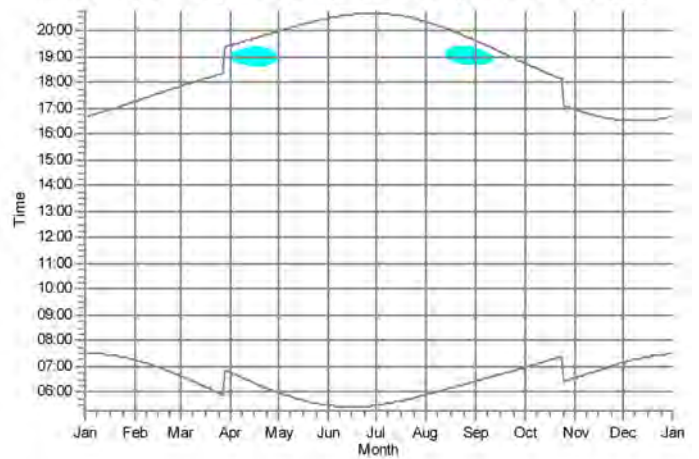
R85: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (68)



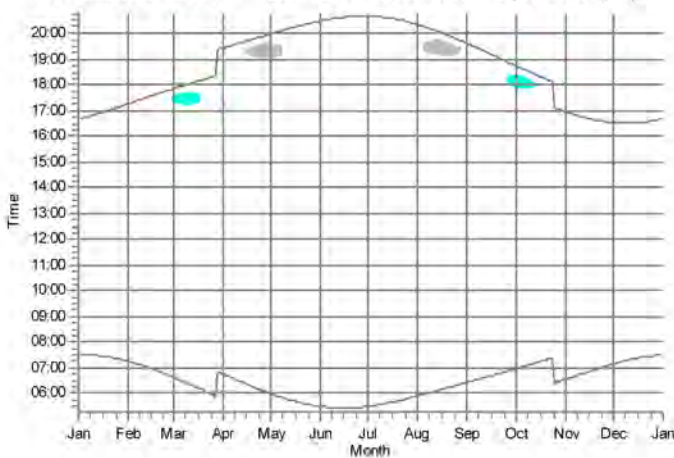
R86: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (69)



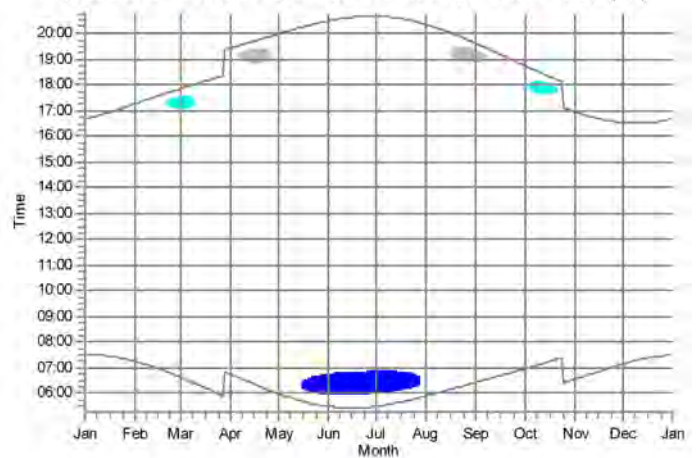
R87: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (70)



R88: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (71)



R89: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (72)



WTG1

LAR03: Siemens Gamesa SG 6.0-170 6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (13)

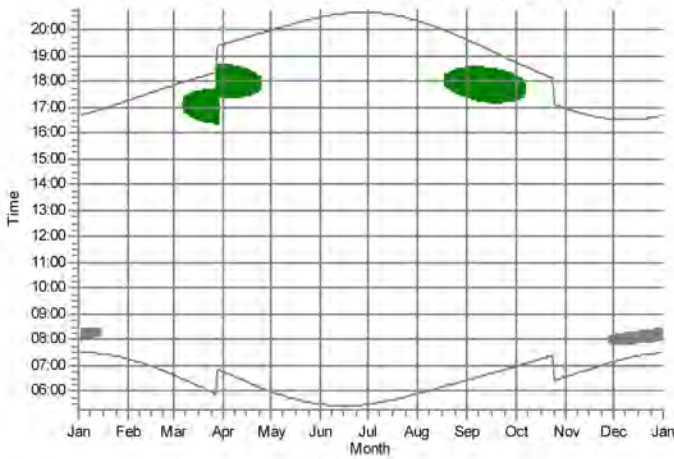
LAR12: Siemens Gamesa SG 6.0-170 6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (12)

LAR13: Siemens Gamesa SG 6.0-170 6200 170.0 IOW hub: 165.0 m (TOT: 250.0 m) (13)

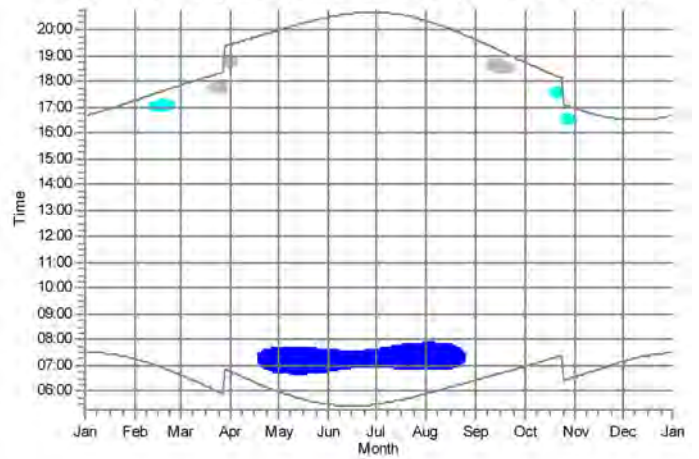


## SHADOW - Calendar, graphical

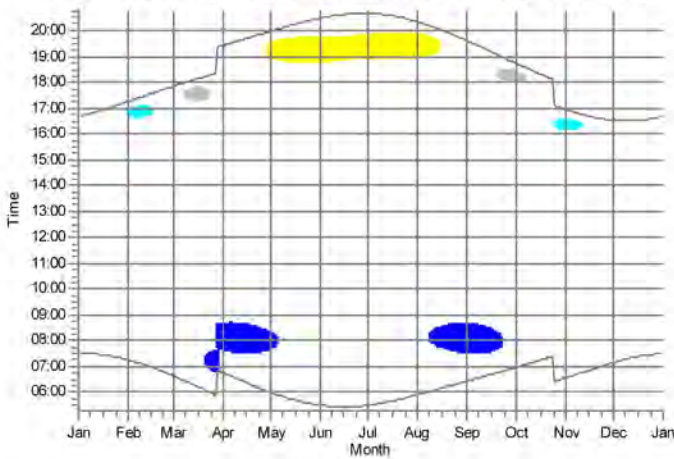
R9: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)



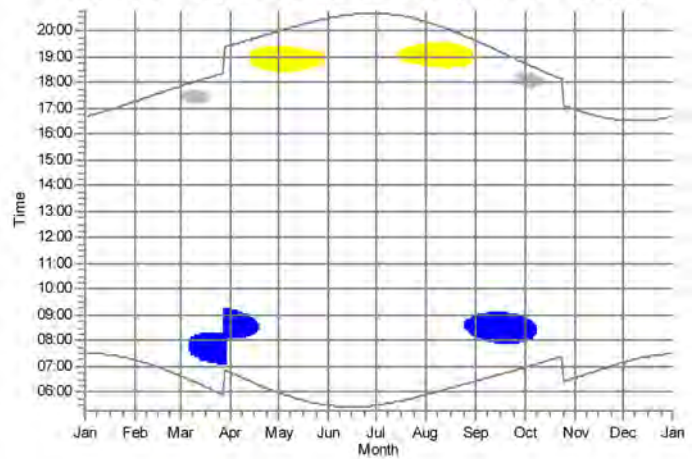
R90: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (73)



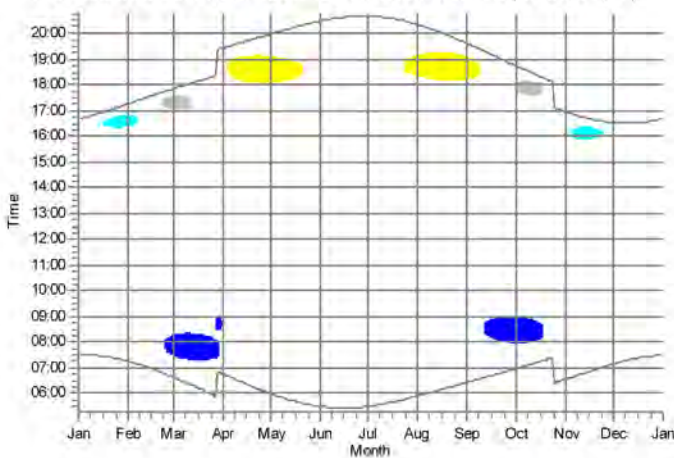
R91: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (74)



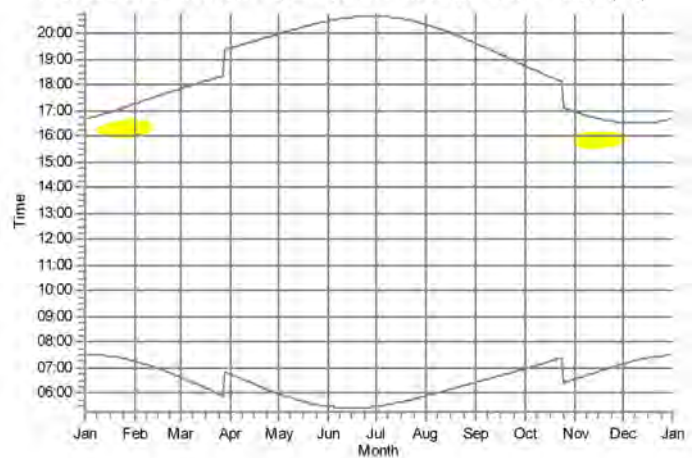
R92: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (75)



R93: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (76)



R98: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (77)



WTG:

LAB01: Siemens Gamesa SG 6.0-110-6200 170.0 ICF hub: 165.0 m (TOT: 250.0 m) (1)  
LAB02: Siemens Gamesa SG 6.0-110-6200 170.0 ICF hub: 165.0 m (TOT: 250.0 m) (2)

LAB03: Siemens Gamesa SG 6.0-110-6200 170.0 ICF hub: 165.0 m (TOT: 250.0 m) (3)  
LAB04: Siemens Gamesa SG 6.0-110-6200 170.0 ICF hub: 165.0 m (TOT: 250.0 m) (4)

LAB12: Siemens Gamesa SG 6.0-110-6200 170.0 ICF hub: 165.0 m (TOT: 250.0 m) (12)  
LAB13: Siemens Gamesa SG 6.0-110-6200 170.0 ICF hub: 165.0 m (TOT: 250.0 m) (13)

## SHADOW - Calendar per WTG

**WTG:** LAR01 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (1)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

### Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January   | February  | March                                      | April                                       | May  | June  |
|-----------------------------|---|---|--|---|--|---|
| 1                           | 07:28 14:51-16:13/82<br>16:40                               | 07:14 15:22-16:09/47<br>17:15 07:52-08:53/61                | 06:37 07:58-08:43/45<br>17:50              | 06:45 17:23-18:36/73<br>19:25 18:44-18:52/8 | 05:59 19:03-19:28/25<br>19:58                | 05:29 19:33-19:53/20<br>20:29 19:56-20:01/5 |
| 2                           | 07:29 14:52-16:14/82<br>16:41                               | 07:13 15:23-16:09/46<br>17:16 07:51-08:54/63                | 06:36 07:59-08:41/42<br>17:51              | 06:44 17:23-18:36/73<br>19:26               | 05:57 19:04-19:27/23<br>19:59                | 05:28 19:35-20:04/29<br>20:29               |
| 3                           | 07:29 14:53-16:15/82<br>16:42                               | 07:12 15:24-16:08/44 16:51-16:54/3<br>17:17 07:51-08:55/64  | 06:34 08:00-08:38/38<br>17:52              | 06:42 17:23-18:36/73<br>19:28               | 05:56 19:04-19:25/21<br>20:00 19:36-19:37/1  | 05:28 19:34-20:05/31<br>20:30               |
| 4                           | 07:29 14:54-16:16/82<br>16:43                               | 07:11 15:24-16:06/42 16:49-16:54/5<br>17:19 07:50-08:55/65  | 06:33 08:03-08:36/33<br>17:54              | 06:40 17:23-18:35/72<br>19:29               | 05:55 19:06-19:24/18<br>20:02 19:33-19:38/5  | 05:27 19:32-20:05/33<br>20:31               |
| 5                           | 07:29 14:56-16:17/81<br>16:44                               | 07:10 15:26-16:06/40 16:47-16:56/9<br>17:20 07:50-08:55/65  | 06:31 08:05-08:33/28<br>17:55              | 06:39 17:23-18:34/71<br>19:30               | 05:53 19:07-19:22/15<br>20:03 19:31-19:39/8  | 05:27 19:31-20:06/35<br>20:32               |
| 6                           | 07:29 14:57-16:18/81<br>16:44                               | 07:09 15:27-16:05/38 16:47-16:58/11<br>17:21 07:50-08:56/66 | 06:29 08:09-08:29/20<br>17:56              | 06:37 17:24-18:34/70<br>19:31               | 05:52 19:10-19:20/10<br>20:04 19:29-19:40/11 | 05:27 19:30-20:07/37<br>20:32               |
| 7                           | 07:29 14:59-16:19/80<br>16:45                               | 07:08 15:29-16:04/35 16:46-16:59/13<br>17:23 07:50-08:56/66 | 06:28 17:05-17:08/3<br>17:57 08:17-08:19/2 | 06:35 17:24-18:33/69<br>19:32               | 05:51 19:28-19:41/13<br>20:05                | 05:26 19:30-20:08/38<br>20:33               |
| 8                           | 07:28 15:01-16:20/79<br>16:46                               | 07:07 15:31-16:02/31 16:46-17:01/15<br>17:24 07:50-08:57/67 | 06:26 16:55-17:17/22<br>17:58              | 06:34 17:24-18:32/68<br>19:33               | 05:50 19:28-19:43/15<br>20:06                | 05:26 19:29-20:08/39<br>20:34               |
| 9                           | 07:28 15:03-16:21/78<br>16:47                               | 07:06 15:33-16:00/27 16:44-17:01/17<br>17:25 07:50-08:57/67 | 06:25 16:50-17:20/30<br>17:59              | 06:32 17:25-18:32/67<br>19:34               | 05:48 19:26-19:43/17<br>20:07                | 05:26 19:28-20:08/40<br>20:34               |
| 10                          | 07:28 15:07-16:22/75<br>16:49                               | 07:04 15:36-15:57/21 16:44-17:03/19<br>17:26 07:49-08:57/68 | 06:23 16:47-17:24/37<br>18:01              | 06:30 17:25-18:30/65<br>19:35               | 05:47 19:25-19:44/19<br>20:08                | 05:26 19:28-20:09/41<br>20:35               |
| 11                          | 07:28 15:12-16:23/71<br>16:50                               | 07:03 15:40-15:54/14 16:45-17:05/20<br>17:28 07:49-08:57/68 | 06:21 16:44-17:26/42<br>18:02              | 06:29 17:25-18:29/64<br>19:36               | 05:46 19:25-19:45/20<br>20:09                | 05:25 19:28-20:10/42<br>20:35               |
| 12                          | 07:28 15:11-16:23/72<br>16:51 08:12-08:22/10                | 07:02 07:49-08:57/68<br>17:29 16:45-17:06/21                | 06:20 16:42-17:28/46<br>18:03              | 06:27 17:27-18:28/61<br>19:37               | 05:45 19:25-19:46/21<br>20:10                | 05:25 19:28-20:10/42<br>20:36               |
| 13                          | 07:27 15:12-16:23/71<br>16:52 08:08-08:25/17                | 07:01 07:49-08:57/68<br>17:30 16:44-17:07/23                | 06:18 16:40-17:30/50<br>18:04              | 06:25 17:27-18:27/60<br>19:39               | 05:44 19:24-19:47/23<br>20:11                | 05:25 19:28-20:11/43<br>20:36               |
| 14                          | 07:27 15:13-16:24/71<br>16:53 08:07-08:29/22                | 06:59 07:49-08:57/68<br>17:32 16:45-17:09/24                | 06:16 16:38-17:31/53<br>18:05              | 06:24 17:29-18:26/57<br>19:40               | 05:43 19:24-19:48/24<br>20:12                | 05:25 19:27-20:11/44<br>20:37               |
| 15                          | 07:26 15:12-16:23/71<br>16:54 08:05-08:31/26                | 06:58 07:50-08:57/67<br>17:33 16:46-17:09/23                | 06:14 16:36-17:32/56<br>18:06              | 06:22 17:29-18:25/56<br>19:41               | 05:42 19:24-19:49/25<br>20:13                | 05:25 19:27-20:12/45<br>20:37               |
| 16                          | 07:26 15:13-16:23/70<br>16:55 08:04-08:33/29                | 06:57 07:49-08:56/67<br>17:34 16:46-17:08/22                | 06:13 16:35-17:34/59<br>18:08              | 06:21 17:31-18:24/53<br>19:42               | 05:41 19:24-19:50/26<br>20:14                | 05:25 19:27-20:12/45<br>20:38               |
| 17                          | 07:26 15:13-16:23/70<br>16:56 08:02-08:35/33                | 06:55 07:50-08:56/66<br>17:35 16:47-17:07/20                | 06:11 16:33-17:34/61<br>18:09              | 06:19 17:31-18:22/51<br>19:43               | 05:40 19:24-19:50/26<br>20:15                | 05:25 19:27-20:12/45<br>20:38               |
| 18                          | 07:25 15:13-16:08/55 16:09-16:21/12<br>16:57 08:01-08:37/36 | 06:54 07:49-08:55/66<br>17:37 16:48-17:05/17                | 06:09 16:32-17:35/63<br>18:10              | 06:18 17:32-18:20/48<br>19:44               | 05:39 19:25-19:52/27<br>20:16                | 05:25 19:27-20:12/45<br>20:38               |
| 19                          | 07:25 15:14-16:09/55 16:12-16:21/9<br>16:59 08:00-08:38/38  | 06:52 07:50-08:55/65<br>17:38 16:50-17:04/14                | 06:08 16:30-17:35/65<br>18:11              | 06:16 17:34-18:18/44<br>19:45               | 05:38 19:25-19:53/28<br>20:17                | 05:25 19:27-20:13/46<br>20:39               |
| 20                          | 07:24 15:14-16:09/55 16:15-16:18/3<br>17:00 07:59-08:40/41  | 06:51 07:51-08:55/64<br>17:39 16:52-17:01/9                 | 06:06 16:30-17:36/66<br>18:12              | 06:14 17:35-18:16/41<br>19:46               | 05:37 19:25-19:53/28<br>20:18                | 05:25 19:27-20:13/46<br>20:39               |
| 21                          | 07:23 15:14-16:09/55<br>17:01 07:59-08:42/43                | 06:50 07:51-08:53/62<br>17:40                               | 06:04 16:29-17:37/68<br>18:13              | 06:13 17:38-18:14/36<br>19:47               | 05:36 19:25-19:53/28<br>20:19                | 05:26 19:27-20:13/46<br>20:39               |
| 22                          | 07:23 15:15-16:10/55<br>17:02 07:57-08:43/46                | 06:48 07:52-08:53/61<br>17:42                               | 06:03 16:27-17:37/70<br>18:14              | 06:11 17:40-18:11/31<br>19:48               | 05:35 19:25-19:52/27<br>20:20                | 05:26 19:28-20:14/46<br>20:39               |
| 23                          | 07:22 15:15-16:10/55<br>17:04 07:56-08:44/48                | 06:47 07:52-08:52/60<br>17:43                               | 06:01 16:27-17:38/71<br>18:15              | 06:10 17:43-18:09/26<br>19:50               | 05:35 19:27-19:53/26<br>20:21                | 05:26 19:28-20:14/46<br>20:40               |
| 24                          | 07:21 15:16-16:10/54<br>17:05 07:55-08:45/50                | 06:45 07:52-08:50/58<br>17:44                               | 05:59 16:26-17:38/72<br>18:16              | 06:08 17:47-18:05/18<br>19:51               | 05:34 19:27-19:52/25<br>20:22                | 05:26 19:28-20:14/46<br>20:40               |
| 25                          | 07:21 15:16-16:10/54<br>17:06 07:55-08:46/51                | 06:44 07:53-08:49/56<br>17:45                               | 05:57 16:25-17:37/72<br>18:18              | 06:07 19:01-19:29/28<br>19:52               | 05:33 19:27-19:51/24<br>20:23                | 05:27 19:29-20:14/45<br>20:40               |
| 26                          | 07:20 15:17-16:11/54<br>17:07 07:55-08:48/53                | 06:42 07:54-08:48/54<br>17:46                               | 05:56 16:25-17:37/72<br>18:19              | 06:05 19:01-19:30/29<br>19:53               | 05:32 19:28-19:52/24<br>20:24                | 05:27 19:29-20:14/45<br>20:40               |
| 27                          | 07:19 15:18-16:11/53<br>17:09 07:54-08:49/55                | 06:41 07:55-08:47/52<br>17:48                               | 05:54 16:25-17:38/73<br>18:20              | 06:04 19:01-19:30/29<br>19:54               | 05:32 19:29-19:51/22<br>20:25                | 05:27 19:29-20:14/45<br>20:40               |
| 28                          | 07:18 15:18-16:10/52<br>17:10 07:53-08:50/57                | 06:39 07:56-08:45/49<br>17:49                               | 05:52 16:24-17:37/73<br>18:21              | 06:03 19:01-19:30/29<br>19:55               | 05:31 19:29-19:50/21<br>20:25                | 05:28 19:30-20:14/44<br>20:40               |
| 29                          | 07:17 15:19-16:10/51<br>17:11 07:53-08:51/58                | 06:38 07:56-08:45/48<br>17:49                               | 05:51 17:23-18:37/74<br>19:22              | 06:01 19:02-19:30/28<br>19:56               | 05:30 19:30-19:50/20<br>20:26                | 05:28 19:31-20:14/43<br>20:40               |
| 30                          | 07:16 15:20-16:10/50<br>17:12 07:52-08:52/60                | 06:37 07:56-08:45/48<br>17:49                               | 05:50 17:24-18:37/73<br>19:23              | 06:00 19:02-19:29/27<br>19:57               | 05:30 19:31-19:49/18<br>20:27                | 05:29 19:32-20:14/42<br>20:40               |
| 31                          | 07:15 15:21-16:10/49<br>17:14 07:52-08:53/61                | 06:36 07:56-08:45/48<br>17:49                               | 05:49 17:23-18:37/74<br>19:24              | 05:59 19:02-19:30/28<br>19:58               | 05:29 19:32-19:49/17<br>20:28                | 05:29 19:32-20:14/42<br>20:40               |
| Potential sun hours         | 295   | 296   | 369  | 400   | 450  | 455   |
| Sum of minutes with flicker | 2903  | 2441  | 1836                                       | 1728  | 701  | 1239  |

### Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



## SHADOW - Calendar per WTG

**WTG:** LAR01 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (1)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | July                          | August                        | September                     | October   | November                               | December                      |
|-----------------------------|-------------------------------|-------------------------------|-------------------------------|---|--|-------------------------------|
| 1                           | 05:29 19:32-20:14/42<br>20:40 | 05:54 19:35-19:56/21<br>20:20 | 06:26 17:25-18:29/64<br>19:36 | 06:57 17:20-18:08/48<br>18:44                   | 06:32 15:05-15:28/23<br>16:14-16:32/18 | 07:08 14:54-16:06/72<br>16:31 |
| 2                           | 05:30 19:33-20:14/41<br>20:40 | 05:55 19:36-19:55/19<br>20:19 | 06:27 17:24-18:29/65<br>19:34 | 06:58 17:22-18:05/43<br>18:43                   | 06:33 15:02-15:30/28<br>16:14-16:31/17 | 07:09 14:51-16:05/74<br>16:31 |
| 3                           | 05:30 19:33-20:14/41<br>20:40 | 05:56 19:36-19:54/18<br>20:18 | 06:28 17:23-18:30/67<br>19:33 | 06:59 17:24-18:03/39<br>18:41                   | 06:34 15:01-15:32/31<br>16:14-16:29/15 | 07:10 14:47-16:05/78<br>16:31 |
| 4                           | 05:31 19:35-20:14/39<br>20:39 | 05:57 19:37-19:53/16<br>20:17 | 06:29 17:22-18:30/68<br>19:31 | 07:00 17:26-18:00/34<br>18:39                   | 06:36 14:59-15:34/35<br>16:16-16:29/13 | 07:11 14:45-16:05/80<br>16:30 |
| 5                           | 05:31 19:35-20:13/38<br>20:39 | 05:58 19:38-19:52/14<br>20:16 | 06:30 17:21-18:30/69<br>19:29 | 07:01 17:29-17:56/27<br>18:37                   | 06:37 14:57-15:35/38<br>16:16-16:27/11 | 07:12 14:44-16:04/80<br>16:30 |
| 6                           | 05:32 19:36-20:13/37<br>20:39 | 05:59 19:23-19:26/3<br>20:14  | 06:31 17:20-18:30/70<br>19:28 | 07:02 17:34-17:50/16<br>18:36                   | 06:38 14:55-15:36/41<br>16:17-16:26/9  | 07:13 14:43-16:04/81<br>16:30 |
| 7                           | 05:32 19:37-20:12/35<br>20:39 | 06:00 19:19-19:31/12<br>20:13 | 06:32 17:18-18:29/71<br>19:26 | 07:03 08:48-09:02/14<br>18:34                   | 06:39 14:55-15:37/42<br>16:20-16:25/5  | 07:14 14:43-16:04/81<br>16:30 |
| 8                           | 05:33 19:38-20:13/35<br>20:38 | 06:01 19:16-19:33/17<br>20:12 | 06:33 17:17-18:29/72<br>19:24 | 07:04 08:42-09:06/24<br>18:32                   | 06:41 14:54-15:38/44<br>16:22-16:24/2  | 07:15 14:42-16:04/82<br>16:30 |
| 9                           | 05:34 19:40-20:13/33<br>20:38 | 06:02 19:15-19:34/19<br>20:11 | 06:34 17:17-18:29/72<br>19:22 | 07:05 08:39-09:09/30<br>18:31                   | 06:42 14:52-15:39/47<br>16:47          | 07:16 14:42-16:04/82<br>16:30 |
| 10                          | 05:34 19:41-20:11/30<br>20:37 | 06:03 19:13-19:35/22<br>20:09 | 06:35 17:16-18:29/73<br>19:21 | 07:06 08:36-09:12/36<br>18:29                   | 06:43 14:52-15:40/48<br>16:46          | 07:17 14:42-16:04/82<br>16:30 |
| 11                          | 05:35 19:42-20:01/19<br>20:37 | 06:04 19:12-19:36/24<br>20:08 | 06:36 17:15-18:28/73<br>19:19 | 07:08 08:34-09:14/40<br>18:27                   | 06:44 14:52-15:41/49<br>16:45          | 07:18 14:42-16:04/82<br>16:30 |
| 12                          | 05:36 19:41-19:59/18<br>20:36 | 06:05 19:11-19:37/26<br>20:07 | 06:37 17:15-18:28/73<br>19:17 | 07:09 08:32-09:15/43<br>18:26                   | 06:46 14:51-15:41/50<br>16:44          | 07:18 14:41-16:03/82<br>16:30 |
| 13                          | 05:37 19:39-19:57/18<br>20:36 | 06:06 19:10-19:37/27<br>20:05 | 06:38 17:14-18:28/74<br>19:16 | 07:10 08:30-09:17/47<br>18:24                   | 06:47 14:51-15:42/51<br>16:43          | 07:19 14:41-16:04/83<br>16:30 |
| 14                          | 05:37 19:39-19:58/19<br>20:35 | 06:07 19:10-19:38/28<br>20:04 | 06:39 17:14-18:27/73<br>19:14 | 07:11 08:29-09:19/50<br>18:23                   | 06:48 14:50-15:42/52<br>16:42          | 07:20 14:42-16:04/82<br>16:30 |
| 15                          | 05:38 19:39-19:59/20<br>20:35 | 06:08 19:09-19:38/29<br>20:02 | 06:40 17:13-18:27/74<br>19:12 | 07:12 08:27-09:20/53<br>18:21                   | 06:49 14:50-15:43/53<br>16:41          | 07:21 14:42-16:05/83<br>16:30 |
| 16                          | 05:39 19:38-20:00/22<br>20:34 | 06:09 19:09-19:38/29<br>20:01 | 06:41 17:13-18:26/73<br>19:10 | 07:13 08:26-09:21/55<br>18:19                   | 06:50 14:50-15:44/54<br>16:40          | 07:21 14:42-16:04/82<br>16:31 |
| 17                          | 05:40 19:38-20:01/23<br>20:34 | 06:10 19:08-19:37/29<br>19:59 | 06:42 17:13-18:25/72<br>19:09 | 07:14 08:25-09:21/56<br>18:18                   | 06:52 14:50-15:44/54<br>16:39          | 07:22 14:42-16:05/83<br>16:31 |
| 18                          | 05:41 19:37-20:01/24<br>20:33 | 06:11 17:59-18:05/6<br>19:58  | 06:43 17:13-18:25/72<br>19:07 | 07:15 08:23-09:22/59<br>18:16                   | 06:53 14:50-15:44/54<br>16:38          | 07:23 14:43-15:52/69<br>16:31 |
| 19                          | 05:41 19:36-20:01/25<br>20:32 | 06:12 17:52-18:12/20<br>19:57 | 06:44 17:13-18:24/71<br>19:05 | 07:17 08:23-09:23/60<br>18:15                   | 06:54 14:49-15:44/55<br>16:38          | 07:23 14:43-15:52/69<br>16:32 |
| 20                          | 05:42 19:36-20:02/26<br>20:31 | 06:13 17:48-18:15/27<br>19:55 | 06:45 17:13-18:23/70<br>19:03 | 07:18 08:22-09:24/62<br>18:13                   | 06:55 14:50-15:45/55<br>16:37          | 07:24 14:43-15:53/70<br>16:32 |
| 21                          | 05:43 19:36-20:03/27<br>20:31 | 06:14 17:45-18:17/32<br>19:53 | 06:46 17:13-18:22/69<br>19:02 | 07:19 08:21-09:24/63<br>18:12                   | 06:56 14:50-15:45/55<br>16:36          | 07:25 14:43-15:53/70<br>16:33 |
| 22                          | 05:44 19:36-20:03/27<br>20:30 | 06:15 17:42-18:19/37<br>19:52 | 06:47 17:14-18:22/68<br>19:00 | 07:20 08:20-09:24/64<br>18:10                   | 06:58 14:50-15:45/55<br>15:51-15:54/3  | 07:25 14:44-15:54/70<br>16:33 |
| 23                          | 05:45 19:36-20:04/28<br>20:29 | 06:16 17:40-18:21/41<br>19:50 | 06:48 17:14-18:21/67<br>18:58 | 07:21 08:20-09:25/65<br>18:09                   | 06:59 14:50-15:45/55<br>15:48-15:57/9  | 07:26 14:44-15:54/70<br>16:34 |
| 24                          | 05:46 19:36-20:04/28<br>20:28 | 06:17 17:38-18:22/44<br>19:49 | 06:49 17:14-18:20/66<br>18:56 | 07:22 08:20-09:26/66<br>18:07                   | 07:00 14:51-15:46/55<br>15:47-15:59/12 | 07:26 14:45-15:55/70<br>16:34 |
| 25                          | 05:47 19:35-20:02/27<br>20:27 | 06:18 17:36-18:24/48<br>19:47 | 06:50 17:15-18:18/63<br>18:55 | 07:24 07:19-08:26/67<br>17:06                   | 07:01 14:51-16:01/70<br>16:34          | 07:26 14:46-15:55/69<br>16:35 |
| 26                          | 05:48 19:35-20:01/26<br>20:26 | 06:19 17:34-18:25/51<br>19:46 | 06:51 17:15-18:17/62<br>18:53 | 07:25 07:19-08:26/67<br>17:04                   | 07:02 14:51-16:01/70<br>16:33          | 07:27 14:46-16:09/83<br>16:35 |
| 27                          | 05:49 19:35-20:01/26<br>20:25 | 06:20 17:32-18:26/54<br>19:44 | 06:52 17:16-18:16/60<br>18:51 | 07:26 07:19-08:27/68<br>17:03                   | 07:03 14:51-16:02/71<br>16:33          | 07:27 14:47-16:10/83<br>16:36 |
| 28                          | 05:50 19:35-20:00/25<br>20:24 | 06:21 17:31-18:27/56<br>19:42 | 06:53 17:17-18:14/57<br>18:49 | 07:27 07:18-08:26/68<br>17:02                   | 07:05 14:52-16:03/71<br>16:32          | 07:28 14:48-16:10/82<br>16:37 |
| 29                          | 05:51 19:35-19:59/24<br>20:23 | 06:22 17:29-18:27/58<br>19:41 | 06:55 17:18-18:12/54<br>18:48 | 07:28 07:18-08:26/68<br>17:00                   | 07:06 14:53-16:04/71<br>16:32          | 07:28 14:48-16:11/83<br>16:37 |
| 30                          | 05:52 19:35-19:58/23<br>20:22 | 06:23 17:28-18:28/60<br>19:39 | 06:56 17:19-18:10/51<br>18:46 | 07:30 07:18-08:26/68<br>16:59                   | 07:07 14:53-16:05/72<br>16:31          | 07:28 14:49-16:11/82<br>16:38 |
| 31                          | 05:53 19:35-19:57/22<br>20:21 | 06:24 17:27-18:28/61<br>19:38 |                               | 06:31 15:09-15:25/16<br>16:14-16:34/20<br>16:58 |  | 07:28 14:50-16:12/82<br>16:39 |
| Potential sun hours         | 462                           | 429                           | 375                           | 344   | 296                                    | 285                           |
| Sum of minutes with flicker | 876                           | 1208                          | 2223                          | 1780  | 3155                                   | 2517                          |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** LAR02 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (2)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|    | January  | February                      | March                         | April                         | May                           | June                          |             |
|----|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------|
| 1  | 07:29 16:04-16:12/8<br>16:40                       | 07:14 16:03-16:34/31<br>17:15 | 06:37 17:20-17:29/9<br>17:50  | 06:45<br>19:25                | 05:58 18:07-19:27/80<br>19:58 | 05:29 18:50-19:42/52<br>20:29 |             |
| 2  | 07:29 16:04-16:14/10<br>16:41                      | 07:13 16:03-16:34/31<br>17:16 | 06:36 17:19-17:30/11<br>17:51 | 06:44<br>19:26                | 05:57 18:08-19:29/81<br>19:59 | 05:28 18:50-19:42/52<br>20:30 |             |
| 3  | 07:29 16:03-16:15/12<br>16:42                      | 07:12 16:04-16:33/29<br>17:17 | 06:34 17:18-17:30/12<br>17:52 | 06:42<br>19:28                | 05:56 18:08-19:30/82<br>20:01 | 05:28 18:51-19:43/52<br>20:30 |             |
| 4  | 07:29 16:03-16:16/13<br>16:43                      | 07:11 16:04-16:32/28<br>17:19 | 06:33 17:18-17:32/14<br>17:54 | 06:40<br>19:29                | 05:55 18:08-19:32/84<br>20:02 | 05:27 18:51-19:42/51<br>20:31 |             |
| 5  | 07:29 16:03-16:17/14<br>16:43                      | 07:10 16:05-16:31/26<br>17:20 | 06:31 17:18-17:33/15<br>17:55 | 06:39 18:34-18:46/12<br>19:30 | 05:53 18:09-19:33/84<br>20:03 | 05:27 18:51-19:43/52<br>20:32 |             |
| 6  | 07:29 16:03-16:18/15<br>16:44                      | 07:09 16:07-16:31/24<br>17:21 | 06:29 17:18-17:34/16<br>17:56 | 06:37 18:29-18:51/22<br>19:31 | 05:52 18:10-19:35/85<br>20:04 | 05:27 18:52-19:43/51<br>20:32 |             |
| 7  | 07:29 16:03-16:19/16<br>16:45                      | 07:08 16:08-16:30/22<br>17:23 | 06:28 17:19-17:36/17<br>17:57 | 06:35 18:25-18:54/29<br>19:32 | 05:51 18:11-19:36/85<br>20:05 | 05:26 18:52-19:42/50<br>20:33 |             |
| 8  | 07:29 16:03-16:20/17<br>16:46                      | 07:07 16:10-16:28/18<br>17:24 | 06:26 17:19-17:35/16<br>17:58 | 06:34 18:22-18:55/33<br>19:33 | 05:50 18:12-19:37/85<br>20:06 | 05:26 18:52-19:42/50<br>20:34 |             |
| 9  | 07:28 16:03-16:22/19<br>16:47                      | 07:06 16:13-16:26/13<br>17:25 | 06:25 17:34-17:38/4<br>17:59  | 06:32 18:21-18:58/37<br>19:34 | 05:48 18:12-19:37/85<br>20:07 | 05:26 18:53-19:43/50<br>20:34 |             |
| 10 | 07:28 16:03-16:22/19<br>16:48                      | 07:04 16:16-16:22/6<br>17:26  | 06:23 17:33-17:39/6<br>18:01  | 06:30 18:18-18:59/41<br>19:35 | 05:47 18:13-19:37/84<br>20:08 | 05:26 18:53-19:43/50<br>20:35 |             |
| 11 | 07:28 16:03-16:23/20<br>16:50                      | 07:03<br>17:28                | 06:21 17:32-17:40/8<br>18:02  | 06:29 18:16-19:00/44<br>19:36 | 05:46 18:14-19:38/84<br>20:09 | 05:25 18:54-19:43/49<br>20:35 |             |
| 12 | 07:28 16:03-16:24/21<br>16:51                      | 07:02<br>17:29                | 06:20 17:30-17:41/11<br>18:03 | 06:27 18:15-19:01/46<br>19:37 | 05:45 18:15-19:39/84<br>20:10 | 05:25 18:54-19:43/49<br>20:36 |             |
| 13 | 07:27 16:03-16:24/21<br>16:52                      | 07:01<br>17:30                | 06:18 17:30-17:43/13<br>18:04 | 06:25 18:13-19:16/63<br>19:39 | 05:44 18:16-19:39/83<br>20:11 | 05:25 18:54-19:43/49<br>20:36 |             |
| 14 | 07:27 16:03-16:26/23<br>16:53                      | 06:59<br>17:32                | 06:16 17:30-17:44/14<br>18:05 | 06:24 18:13-19:18/65<br>19:40 | 05:43 18:17-19:40/83<br>20:12 | 05:25 18:55-19:44/49<br>20:37 |             |
| 15 | 07:27 16:03-16:26/23<br>16:54                      | 06:58 17:08-17:10/2<br>17:33  | 06:14 17:29-17:45/16<br>18:06 | 06:22 18:11-19:18/67<br>19:41 | 05:42 18:18-19:40/82<br>20:13 | 05:25 18:55-19:44/49<br>20:37 |             |
| 16 | 07:26 16:03-16:27/24<br>16:55                      | 06:57 17:06-17:11/5<br>17:34  | 06:13 17:30-17:47/17<br>18:08 | 06:21 18:10-19:18/68<br>19:42 | 05:41 18:20-19:40/80<br>20:14 | 05:25 18:55-19:44/49<br>20:38 |             |
| 17 | 07:26 16:02-16:27/25<br>16:56                      | 06:55 17:05-17:13/8<br>17:35  | 06:11 17:30-17:47/17<br>18:09 | 06:19 18:10-19:17/67<br>19:43 | 05:40 18:22-19:40/78<br>20:15 | 05:25 18:55-19:44/49<br>20:38 |             |
| 18 | 07:25 16:02-16:28/26<br>16:57                      | 06:54 17:04-17:14/10<br>17:37 | 06:09 17:30-17:48/18<br>18:10 | 06:18 18:09-19:14/65<br>19:44 | 05:39 18:25-19:41/76<br>20:16 | 05:25 18:56-19:44/48<br>20:38 |             |
| 19 | 07:25 16:02-16:28/26<br>16:59                      | 06:52 17:04-17:15/11<br>17:38 | 06:08 17:30-17:48/18<br>18:11 | 06:16 18:09-19:14/65<br>19:45 | 05:38 18:27-19:41/74<br>20:17 | 05:25 18:56-19:44/48<br>20:39 |             |
| 20 | 07:24 16:01-16:29/28<br>17:00                      | 06:51 17:03-17:16/13<br>17:39 | 06:06 17:32-17:48/16<br>18:12 | 06:14 18:08-19:15/67<br>19:46 | 05:37 18:31-19:41/70<br>20:18 | 05:25 18:56-19:44/48<br>20:39 |             |
| 21 | 07:23 16:02-16:30/28<br>17:01                      | 06:50 17:04-17:18/14<br>17:40 | 06:04 17:33-17:46/13<br>18:13 | 06:13 18:08-19:16/68<br>19:47 | 05:36 18:38-19:41/63<br>20:19 | 05:26 18:56-19:44/48<br>20:39 |             |
| 22 | 07:23 16:01-16:31/30<br>17:02                      | 06:48 17:04-17:19/15<br>17:42 | 06:03 17:35-17:42/7<br>18:14  | 06:11 18:07-19:16/69<br>19:48 | 05:35 18:39-19:41/62<br>20:20 | 05:26 18:57-19:45/48<br>20:39 |             |
| 23 | 07:22 16:01-16:31/30<br>17:04                      | 06:47 17:05-17:21/16<br>17:43 | 06:01<br>18:15                | 06:10 18:07-19:17/70<br>19:50 | 05:34 18:41-19:42/61<br>20:21 | 05:26 18:57-19:45/48<br>20:40 |             |
| 24 | 07:21 16:01-16:31/30<br>17:05                      | 06:45 17:05-17:21/16<br>17:44 | 05:59<br>18:16                | 06:08 18:07-19:18/71<br>19:51 | 05:34 18:42-19:42/60<br>20:22 | 05:26 18:57-19:45/48<br>20:40 |             |
| 25 | 07:21 16:00-16:32/32<br>17:06                      | 06:44 17:07-17:20/13<br>17:45 | 05:57<br>18:18                | 06:07 18:06-19:18/72<br>19:52 | 05:33 18:43-19:42/59<br>20:23 | 05:27 18:57-19:45/48<br>20:40 |             |
| 26 | 07:20 16:01-16:33/32<br>17:07                      | 06:42 17:08-17:17/9<br>17:46  | 05:56<br>18:19                | 06:05 18:07-19:19/72<br>19:53 | 05:32 18:46-19:42/56<br>20:24 | 05:27 18:57-19:46/49<br>20:40 |             |
| 27 | 07:19 16:01-16:33/32<br>17:09                      | 06:41 17:22-17:26/4<br>17:48  | 05:54<br>18:20                | 06:04 18:06-19:19/73<br>19:54 | 05:32 18:47-19:42/55<br>20:25 | 05:27 18:57-19:46/49<br>20:40 |             |
| 28 | 07:18 16:01-16:34/33<br>17:10                      | 06:39 17:21-17:27/6<br>17:49  | 05:52<br>18:21                | 06:03 18:07-19:19/72<br>19:55 | 05:31 18:49-19:42/53<br>20:26 | 05:28 18:58-19:47/49<br>20:40 |             |
| 29 | 07:17 16:02-16:34/32<br>17:11                      |                               | 06:51<br>19:22                | 06:01 18:07-19:20/73<br>19:56 | 05:30 18:49-19:42/53<br>20:26 | 05:28 18:58-19:47/49<br>20:40 |             |
| 30 | 07:16 16:02-16:34/32<br>17:12                      |                               | 06:49<br>19:23                | 06:00 18:07-19:23/76<br>19:57 | 05:30 18:49-19:42/53<br>20:27 | 05:28 18:57-19:46/49<br>20:40 |             |
| 31 | 07:15 16:02-16:34/32<br>17:14                      |                               | 06:47<br>19:24                |                               | 05:29 18:50-19:42/52<br>20:28 |                               |             |
|    | Potential sun hours<br>Sum of minutes with flicker | 295<br>723                    | 296<br>370                    | 369<br>307                    | 400<br>1560                   | 451<br>2256                   | 455<br>1482 |

**Table layout: For each day in each month the following matrix apply**

Day in month    Sun rise (hh:mm)    First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm)    First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: LAR02 - Siemens Gamesa SG 6.0-170 6200 170.0 IO! hub: 165,0 m (TOT: 250,0 m) (2)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | July                 | August               | September            | October              | November             | December             |
|-----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| 1                           | 05:29 18:58-19:47/49 | 05:54 18:25-19:49/84 | 06:25 18:16-18:59/43 | 06:57 18:10-18:21/11 | 06:32 15:45-15:53/8  | 07:08 15:45-16:05/20 |
|                             | 20:40                | 20:20                | 19:36 19:01-19:13/12 | 18:44                | 16:56                | 16:31                |
| 2                           | 05:29 18:57-19:47/50 | 05:55 18:24-19:48/84 | 06:27 18:17-18:58/41 | 06:58 18:10-18:20/10 | 06:33 15:41-15:56/15 | 07:09 15:46-16:05/19 |
|                             | 20:40                | 20:19                | 19:34 19:01-19:11/10 | 18:43                | 16:55                | 16:31                |
| 3                           | 05:30 18:58-19:48/50 | 05:56 18:23-19:48/85 | 06:28 18:19-18:56/37 | 06:59 18:10-18:18/8  | 06:35 15:40-15:58/18 | 07:10 15:46-16:05/19 |
|                             | 20:40                | 20:18                | 19:33 19:01-19:10/9  | 18:41                | 16:54                | 16:30                |
| 4                           | 05:31 18:58-19:49/51 | 05:57 18:22-19:47/85 | 06:29 18:20-18:53/33 | 07:00 18:11-18:16/5  | 06:36 15:38-16:00/22 | 07:11 15:47-16:04/17 |
|                             | 20:39                | 20:17                | 19:31 19:02-19:08/6  | 18:39 17:59-18:10/11 | 16:53                | 16:30                |
| 5                           | 05:31 18:58-19:48/50 | 05:58 18:21-19:46/85 | 06:30 18:22-18:51/29 | 07:01 18:13-18:14/1  | 06:37 15:36-16:01/25 | 07:12 15:48-16:04/16 |
|                             | 20:39                | 20:16                | 19:29 19:03-19:06/3  | 18:37 17:57-18:11/14 | 16:51                | 16:30                |
| 6                           | 05:32 18:58-19:49/51 | 05:59 18:20-19:45/85 | 06:31 18:24-18:46/22 | 07:02 17:55-18:12/17 | 06:38 15:36-16:02/26 | 07:13 15:49-16:04/15 |
|                             | 20:39                | 20:14                | 19:28 19:04-19:05/1  | 18:36                | 16:50                | 16:30                |
| 7                           | 05:32 18:58-19:49/51 | 06:00 18:19-19:44/85 | 06:32 18:28-18:41/13 | 07:03 17:54-18:10/16 | 06:39 15:35-16:03/28 | 07:14 15:50-16:04/14 |
|                             | 20:39                | 20:13                | 19:26                | 18:34                | 16:49                | 16:30                |
| 8                           | 05:33 18:58-19:49/51 | 06:01 18:18-19:43/85 | 06:33                | 07:04 17:54-18:10/16 | 06:41 15:34-16:03/29 | 07:15 15:51-16:04/13 |
|                             | 20:38                | 20:12                | 19:24                | 18:32                | 16:48                | 16:30                |
| 9                           | 05:34 18:58-19:50/52 | 06:02 18:18-19:41/83 | 06:34                | 07:05 17:53-18:08/15 | 06:42 15:33-16:03/30 | 07:16 15:52-16:04/12 |
|                             | 20:38                | 20:11                | 19:22                | 18:31                | 16:47                | 16:30                |
| 10                          | 05:34 18:58-19:50/52 | 06:03 18:17-19:39/82 | 06:35                | 07:06 17:53-18:06/13 | 06:43 15:34-16:05/31 | 07:17 15:54-16:04/10 |
|                             | 20:37                | 20:09                | 19:21                | 18:29                | 16:46                | 16:30                |
| 11                          | 05:35 18:58-19:50/52 | 06:04 18:16-19:37/81 | 06:36                | 07:08 17:52-18:04/12 | 06:44 15:33-16:05/32 | 07:18 15:55-16:03/8  |
|                             | 20:37                | 20:08                | 19:19                | 18:27                | 16:45                | 16:30                |
| 12                          | 05:36 18:58-19:51/53 | 06:05 18:16-19:35/79 | 06:37                | 07:09 17:53-18:02/9  | 06:46 15:33-16:05/32 | 07:18 15:57-16:03/6  |
|                             | 20:37                | 20:07                | 19:17                | 18:26                | 16:44                | 16:30                |
| 13                          | 05:37 18:58-19:50/52 | 06:06 18:15-19:31/76 | 06:38                | 07:10 17:53-18:00/7  | 06:47 15:34-16:06/32 | 07:19 15:58-16:01/3  |
|                             | 20:36                | 20:05                | 19:16                | 18:24                | 16:43                | 16:30                |
| 14                          | 05:37 18:58-19:51/53 | 06:07 18:15-19:27/72 | 06:39                | 07:11 17:54-18:00/6  | 06:48 15:33-16:05/32 | 07:20 16:30          |
|                             | 20:35                | 20:04                | 19:14                | 18:23                | 16:42                | 16:30                |
| 15                          | 05:38 18:58-19:51/53 | 06:08 18:14-19:27/73 | 06:40                | 07:12 17:44-17:47/3  | 06:49 15:33-16:05/32 | 07:21 16:30          |
|                             | 20:35                | 20:02                | 19:12                | 18:21 17:56-17:58/2  | 16:41                | 16:30                |
| 16                          | 05:39 18:58-19:51/53 | 06:09 18:14-19:26/72 | 06:41                | 07:13 17:40-17:50/10 | 06:50 15:34-16:06/32 | 07:21 16:31          |
|                             | 20:34                | 20:01                | 19:10                | 18:19                | 16:40                | 16:31                |
| 17                          | 05:40 18:56-19:52/56 | 06:10 18:13-19:26/73 | 06:42                | 07:14 17:38-17:52/14 | 06:52 15:34-16:06/32 | 07:22 16:31          |
|                             | 20:34                | 19:59                | 19:09                | 18:18                | 16:39                | 16:31                |
| 18                          | 05:41 18:53-19:51/58 | 06:11 18:13-19:25/72 | 06:43                | 07:15 17:36-17:52/16 | 06:53 15:35-16:05/30 | 07:23 16:31          |
|                             | 20:33                | 19:58                | 19:07                | 18:16                | 16:38                | 16:31                |
| 19                          | 05:41 18:52-19:51/59 | 06:12 18:13-19:24/71 | 06:44                | 07:17 17:35-17:51/16 | 06:54 15:36-16:06/30 | 07:23 16:32          |
|                             | 20:32                | 19:57                | 19:05                | 18:15                | 16:38                | 16:32                |
| 20                          | 05:42 18:51-19:52/61 | 06:13 18:13-19:23/70 | 06:45                | 07:18 17:35-17:50/15 | 06:55 15:36-16:06/30 | 07:24 16:32          |
|                             | 20:32                | 19:55                | 19:03                | 18:13                | 16:37                | 16:32                |
| 21                          | 05:43 18:50-19:52/62 | 06:14 18:13-19:22/69 | 06:46 18:22-18:26/4  | 07:19 17:34-17:48/14 | 06:57 15:37-16:05/28 | 07:25 16:32          |
|                             | 20:31                | 19:54                | 19:02                | 18:12                | 16:36                | 16:32                |
| 22                          | 05:44 18:49-19:52/63 | 06:15 18:12-19:21/69 | 06:47 18:18-18:29/11 | 07:20 17:34-17:46/12 | 06:58 15:37-16:05/28 | 07:25 16:33          |
|                             | 20:30                | 19:52                | 19:00                | 18:10                | 16:36                | 16:33                |
| 23                          | 05:45 18:48-19:52/64 | 06:16 18:12-19:19/67 | 06:48 18:16-18:31/15 | 07:21 17:34-17:45/11 | 06:59 15:39-16:05/26 | 07:26 16:33          |
|                             | 20:29                | 19:50                | 18:58                | 18:09                | 16:35                | 16:33                |
| 24                          | 05:46 18:39-19:52/73 | 06:17 18:12-19:18/66 | 06:49 18:15-18:33/18 | 07:22 17:35-17:44/9  | 07:00 15:39-16:05/26 | 07:26 16:34          |
|                             | 20:28                | 19:49                | 18:56                | 18:07                | 16:34                | 16:34                |
| 25                          | 05:47 18:35-19:51/76 | 06:18 18:13-19:18/65 | 06:50 18:14-18:32/18 | 06:24 16:35-16:42/7  | 07:01 15:40-16:05/25 | 07:27 16:35          |
|                             | 20:27                | 19:47                | 18:55                | 17:06                | 16:34                | 16:35                |
| 26                          | 05:48 18:33-19:51/78 | 06:19 18:13-19:20/67 | 06:51 18:13-18:30/17 | 06:25 16:36-16:40/4  | 07:02 15:41-16:05/24 | 07:27 16:35          |
|                             | 20:26                | 19:46                | 18:53                | 17:04                | 16:33                | 16:35                |
| 27                          | 05:49 18:31-19:51/80 | 06:20 18:13-19:21/68 | 06:52 18:11-18:29/18 | 06:26 16:37-16:39/2  | 07:03 15:42-16:05/23 | 07:27 16:36          |
|                             | 20:25                | 19:44                | 18:51                | 17:03                | 16:33                | 16:36                |
| 28                          | 05:50 18:30-19:51/81 | 06:21 18:13-19:20/67 | 06:53 18:11-18:27/16 | 06:27                | 07:05 15:43-16:06/23 | 07:28 16:37          |
|                             | 20:24                | 19:43                | 18:49                | 17:02                | 16:32                | 16:37                |
| 29                          | 05:51 18:28-19:50/82 | 06:22 18:14-19:19/65 | 06:55 18:10-18:25/15 | 06:28                | 07:06 15:44-16:05/21 | 07:28 16:37          |
|                             | 20:23                | 19:41                | 18:48                | 17:00                | 16:32                | 16:37                |
| 30                          | 05:52 18:27-19:50/83 | 06:23 18:14-19:02/48 | 06:56 18:10-18:23/13 | 06:30                | 07:07 15:44-16:05/21 | 07:28 16:38          |
|                             | 20:22                | 19:39 19:03-19:17/14 | 18:46                | 16:59                | 16:31                | 16:38                |
| 31                          | 05:53 18:26-19:50/84 | 06:24 18:15-19:01/46 | 06:57                | 06:31                | 07:08 16:05-16:10/5  | 07:28 16:39          |
|                             | 20:21                | 19:38 19:03-19:15/12 | 18:45                | 16:58                | 16:31                | 16:39                |
| Potential sun hours         | 462                  | 430                  | 375                  | 344                  | 296                  | 285                  |
| Sum of minutes with flicker | 1883                 | 2305                 | 404                  | 306                  | 791                  | 177                  |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

### SHADOW - Calendar per WTG

WTG: LAR03 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (3)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

#### Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January              | February             | March                | April                | May                  | June                 |
|-----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| 1                           | 07:28 14:40-16:06/86 | 07:14 15:05-16:42/97 | 06:37 07:34-08:11/37 | 06:45 07:42-09:09/87 | 05:58 07:45-08:14/29 | 05:29 06:48-07:33/45 |
| 2                           | 07:29 14:41-16:07/86 | 07:13 15:06-16:43/97 | 06:36 07:32-08:12/40 | 06:44 07:40-09:08/88 | 05:57 07:47-08:12/25 | 05:28 06:49-07:33/44 |
| 3                           | 07:29 14:42-16:07/85 | 07:12 15:07-16:43/96 | 06:34 07:30-08:13/43 | 06:42 07:40-09:08/88 | 05:56 07:49-08:08/19 | 05:28 06:50-07:33/43 |
| 4                           | 07:29 14:42-16:08/86 | 07:11 15:07-16:42/95 | 06:33 07:29-08:14/45 | 06:40 07:39-09:06/87 | 05:54 07:54-08:03/9  | 05:27 06:50-07:32/42 |
| 5                           | 07:29 14:43-16:09/86 | 07:10 15:08-16:43/95 | 06:31 07:27-08:15/48 | 06:39 07:37-09:05/88 | 05:53 06:43-07:39/56 | 05:27 06:51-07:32/41 |
| 6                           | 07:29 14:45-16:09/84 | 07:09 15:09-16:43/94 | 06:29 07:26-08:15/49 | 06:37 07:37-09:04/87 | 05:52 06:43-07:40/57 | 05:27 06:52-07:32/40 |
| 7                           | 07:29 14:46-16:10/84 | 07:08 15:11-16:43/92 | 06:28 07:26-08:16/50 | 06:35 07:36-09:02/86 | 05:51 06:43-07:40/57 | 05:26 06:52-07:31/39 |
| 8                           | 07:28 14:47-16:11/84 | 07:07 15:12-16:42/90 | 06:26 07:24-08:16/52 | 06:34 07:35-09:00/85 | 05:49 06:43-07:40/57 | 05:26 06:53-07:31/38 |
| 9                           | 07:28 14:47-16:10/83 | 07:06 15:13-16:50/37 | 06:24 07:23-08:16/53 | 06:32 07:36-08:59/83 | 05:48 06:42-07:39/57 | 05:26 06:53-07:31/38 |
| 10                          | 07:28 14:49-16:11/82 | 07:04 15:15-16:49/34 | 06:23 07:23-08:17/54 | 06:30 07:35-08:57/82 | 05:47 06:42-07:39/57 | 05:26 06:54-07:31/37 |
| 11                          | 07:28 14:51-16:12/81 | 07:03 15:17-16:47/30 | 06:21 07:22-08:16/54 | 06:29 07:34-08:55/81 | 05:46 06:42-07:39/57 | 05:25 06:55-07:31/36 |
| 12                          | 07:28 14:52-16:12/80 | 07:02 15:20-16:45/25 | 06:19 07:22-08:16/54 | 06:27 07:34-08:54/80 | 05:45 06:42-07:39/57 | 05:25 06:56-07:31/35 |
| 13                          | 07:27 14:54-16:26/92 | 07:01 15:23-16:42/19 | 06:18 07:22-08:16/54 | 06:25 07:34-08:51/77 | 05:44 06:42-07:39/57 | 05:25 06:56-07:31/35 |
| 14                          | 07:27 14:56-16:27/91 | 06:59 15:28-16:37/9  | 06:16 07:20-08:16/56 | 06:24 07:34-08:49/75 | 05:43 06:42-07:39/57 | 05:25 06:57-07:31/34 |
| 15                          | 07:26 14:58-16:28/90 | 06:58 15:33-16:41/48 | 06:14 07:18-08:15/57 | 06:22 07:34-08:45/71 | 05:42 06:42-07:38/56 | 05:25 06:57-07:31/34 |
| 16                          | 07:26 14:59-16:30/91 | 06:57 15:36-16:37/28 | 06:13 07:18-08:15/57 | 06:21 07:33-08:41/68 | 05:41 06:42-07:38/56 | 05:25 06:58-07:31/34 |
| 17                          | 07:26 14:59-16:30/91 | 06:55 16:11-16:36/25 | 06:11 07:16-08:14/58 | 06:19 07:34-08:35/61 | 05:40 06:42-07:38/56 | 05:25 06:58-07:31/34 |
| 18                          | 07:25 14:59-16:31/92 | 06:54 16:12-16:34/22 | 06:09 07:15-08:14/59 | 06:17 07:34-08:32/58 | 05:39 06:43-07:38/55 | 05:25 06:58-07:31/33 |
| 19                          | 07:25 14:59-16:33/94 | 06:52 16:14-16:32/18 | 06:08 07:13-08:14/61 | 06:16 07:34-08:32/58 | 05:38 06:43-07:38/55 | 05:25 06:58-07:31/32 |
| 20                          | 07:24 14:59-16:33/94 | 06:51 16:18-16:27/9  | 06:06 07:13-08:15/62 | 06:14 07:34-08:30/56 | 05:37 06:43-07:38/55 | 05:25 06:58-07:31/32 |
| 21                          | 07:23 14:59-16:34/95 | 06:50 16:42-17:10/28 | 06:04 07:12-08:15/63 | 06:13 07:35-08:30/55 | 05:36 06:43-07:37/54 | 05:26 06:58-07:31/32 |
| 22                          | 07:23 15:00-16:35/95 | 06:48 16:40-17:11/31 | 06:02 07:05-08:14/69 | 06:11 07:35-08:28/53 | 05:35 06:44-07:36/52 | 05:26 06:59-07:31/32 |
| 23                          | 07:22 15:00-16:35/95 | 06:47 16:40-17:12/32 | 06:01 07:01-08:15/74 | 06:10 07:36-08:27/51 | 05:34 06:45-07:37/52 | 05:26 06:59-07:31/32 |
| 24                          | 07:21 15:00-16:35/95 | 06:45 16:39-17:11/32 | 05:59 06:57-08:14/77 | 06:08 07:37-08:26/49 | 05:33 06:45-07:36/51 | 05:26 06:59-07:31/32 |
| 25                          | 07:21 15:01-16:36/95 | 06:44 07:45-08:01/16 | 05:57 06:54-08:14/80 | 06:07 07:37-08:24/47 | 05:33 06:45-07:36/51 | 05:27 06:59-07:32/33 |
| 26                          | 07:20 15:02-16:37/95 | 06:42 16:40-17:12/32 | 05:56 06:51-08:13/82 | 06:05 07:39-08:23/44 | 05:32 06:46-07:36/50 | 05:27 06:59-07:32/33 |
| 27                          | 07:19 15:02-16:39/97 | 06:40 07:38-08:07/29 | 05:54 06:50-08:13/83 | 06:04 07:39-08:21/42 | 05:32 06:46-07:35/49 | 05:27 06:59-07:32/33 |
| 28                          | 07:18 15:03-16:40/97 | 06:39 07:35-08:09/34 | 05:52 06:48-08:12/84 | 06:03 07:40-08:20/40 | 05:31 06:46-07:34/48 | 05:28 07:00-07:34/34 |
| 29                          | 07:17 15:03-16:41/98 | 06:37 16:39-17:11/32 | 05:50 07:46-09:12/86 | 06:01 07:42-08:19/37 | 05:30 06:47-07:35/48 | 05:28 06:59-07:34/35 |
| 30                          | 07:16 15:04-16:41/97 | 06:36 16:40-17:12/32 | 05:49 07:44-09:11/87 | 05:59 07:43-08:16/33 | 05:29 06:48-07:34/46 | 05:28 06:59-07:34/35 |
| 31                          | 07:15 15:04-16:42/98 | 06:35 16:41-17:13/32 | 05:48 07:43-09:10/88 | 05:58 07:44-08:17/34 | 05:28 06:48-07:34/46 | 05:28 06:59-07:34/35 |
| Potential sun hours         |                      | 295                  | 296                  | 369                  | 400                  | 451                  |
| Sum of minutes with flicker |                      | 2822                 | 1747                 | 3017                 | 5005                 | 3751                 |
|                             |                      |                      |                      |                      |                      | 455                  |
|                             |                      |                      |                      |                      |                      | 3789                 |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



# SHADOW - Calendar per WTG

WTG: LAR03 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (3)

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

## Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|    | July   | August   | September  | October  | November  | December   |
|----|--|--|--|--|---|--|
| 1  | 05:29 06:59-07:35/36<br>20:40 06:04-06:48/44<br>20:40 06:58-07:35/37<br>20:40 06:04-06:48/44       | 05:54 06:52-07:50/58<br>20:20 19:02-19:50/48<br>05:55 06:52-07:50/58<br>20:19 19:01-19:49/48 | 06:25 07:34-08:55/81<br>19:36 17:46-18:57/71<br>06:26 07:34-08:56/82<br>19:34 17:45-18:56/71 | 06:57 08:01-08:55/54<br>18:44 17:46-18:15/29<br>06:58 08:01-08:55/54<br>18:42 17:46-18:14/28 | 06:32 14:44-15:19/35<br>16:56 15:23-16:11/48<br>06:33 14:43-16:11/88<br>16:55 16:31-15:59/16:05/6 | 07:08 14:33-15:54/81<br>16:31 15:58-16:06/8<br>07:09 14:32-15:54/82<br>16:31 15:59-16:05/6 |
| 2  | 05:30 06:59-07:36/37<br>20:40 06:05-06:49/44<br>20:39 06:05-06:49/44                               | 05:56 06:52-07:50/58<br>20:18 19:01-19:49/48<br>05:57 06:52-07:50/58<br>20:17 19:00-19:48/48 | 06:27 07:34-08:57/83<br>19:33 17:45-18:55/70<br>06:29 07:33-08:58/85<br>19:31 17:45-18:55/70 | 06:57 07:07-07:22/25<br>18:41 17:46-18:12/26<br>07:00 08:01-08:54/53<br>18:39 17:47-18:11/24 | 06:34 14:42-16:11/89<br>16:54 16:30<br>06:36 14:40-16:12/92<br>16:53 16:30                        | 07:10 14:32-15:54/82<br>16:30<br>07:11 14:31-15:55/84<br>16:30                             |
| 3  | 05:31 06:58-07:37/39<br>20:39 06:05-06:49/44<br>05:32 06:58-07:38/40<br>20:39 06:06-06:49/43       | 05:58 06:53-07:50/57<br>20:16 19:00-19:47/47<br>05:59 06:53-07:49/56<br>20:14 18:59-19:46/47 | 06:30 07:33-08:58/85<br>19:29 17:45-18:54/69<br>06:31 07:33-08:59/87<br>19:28 17:45-18:53/68 | 07:01 08:01-08:53/52<br>18:37 17:27-17:34/7<br>07:02 08:01-08:52/51<br>18:36 17:23-17:38/15  | 06:37 14:39-16:12/93<br>16:57 16:30<br>06:38 14:38-16:12/94<br>16:50 16:30                        | 07:12 14:31-15:55/84<br>16:30<br>07:13 14:31-15:55/84<br>16:30                             |
| 4  | 05:32 06:58-07:38/40<br>20:39 06:06-06:49/43<br>05:32 06:58-07:38/40<br>20:39 06:06-06:49/43       | 05:58 06:53-07:49/56<br>20:13 18:59-19:45/46<br>06:01 06:53-07:49/56<br>20:12 18:18-18:27/9  | 06:32 07:32-09:00/88<br>19:26 17:46-18:51/65<br>06:33 07:33-09:00/87<br>19:24 17:46-18:50/64 | 07:03 08:02-08:52/50<br>18:34 17:20-17:39/19<br>07:04 08:03-08:51/48<br>18:32 17:19-17:42/23 | 06:39 14:38-16:13/95<br>16:49 16:30<br>06:41 14:37-16:13/96<br>16:48 16:30                        | 07:14 14:31-15:56/85<br>16:30<br>07:15 14:31-15:56/85<br>16:30                             |
| 5  | 05:34 06:58-07:40/42<br>20:38 06:06-06:49/43<br>20:38 06:07-06:49/42                               | 06:02 08:02-08:14/12<br>20:10 06:53-07:49/56<br>06:03 07:58-08:18/20<br>20:09 06:54-07:48/54 | 06:34 07:33-09:01/88<br>19:22 17:46-18:48/62<br>06:35 07:33-09:01/88<br>19:21 17:47-18:47/60 | 07:05 08:03-08:50/47<br>18:31 17:17-17:43/26<br>07:06 08:04-08:48/44<br>18:29 17:15-17:43/28 | 06:42 14:36-16:13/97<br>16:47 16:30<br>06:43 14:36-16:13/97<br>16:46 16:30                        | 07:16 14:31-15:56/85<br>16:30<br>07:17 14:31-15:57/86<br>16:30                             |
| 6  | 05:35 06:57-07:41/44<br>20:37 06:08-06:48/40<br>05:36 06:57-07:42/45<br>20:37 06:08-06:48/40       | 06:04 07:55-08:21/26<br>20:08 06:54-07:48/54<br>06:05 07:53-08:23/30<br>20:06 06:54-07:47/53 | 06:36 07:34-09:01/87<br>19:19 17:47-18:45/58<br>06:37 07:34-09:02/88<br>19:17 17:48-18:42/54 | 07:07 08:05-08:47/42<br>18:27 17:14-17:44/30<br>07:09 08:06-08:45/39<br>18:26 17:13-17:44/31 | 06:44 14:35-16:13/98<br>16:45 16:30<br>06:46 14:35-16:12/97<br>16:44 16:30                        | 07:18 14:31-15:57/86<br>16:30<br>07:18 14:30-15:57/87<br>16:30                             |
| 7  | 05:36 06:56-07:42/46<br>20:36 06:08-06:47/39<br>05:37 06:56-07:43/47<br>20:36 06:09-06:47/38       | 06:06 07:51-08:25/34<br>20:05 06:55-07:46/51<br>06:07 07:49-08:27/38<br>20:04 06:55-07:45/50 | 06:38 07:35-09:02/87<br>19:15 17:48-18:40/52<br>06:39 07:36-09:02/86<br>19:14 17:48-18:40/52 | 07:10 08:07-08:43/36<br>18:24 17:12-17:44/32<br>07:11 08:09-08:41/32<br>18:23 17:11-17:44/33 | 06:47 14:35-16:13/98<br>16:43 16:30<br>06:48 14:35-16:12/97<br>16:42 16:30                        | 07:19 14:31-15:57/86<br>16:30<br>07:20 14:31-15:58/87<br>16:30                             |
| 8  | 05:38 06:56-07:43/47<br>20:35 06:10-06:47/37<br>05:39 06:56-07:44/48<br>20:34 06:11-06:47/36       | 06:08 07:48-08:28/40<br>20:02 06:56-07:45/49<br>06:09 07:46-08:29/43<br>20:01 06:57-07:43/46 | 06:40 07:37-09:02/85<br>19:12 17:49-18:40/51<br>06:41 07:38-09:02/84<br>19:10 17:49-18:39/50 | 07:12 08:11-08:39/28<br>18:21 17:12-17:44/32<br>07:13 08:14-08:35/21<br>18:19 17:11-17:44/33 | 06:49 14:34-16:11/97<br>16:41 16:30<br>06:50 14:35-16:11/96<br>16:40 16:30                        | 07:21 14:32-15:58/86<br>16:30<br>07:21 14:31-15:58/87<br>16:30                             |
| 9  | 05:40 06:56-07:45/49<br>20:34 06:12-06:47/35<br>05:40 06:55-07:45/50<br>20:33 06:12-06:46/34       | 06:10 07:45-08:30/45<br>19:59 06:58-07:42/44<br>06:11 07:44-08:31/47<br>19:58 06:59-07:41/42 | 06:42 07:39-09:01/82<br>19:09 17:51-18:38/48<br>06:43 07:41-09:01/80<br>19:07 17:51-18:37/46 | 07:14 08:18-08:30/12<br>18:18 17:11-17:43/32<br>07:15 17:11-17:43/32<br>18:16 17:11-17:42/31 | 06:52 14:35-16:10/95<br>16:39 16:30<br>06:53 14:34-16:09/95<br>16:38 16:30                        | 07:22 14:32-15:59/87<br>16:31<br>07:23 14:33-15:59/86<br>16:31                             |
| 10 | 05:41 06:54-07:45/51<br>20:32 06:13-06:45/32<br>05:42 06:54-07:46/52<br>20:31 06:14-06:44/30       | 06:12 07:43-08:32/49<br>19:56 07:00-07:39/39<br>06:13 07:42-08:33/51<br>19:55 07:01-07:38/37 | 06:44 07:43-09:01/78<br>19:05 17:53-18:36/43<br>06:45 07:45-09:00/75<br>19:03 17:55-18:34/39 | 07:17 17:12-17:42/30<br>18:13 17:12-17:42/30<br>07:19 17:13-17:41/28<br>18:12 17:13-17:41/28 | 06:54 14:34-16:09/95<br>16:38 16:30<br>06:55 14:35-16:10/95<br>16:37 16:30                        | 07:23 14:33-15:59/86<br>16:32<br>07:24 14:33-16:00/87<br>16:32                             |
| 11 | 05:43 06:54-07:47/53<br>20:31 06:15-06:44/29<br>05:44 06:54-07:47/53<br>20:30 06:16-06:43/27       | 06:14 07:41-08:34/53<br>19:53 07:03-07:36/33<br>06:15 07:40-08:34/54<br>19:52 07:05-07:33/28 | 06:46 07:49-09:00/71<br>19:02 17:53-18:33/40<br>06:47 07:57-09:00/63<br>19:00 17:51-18:31/40 | 07:20 16:47-16:59/12<br>18:10 17:13-17:39/26<br>07:21 16:43-17:02/19<br>18:09 17:14-17:38/24 | 06:56 14:35-16:10/95<br>16:36 16:30<br>06:58 14:35-16:09/94<br>16:35 16:30                        | 07:25 14:33-16:00/87<br>16:32<br>07:25 14:34-16:01/87<br>16:33                             |
| 12 | 05:45 06:54-07:48/54<br>20:29 06:18-06:42/24<br>05:46 06:54-07:48/54<br>20:28 06:19-06:40/21       | 06:16 07:39-08:35/56<br>19:50 07:07-07:30/23<br>06:17 07:38-08:36/58<br>19:49 07:07-07:26/19 | 06:48 07:57-08:59/62<br>18:58 17:50-18:28/58<br>06:49 07:58-08:58/60<br>18:56 17:49-18:24/55 | 07:22 14:56-15:08/12<br>17:02 15:36-16:09/33<br>06:28 14:52-15:12/20<br>17:00 15:35-16:09/34 | 06:59 14:35-16:09/94<br>16:35 16:30<br>07:00 14:37-16:09/92<br>16:34 16:30                        | 07:26 14:34-16:01/87<br>16:33<br>07:26 14:36-16:02/86<br>16:34                             |
| 13 | 05:47 06:53-07:48/55<br>20:27 06:20-06:37/17<br>05:48 06:53-07:48/55<br>20:26 06:23-06:35/12       | 06:18 07:37-08:36/59<br>19:47 17:50-18:59/69<br>06:19 07:37-08:39/62<br>19:46 17:49-18:59/70 | 06:50 07:58-08:57/59<br>18:55 17:48-18:17/29<br>06:51 07:58-08:56/58<br>18:53 17:48-18:17/29 | 06:24 15:40-16:06/26<br>17:06 16:18-16:35/17<br>06:25 15:38-16:07/29<br>17:04 16:20-16:31/11 | 06:54 14:35-16:09/94<br>16:35 16:30<br>07:03 14:37-16:09/92<br>16:34 16:30                        | 07:26 14:36-16:02/86<br>16:34<br>07:27 14:36-16:03/87<br>16:35                             |
| 14 | 05:49 06:53-07:49/56<br>20:25 19:06-19:56/50<br>20:29 06:18-06:42/24<br>05:50 06:53-07:49/56       | 06:20 07:36-08:44/68<br>19:44 17:49-18:59/70<br>19:50 07:07-07:30/23<br>06:21 07:36-08:47/71 | 06:52 07:59-08:56/57<br>18:51 17:47-18:17/30<br>06:53 07:59-08:56/57<br>18:49 17:46-18:17/31 | 06:26 15:37-16:07/30<br>17:03 14:56-15:08/12<br>06:27 14:56-15:08/12<br>17:02 15:36-16:09/33 | 07:03 14:37-16:07/90<br>16:33 16:30<br>07:05 14:36-16:06/90<br>16:32 16:30                        | 07:27 14:37-16:04/87<br>16:36<br>07:28 14:38-16:04/86<br>16:37                             |
| 15 | 05:50 06:53-07:49/56<br>20:24 19:05-19:54/49<br>05:51 06:52-07:49/57<br>20:23 19:04-19:52/48       | 06:22 07:35-08:50/75<br>19:41 17:48-18:59/71<br>06:23 07:35-08:52/77<br>19:39 17:47-18:58/71 | 06:54 08:00-08:56/56<br>18:48 17:46-18:16/30<br>06:56 08:01-08:56/55<br>18:46 17:46-18:15/29 | 06:28 14:52-15:12/20<br>17:00 15:35-16:09/34<br>06:30 14:48-15:15/27<br>16:59 15:30-16:09/39 | 07:06 14:35-16:07/92<br>16:32 16:30<br>07:07 14:34-15:54/80<br>16:31 15:56-16:06/10               | 07:28 14:38-16:05/87<br>16:37<br>07:28 14:39-16:05/86<br>16:38                             |
| 16 | 05:52 06:52-07:50/58<br>20:21 19:03-19:50/47<br>Potential sun hours<br>Sum of minutes with flicker | 06:24 07:34-08:54/80<br>19:38 17:47-18:57/70<br>429  | 06:31 14:47-15:17/30<br>16:58 15:26-16:11/45<br>375  | 06:31 14:47-15:17/30<br>16:58 15:26-16:11/45<br>344  | 07:28 14:39-16:05/86<br>16:39<br>296  | 07:28 14:39-16:05/86<br>16:39<br>2669  |

### Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



## SHADOW - Calendar per WTG

**WTG:** LAR04 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (4)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January  | February                                    | March                         | April                         | May                           | June                          |
|-----------------------------|--|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| 1                           | 07:28 08:02-09:01/59 13:40-14:24/44<br>16:40 15:11-16:04/53                              | 07:14 07:42-08:15/33<br>17:15 08:44-08:53/9 | 06:37 07:22-08:07/45<br>17:50 | 06:45 07:27-08:13/46<br>19:25 | 05:58<br>19:58                | 05:29 06:27-07:40/73<br>20:29 |
| 2                           | 07:28 08:02-09:01/59 13:41-14:24/43<br>16:41 15:11-16:05/54                              | 07:13 07:42-08:15/33<br>17:16               | 06:36 07:21-08:06/45<br>17:51 | 06:44 07:27-08:12/45<br>19:26 | 05:57<br>19:59                | 05:28 06:27-07:40/73<br>20:29 |
| 3                           | 07:29 08:03-09:02/59 13:42-14:24/42<br>16:42 15:12-16:05/53                              | 07:12 07:43-08:16/33<br>17:17               | 06:34 07:21-08:06/45<br>17:52 | 06:42 07:27-08:12/45<br>19:27 | 05:56<br>20:00                | 05:28 06:27-07:41/74<br>20:30 |
| 4                           | 07:29 08:03-09:02/59 13:43-14:24/41<br>16:43 15:13-16:06/53                              | 07:11 07:42-08:15/33<br>17:19               | 06:33 07:21-08:06/45<br>17:54 | 06:40 07:27-08:11/44<br>19:29 | 05:54<br>20:01                | 05:27 06:26-07:41/75<br>20:31 |
| 5                           | 07:29 08:04-09:03/59 13:44-14:24/40<br>16:43 15:14-16:07/53                              | 07:10 07:42-08:15/33<br>17:20               | 06:31 07:21-08:04/43<br>17:55 | 06:39 07:27-08:10/43<br>19:30 | 05:53<br>20:03                | 05:27 06:26-07:42/76<br>20:32 |
| 6                           | 07:29 08:05-09:03/58 13:45-14:24/39<br>16:44 15:14-16:08/54                              | 07:09 07:43-08:15/32<br>17:21               | 06:29 07:21-08:03/42<br>17:56 | 06:37 07:28-08:09/41<br>19:31 | 05:52<br>20:04                | 05:27 06:26-07:42/76<br>20:32 |
| 7                           | 07:28 08:06-09:04/58 13:47-14:23/36<br>16:45 15:15-16:08/53                              | 07:08 07:39-08:16/37<br>17:23               | 06:28 07:22-08:03/41<br>17:57 | 06:35 07:28-08:08/40<br>19:32 | 05:51<br>20:05                | 05:26 06:23-07:43/80<br>20:33 |
| 8                           | 07:28 08:07-09:04/57 13:48-14:23/35<br>16:46 15:16-16:09/53                              | 07:07 07:37-08:15/38<br>17:24               | 06:26 07:22-08:01/39<br>17:58 | 06:34 07:28-08:06/38<br>19:33 | 05:50<br>20:06                | 05:26 06:20-07:43/83<br>20:33 |
| 9                           | 07:28 08:07-09:04/57 13:49-14:22/33<br>16:47 15:17-16:09/52                              | 07:05 07:35-08:14/39<br>17:25               | 06:24 07:23-08:00/37<br>17:59 | 06:32 07:30-08:05/35<br>19:34 | 05:48<br>20:07                | 05:26 06:19-07:43/84<br>20:34 |
| 10                          | 07:28 08:09-09:05/56 13:51-14:21/30<br>16:48 15:18-16:10/52                              | 07:04 07:34-08:14/40<br>17:26               | 06:23 07:24-07:59/35<br>18:01 | 06:30 07:31-08:03/32<br>19:35 | 05:47 06:56-07:08/12<br>20:08 | 05:26 06:18-07:44/86<br>20:35 |
| 11                          | 07:28 08:10-09:05/55 13:53-14:21/28<br>16:50 15:19-16:11/52                              | 07:03 07:33-08:14/41<br>17:28               | 06:21 07:25-07:57/32<br>18:02 | 06:29 07:32-08:00/28<br>19:36 | 05:46 06:51-07:14/23<br>20:09 | 05:25 06:17-07:44/87<br>20:35 |
| 12                          | 07:27 08:11-09:05/54 15:20-15:41/21<br>16:51 15:42-16:11/29 13:55-14:19/24               | 07:02 07:33-08:13/40<br>17:29               | 06:19 07:26-07:54/28<br>18:03 | 06:27 07:34-07:59/25<br>19:37 | 05:45 06:47-07:17/30<br>20:10 | 05:25 06:17-07:45/88<br>20:36 |
| 13                          | 07:27 08:13-09:06/53 15:21-15:41/20<br>16:52 15:42-16:12/30 13:58-14:18/20               | 07:00 07:31-08:11/40<br>17:30               | 06:18 07:29-07:53/24<br>18:04 | 06:25 07:36-07:55/19<br>19:38 | 05:44 06:45-07:20/35<br>20:11 | 05:25 06:16-07:45/89<br>20:36 |
| 14                          | 07:27 08:17-08:19/2 15:22-15:40/18 08:22-09:06/44<br>16:53 15:42-16:11/29 14:02-14:16/14 | 06:59 07:31-08:10/39<br>17:31               | 06:16 07:31-07:49/18<br>18:05 | 06:24 07:40-07:52/12<br>19:40 | 05:43 06:42-07:22/40<br>20:12 | 05:25 06:16-07:45/89<br>20:37 |
| 15                          | 07:26 15:43-16:12/29 08:22-09:06/44<br>16:54 15:24-15:40/16                              | 06:58 07:31-08:08/37<br>17:33               | 06:14 07:36-07:43/7<br>18:06  | 06:22<br>19:41                | 05:42 06:40-07:24/44<br>20:13 | 05:25 06:15-07:46/91<br>20:37 |
| 16                          | 07:26 15:43-16:12/29 08:23-09:07/44<br>16:55 15:26-15:38/12                              | 06:56 07:30-08:04/34<br>17:34               | 06:13 06:49-07:03/14<br>18:07 | 06:21<br>19:42                | 05:41 06:39-07:26/47<br>20:14 | 05:25 06:15-07:46/91<br>20:38 |
| 17                          | 07:25 15:44-16:13/29 08:23-09:06/43<br>16:56 15:29-15:36/7                               | 06:55 07:30-08:05/35<br>17:35               | 06:11 06:44-07:06/22<br>18:09 | 06:19<br>19:43                | 05:40 06:37-07:27/50<br>20:15 | 05:25 06:15-07:46/91<br>20:38 |
| 18                          | 07:25 15:44-16:13/29<br>16:57 08:24-09:06/42   | 06:54 07:28-08:04/36<br>17:37               | 06:09 06:41-07:08/27<br>18:10 | 06:17<br>19:44                | 05:39 06:37-07:29/52<br>20:16 | 05:25 06:15-07:46/91<br>20:38 |
| 19                          | 07:24 15:45-16:14/29<br>16:59 08:25-09:07/42   | 06:52 07:28-08:04/36<br>17:38               | 06:08 06:39-07:10/31<br>18:11 | 06:16<br>19:45                | 05:38 06:35-07:30/55<br>20:17 | 05:25 06:15-07:46/91<br>20:39 |
| 20                          | 07:24 07:47-07:55/8 08:25-09:06/41<br>17:00 15:45-16:13/28                               | 06:51 07:26-08:04/38<br>17:39               | 06:06 06:37-07:12/35<br>18:12 | 06:14<br>19:46                | 05:37 06:34-07:31/57<br>20:18 | 05:25 06:15-07:46/91<br>20:39 |
| 21                          | 07:23 07:45-07:57/12 08:26-09:06/40<br>17:01 15:46-16:13/27                              | 06:49 07:25-08:05/40<br>17:40               | 06:04 06:35-07:12/37<br>18:13 | 06:13<br>19:47                | 05:36 06:33-07:32/59<br>20:19 | 05:26 06:15-07:46/91<br>20:39 |
| 22                          | 07:23 07:44-07:59/15 08:27-09:06/39<br>17:02 15:47-16:14/27                              | 06:48 07:24-08:05/41<br>17:41               | 06:02 06:34-07:13/39<br>18:14 | 06:11<br>19:48                | 05:35 06:32-07:33/61<br>20:20 | 05:26 06:16-07:47/91<br>20:39 |
| 23                          | 07:22 07:43-08:03/20 08:28-09:05/37<br>17:03 15:48-16:13/25                              | 06:46 07:24-08:06/42<br>17:43               | 06:01 06:33-07:14/41<br>18:15 | 06:10<br>19:49                | 05:34 06:32-07:34/62<br>20:21 | 05:26 06:16-07:47/91<br>20:39 |
| 24                          | 07:21 07:42-08:05/23 08:29-09:05/36<br>17:05 15:49-16:12/23                              | 06:45 07:23-08:06/43<br>17:44               | 05:59 06:32-07:14/42<br>18:16 | 06:08<br>19:51                | 05:34 06:31-07:35/64<br>20:22 | 05:26 06:16-07:47/91<br>20:40 |
| 25                          | 07:20 07:42-08:07/25 08:29-09:04/35<br>17:06 15:50-16:12/22                              | 06:43 07:23-08:07/44<br>17:45               | 05:57 06:30-07:14/44<br>18:17 | 06:07<br>19:52                | 05:33 06:30-07:35/65<br>20:23 | 05:27 06:17-07:48/91<br>20:40 |
| 26                          | 07:20 07:41-08:08/27 08:30-09:03/33<br>17:07 15:51-16:11/20                              | 06:42 07:22-08:07/45<br>17:46               | 05:56 06:29-07:14/45<br>18:19 | 06:05<br>19:53                | 05:32 06:30-07:37/67<br>20:24 | 05:27 06:17-07:48/91<br>20:40 |
| 27                          | 07:19 07:42-08:11/29 08:33-09:03/30<br>17:08 15:52-16:10/18                              | 06:40 07:22-08:07/45<br>17:48               | 05:54 06:29-07:15/46<br>18:20 | 06:04<br>19:54                | 05:32 06:29-07:37/68<br>20:24 | 05:27 06:17-07:48/91<br>20:40 |
| 28                          | 07:18 07:42-08:12/30 08:34-09:02/28<br>17:10 15:55-16:09/14                              | 06:39 07:21-08:07/46<br>17:49               | 05:52 06:28-07:15/47<br>18:21 | 06:03<br>19:55                | 05:31 06:28-07:37/69<br>20:25 | 05:28 06:19-07:48/89<br>20:40 |
| 29                          | 07:17 07:42-08:12/30 08:36-09:00/24<br>17:11 15:57-16:07/10                              | 06:50 07:28-08:14/46<br>19:22               | 06:50 07:28-08:14/46<br>19:22 | 06:01<br>19:56                | 05:30 06:28-07:38/70<br>20:26 | 05:28 06:19-07:48/89<br>20:40 |
| 30                          | 07:16 07:42-08:13/31<br>17:12 08:37-08:59/22   | 06:49 07:27-08:14/47<br>19:23               | 06:49 07:27-08:14/47<br>19:23 | 06:00<br>19:57                | 05:30 06:27-07:39/72<br>20:27 | 05:28 06:20-07:49/89<br>20:40 |
| 31                          | 07:15 07:42-08:14/32<br>17:14 08:40-08:56/16   | 06:47 07:27-08:14/47<br>19:24               | 06:47 07:27-08:14/47<br>19:24 |                               | 05:29 06:27-07:40/73<br>20:28 |                               |
| Potential sun hours         | 295  | 296   | 369                           | 400                           | 450                           | 455                           |
| Sum of minutes with flicker | 3259   | 1082  | 1136                          | 493                           | 1175                          | 2583                          |

### Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** LAR04 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (4)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | July                          | August                        | September                     | October                       | November                                     | December  |
|-----------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--|---|
| 1                           | 05:29 06:21-07:48/87<br>20:40 | 05:54 06:59-07:27/28<br>20:20 | 06:25 07:32-08:00/28<br>19:36 | 06:57 08:07-08:33/26<br>18:44 | 06:32 07:04-07:44/40<br>16:56                | 07:08 07:52-08:47/55 13:36-14:03/27<br>16:31 15:01-15:53/52 |
| 2                           | 05:29 06:23-07:48/85<br>20:40 | 05:55 07:03-07:23/20<br>20:19 | 06:26 07:30-08:02/32<br>19:34 | 06:58 08:05-08:35/30<br>18:42 | 06:33 07:05-07:44/39<br>16:55                | 07:09 07:52-08:48/56 13:34-14:04/30<br>16:31 15:01-15:53/52 |
| 3                           | 05:30 06:23-07:48/85<br>20:39 | 05:56 07:12-07:14/2<br>20:18  | 06:27 07:28-08:03/35<br>19:33 | 06:59 08:03-08:36/33<br>18:41 | 06:34 07:06-07:44/38<br>16:54                | 07:10 07:51-08:48/57 13:33-14:06/33<br>16:30 15:01-15:53/52 |
| 4                           | 05:31 06:25-07:49/84<br>20:39 | 05:57<br>20:17                | 06:29 07:27-08:04/37<br>19:31 | 07:00 08:01-08:37/36<br>18:39 | 06:36 07:10-07:45/35<br>16:53                | 07:11 07:51-08:49/58 13:32-14:07/35<br>16:30 15:00-15:53/53 |
| 5                           | 05:31 06:27-07:48/81<br>20:39 | 05:58<br>20:15                | 06:30 07:24-08:04/40<br>19:29 | 07:01 08:00-08:38/38<br>18:37 | 06:37 07:12-07:45/33<br>16:51                | 07:12 07:51-08:49/58 13:32-14:08/36<br>16:30 15:00-15:53/53 |
| 6                           | 05:32 06:31-07:49/78<br>20:39 | 05:59<br>20:14                | 06:31 07:23-08:04/41<br>19:27 | 07:02 07:58-08:38/40<br>18:36 | 06:38 07:12-07:45/33<br>16:50                | 07:13 07:51-08:49/58 13:31-14:10/39<br>16:30 15:01-15:54/53 |
| 7                           | 05:32 06:32-07:48/76<br>20:38 | 06:00<br>20:13                | 06:32 07:22-08:05/43<br>19:26 | 07:03 07:57-08:39/42<br>18:34 | 06:39 07:13-07:46/33<br>16:49                | 07:14 07:51-08:50/59 13:31-14:11/40<br>16:30 15:01-15:54/53 |
| 8                           | 05:33 06:33-07:48/75<br>20:38 | 06:01<br>20:12                | 06:33 07:21-08:05/44<br>19:24 | 07:04 07:57-08:40/43<br>18:32 | 06:40 07:13-07:45/32<br>16:48                | 07:15 07:52-08:50/58 13:31-14:12/41<br>16:30 15:01-15:54/53 |
| 9                           | 05:34 06:34-07:49/75<br>20:38 | 06:02<br>20:10                | 06:34 07:20-08:05/45<br>19:22 | 07:05 07:56-08:40/44<br>18:31 | 06:42 07:12-07:45/33<br>16:47                | 07:16 07:52-08:51/59 13:31-14:13/42<br>16:30 15:01-15:54/53 |
| 10                          | 05:34 06:34-07:48/74<br>20:37 | 06:03<br>20:09                | 06:35 07:20-08:05/45<br>19:21 | 07:06 07:56-08:40/44<br>18:29 | 06:43 07:13-07:45/32<br>16:46                | 07:17 07:52-08:51/59 13:31-14:14/43<br>16:30 15:02-15:55/53 |
| 11                          | 05:35 06:35-07:48/73<br>20:37 | 06:04<br>20:08                | 06:36 07:19-08:05/46<br>19:19 | 07:07 07:55-08:40/45<br>18:27 | 06:44 07:13-07:45/32<br>16:45                | 07:17 07:53-08:52/59 13:31-14:15/44<br>16:30 15:01-15:54/53 |
| 12                          | 05:36 06:35-07:48/73<br>20:36 | 06:05<br>20:06                | 06:37 07:19-08:05/46<br>19:17 | 07:09 07:54-08:40/46<br>18:26 | 06:45 07:12-07:44/32<br>16:44                | 07:18 07:52-08:51/59 13:30-14:15/45<br>16:30 15:01-15:54/53 |
| 13                          | 05:37 06:36-07:48/72<br>20:36 | 06:06<br>20:05                | 06:38 07:18-08:05/47<br>19:15 | 07:10 07:54-08:40/46<br>18:24 | 06:47 07:13-07:44/31 08:07-08:33/26<br>16:43 | 07:19 07:53-08:52/59 13:30-14:16/46<br>16:30 15:02-15:55/53 |
| 14                          | 05:37 06:36-07:47/71<br>20:35 | 06:07<br>20:04                | 06:39 07:18-08:04/46<br>19:14 | 07:11 07:55-08:40/45<br>18:23 | 06:48 07:14-07:43/29 08:06-08:34/28<br>16:42 | 07:20 07:53-08:52/59 13:31-14:17/46<br>16:30 15:03-15:55/52 |
| 15                          | 05:38 06:37-07:47/70<br>20:35 | 06:08<br>20:02                | 06:40 07:18-08:04/46<br>19:12 | 07:12 07:54-08:40/46<br>18:21 | 06:49 07:14-07:42/28 08:04-08:35/31<br>16:41 | 07:21 07:54-08:53/59 13:31-14:18/47<br>16:30 15:03-15:56/53 |
| 16                          | 05:39 06:38-07:47/69<br>20:34 | 06:09<br>20:01                | 06:41 07:18-08:03/45<br>19:10 | 07:13 07:54-08:39/45<br>18:19 | 06:50 07:15-07:42/27 08:04-08:37/33<br>16:40 | 07:21 07:54-08:56/62 13:30-14:18/48<br>16:31 15:03-15:55/52 |
| 17                          | 05:40 06:39-07:46/67<br>20:33 | 06:10<br>19:59                | 06:42 07:18-08:03/45<br>19:08 | 07:14 07:54-08:38/44<br>18:18 | 06:52 07:16-07:41/25 08:03-08:38/35<br>16:39 | 07:22 07:54-08:58/64 13:31-14:19/48<br>16:31 15:04-15:56/52 |
| 18                          | 05:41 06:39-07:45/66<br>20:33 | 06:11<br>19:58                | 06:43 07:18-08:02/44<br>19:07 | 07:15 07:54-08:38/44<br>18:16 | 06:53 07:16-07:39/23 08:03-08:39/36<br>16:38 | 07:23 07:55-09:00/65 13:32-14:19/47<br>16:31 15:04-15:57/53 |
| 19                          | 05:41 06:40-07:45/65<br>20:32 | 06:12<br>19:56                | 06:44 07:18-08:01/43<br>19:05 | 07:16 07:54-08:37/43<br>18:15 | 06:54 07:17-07:37/20 08:02-08:39/37<br>16:38 | 07:23 07:55-09:00/65 13:32-14:19/47<br>16:32 15:04-15:57/53 |
| 20                          | 05:42 06:41-07:44/63<br>20:31 | 06:13<br>19:55                | 06:45 07:18-08:00/42<br>19:03 | 07:18 07:56-08:37/41<br>18:13 | 06:55 07:19-07:34/15 08:02-08:41/39<br>16:37 | 07:24 07:56-09:01/65 13:32-14:20/48<br>16:32 15:05-15:57/52 |
| 21                          | 05:43 06:42-07:44/62<br>20:31 | 06:14<br>19:53                | 06:46 07:19-07:58/39<br>19:01 | 07:19 07:56-08:35/39<br>18:12 | 06:56 07:21-07:33/12 08:02-08:42/40<br>16:36 | 07:24 07:56-09:01/65 13:32-14:20/48<br>16:32 15:05-15:57/52 |
| 22                          | 05:44 06:43-07:43/60<br>20:30 | 06:15<br>19:52                | 06:47 07:19-07:57/38<br>19:00 | 07:20 07:57-08:34/37<br>18:10 | 06:58 07:23-07:31/8 08:01-08:42/41<br>16:35  | 07:25 07:57-09:02/65 13:33-14:21/48<br>16:33 15:06-15:58/52 |
| 23                          | 05:45 06:44-07:42/58<br>20:29 | 06:16<br>19:50                | 06:48 07:21-07:56/35<br>18:58 | 07:21 07:58-08:34/36<br>18:09 | 06:59 15:21-15:50/29<br>16:35                | 07:25 07:57-09:02/65 13:33-14:21/48<br>16:33 15:06-15:58/52 |
| 24                          | 05:46 06:45-07:41/56<br>20:28 | 06:17<br>19:49                | 06:49 07:22-07:54/32<br>18:56 | 07:22 08:00-08:35/35<br>18:07 | 07:00 15:22-15:51/29<br>16:34                | 07:26 07:58-09:03/65 13:34-14:22/48<br>16:34 15:06-15:58/52 |
| 25                          | 05:47 06:46-07:40/54<br>20:27 | 06:18<br>19:47                | 06:50 07:24-07:52/28<br>18:55 | 07:24 07:00-07:34/34<br>17:06 | 07:01 15:22-15:51/29 08:02-08:44/42<br>16:34 | 07:26 07:58-09:03/65 13:35-14:22/47<br>16:35 15:07-16:00/53 |
| 26                          | 05:48 06:47-07:38/51<br>20:26 | 06:19<br>19:46                | 06:51 07:26-07:50/24<br>18:53 | 06:25 06:59-07:35/36<br>17:04 | 07:02 15:22-15:51/29 08:01-08:45/44<br>16:33 | 07:27 07:58-09:02/64 13:35-14:23/48<br>16:35 15:08-16:00/52 |
| 27                          | 05:49 06:48-07:37/49<br>20:25 | 06:20<br>19:44                | 06:52 07:29-07:46/17<br>18:51 | 06:26 07:00-07:37/37<br>17:03 | 07:03 15:22-15:51/29 08:01-08:45/44<br>16:33 | 07:27 08:00-09:03/63 13:35-14:23/48<br>16:36 15:08-16:00/52 |
| 28                          | 05:50 06:50-07:36/46<br>20:24 | 06:21<br>19:42                | 06:53 07:34-07:39/5<br>18:49  | 06:27 07:01-07:40/39<br>17:02 | 07:04 15:22-15:51/29 13:41-13:55/14<br>16:32 | 07:27 08:00-09:01/61 13:37-14:24/47<br>16:37 15:09-16:02/53 |
| 29                          | 05:51 06:52-07:34/42<br>20:23 | 06:22 07:40-07:53/13<br>19:41 | 06:54 08:13-08:28/15<br>18:48 | 06:28 07:01-07:41/40<br>17:00 | 07:06 15:22-15:52/30 13:38-13:58/20<br>16:32 | 07:28 08:00-08:59/59 13:37-14:24/47<br>16:37 15:09-16:02/53 |
| 30                          | 05:52 06:54-07:32/38<br>20:22 | 06:23 07:36-07:57/21<br>19:39 | 06:55 08:10-08:31/21<br>18:46 | 06:29 07:01-07:42/41<br>16:59 | 07:07 07:53-08:47/54 15:02-15:23/21<br>16:31 | 07:28 08:00-09:00/60 13:38-14:24/46<br>16:38 15:10-16:03/53 |
| 31                          | 05:53 06:56-07:30/34<br>20:21 | 06:24 07:34-07:59/25<br>19:37 |                               | 06:31 07:03-07:44/41<br>16:58 |  | 07:28 08:01-09:00/59 13:39-14:24/45<br>16:39 15:10-16:03/53 |
| Potential sun hours         | 461                           | 429                           | 375                           | 344                           | 296  | 285   |
| Sum of minutes with flicker | 2039                          | 109                           | 1094                          | 1236                          | 1989   | 4866  |

### Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** LAR05 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (5)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July                    | August         | September               | October        | November       | December       |                |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------------|----------------|-------------------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:29 | 19:47-20:03/16<br>20:40 | 05:29<br>20:20 | 19:53-20:14/21<br>20:20 | 05:53<br>19:36 | 06:25<br>18:44 | 06:57<br>16:56 | 06:32<br>16:31 |
| 2                           | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 19:48-20:04/16<br>20:40 | 05:29<br>20:19 | 19:53-20:14/21<br>19:34 | 05:54<br>19:34 | 06:26<br>18:42 | 06:58<br>16:55 | 06:33<br>16:31 |
| 3                           | 07:29<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 19:47-20:04/17<br>20:40 | 05:30<br>20:18 | 19:54-20:14/20<br>19:33 | 05:55<br>19:33 | 06:27<br>18:41 | 06:59<br>16:54 | 06:34<br>16:30 |
| 4                           | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53 | 06:40<br>19:29 | 05:54<br>20:02 | 05:27<br>20:31 | 19:48-20:05/17<br>20:39 | 05:30<br>20:17 | 19:53-20:13/20<br>19:31 | 05:56<br>19:31 | 06:28<br>18:39 | 07:00<br>16:52 | 06:36<br>16:30 |
| 5                           | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 19:48-20:06/18<br>20:39 | 05:31<br>20:16 | 19:54-20:13/19<br>19:29 | 05:57<br>19:29 | 06:29<br>18:37 | 07:01<br>16:51 | 06:37<br>16:30 |
| 6                           | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:26<br>20:32 | 19:48-20:07/19<br>20:39 | 05:32<br>20:14 | 19:55-20:14/19<br>19:27 | 05:58<br>19:27 | 06:31<br>18:36 | 07:02<br>16:50 | 06:38<br>16:30 |
| 7                           | 07:29<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 19:48-20:07/19<br>20:39 | 05:32<br>20:13 | 19:54-20:13/19<br>19:26 | 05:59<br>19:26 | 06:32<br>18:34 | 07:03<br>16:49 | 06:39<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:49<br>20:06 | 05:26<br>20:34 | 19:48-20:08/20<br>20:38 | 05:33<br>20:12 | 19:55-20:13/18<br>19:24 | 06:01<br>19:24 | 06:33<br>18:32 | 07:04<br>16:48 | 06:41<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 19:49-20:09/20<br>20:38 | 05:33<br>20:10 | 19:54-20:12/18<br>19:22 | 06:02<br>19:22 | 06:34<br>18:31 | 07:05<br>16:47 | 06:42<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:35 | 19:49-20:09/20<br>20:37 | 05:34<br>20:09 | 19:55-20:12/17<br>19:21 | 06:03<br>19:21 | 06:35<br>18:29 | 07:06<br>16:46 | 06:43<br>16:30 |
| 11                          | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 19:49-20:10/21<br>20:37 | 05:35<br>20:08 | 19:55-20:12/17<br>19:19 | 06:04<br>19:19 | 06:36<br>18:27 | 07:07<br>16:45 | 06:44<br>16:30 |
| 12                          | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 19:50-20:10/20<br>20:36 | 05:36<br>20:06 | 19:56-20:11/15<br>19:17 | 06:05<br>19:17 | 06:37<br>18:26 | 07:09<br>16:44 | 06:46<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 19:49-20:10/21<br>20:36 | 05:36<br>20:05 | 19:56-20:10/14<br>19:15 | 06:06<br>19:15 | 06:38<br>18:24 | 07:10<br>16:43 | 06:47<br>16:30 |
| 14                          | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 19:49-20:10/21<br>20:35 | 05:37<br>20:04 | 19:56-20:10/14<br>19:14 | 06:07<br>19:14 | 06:39<br>18:22 | 07:11<br>16:42 | 06:48<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 19:49-20:11/22<br>20:35 | 05:38<br>20:02 | 19:57-20:10/13<br>19:12 | 06:08<br>19:12 | 06:40<br>18:21 | 07:12<br>16:41 | 06:49<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 19:51-20:12/21<br>20:34 | 05:39<br>20:01 | 19:58-20:09/11<br>19:10 | 06:09<br>19:10 | 06:41<br>18:19 | 07:13<br>16:40 | 06:50<br>16:30 |
| 17                          | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 19:51-20:12/21<br>20:34 | 05:40<br>19:59 | 19:57-20:08/11<br>19:08 | 06:10<br>19:08 | 06:42<br>18:18 | 07:14<br>16:39 | 06:52<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 19:51-20:13/22<br>20:33 | 05:40<br>19:58 | 19:58-20:08/10<br>19:07 | 06:11<br>19:07 | 06:43<br>18:16 | 07:15<br>16:38 | 06:53<br>16:31 |
| 19                          | 07:25<br>16:58 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 19:51-20:13/22<br>20:32 | 05:41<br>19:56 | 19:59-20:07/8<br>19:05  | 06:12<br>19:05 | 06:44<br>18:15 | 07:17<br>16:38 | 06:54<br>16:31 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 19:51-20:13/22<br>20:31 | 05:42<br>19:55 | 20:00-20:07/7<br>19:03  | 06:13<br>19:03 | 06:45<br>18:13 | 07:18<br>16:37 | 06:55<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 19:51-20:13/22<br>20:31 | 05:43<br>19:53 | 20:01-20:06/5<br>19:01  | 06:14<br>19:01 | 06:46<br>18:12 | 07:19<br>16:36 | 06:56<br>16:32 |
| 22                          | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 19:51-20:13/22<br>20:30 | 05:44<br>19:52 | 20:03-20:05/2<br>19:00  | 06:15<br>19:00 | 06:47<br>18:10 | 07:20<br>16:35 | 06:58<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:40 | 19:52-20:14/22<br>20:29 | 05:45<br>19:50 | 20:14/22<br>18:58       | 06:16<br>18:58 | 06:48<br>18:09 | 07:21<br>16:35 | 06:59<br>16:33 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 | 19:52-20:14/22<br>20:28 | 05:46<br>19:49 | 20:14/22<br>18:56       | 06:17<br>19:49 | 06:49<br>18:07 | 07:22<br>16:34 | 07:00<br>16:34 |
| 25                          | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:26<br>20:40 | 19:52-20:14/22<br>20:27 | 05:47<br>19:47 | 20:14/22<br>18:55       | 06:18<br>18:55 | 06:50<br>17:06 | 06:24<br>16:34 | 07:01<br>16:34 |
| 26                          | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 19:53-20:14/21<br>20:26 | 05:48<br>19:46 | 20:14/21<br>18:53       | 06:19<br>19:46 | 06:51<br>17:04 | 06:25<br>16:33 | 07:02<br>16:35 |
| 27                          | 07:19<br>17:08 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>20:25 | 05:27<br>20:40 | 19:52-20:14/22<br>20:25 | 05:49<br>19:44 | 20:14/22<br>18:51       | 06:20<br>18:51 | 06:52<br>17:03 | 06:26<br>16:33 | 07:03<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 19:52-20:14/22<br>20:24 | 05:50<br>19:42 | 20:14/22<br>18:49       | 06:21<br>18:49 | 06:53<br>17:02 | 06:27<br>16:32 | 07:05<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:38<br>17:48 | 05:51<br>18:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 19:53-20:14/21<br>20:23 | 05:50<br>19:41 | 20:14/21<br>18:48       | 06:22<br>19:41 | 06:54<br>17:00 | 06:28<br>16:32 | 07:06<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:37<br>17:47 | 05:50<br>18:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 19:53-20:14/21<br>20:22 | 05:51<br>19:39 | 20:14/21<br>18:46       | 06:23<br>19:39 | 06:55<br>18:46 | 06:30<br>16:59 | 07:07<br>16:31 |
| 31                          | 07:15<br>17:13 | 06:36<br>17:46 | 05:49<br>18:24 | 05:59<br>19:58 | 05:29<br>20:28 | 05:28<br>20:40 | 19:53-20:14/21<br>20:21 | 05:52<br>19:38 | 20:14/21<br>18:46       | 06:24<br>19:38 | 06:56<br>18:46 | 06:31<br>16:58 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 451            | 455            | 462                     | 430            | 375                     | 344            | 296            | 285            |                |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 104            | 612            | 319                     | 0              | 0                       | 0              | 0              | 0              |                |

### Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** LAR06 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (6)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April                         | May                           | June                          |
|-----------------------------|----------------|----------------|----------------|-------------------------------|-------------------------------|-------------------------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25                | 05:58<br>19:58                | 05:28 05:50-06:28/38<br>20:29 |
| 2                           | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26                | 05:57<br>19:59                | 05:28 05:50-06:29/39<br>20:29 |
| 3                           | 07:29<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27                | 05:56<br>20:00                | 05:28 05:51-06:29/38<br>20:30 |
| 4                           | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53 | 06:40<br>19:29                | 05:54<br>20:01                | 05:27 05:50-06:29/39<br>20:31 |
| 5                           | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30                | 05:53<br>20:03                | 05:27 05:50-06:29/39<br>20:32 |
| 6                           | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31                | 05:52<br>20:04                | 05:26 05:51-06:30/39<br>20:32 |
| 7                           | 07:29<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32                | 05:51<br>20:05                | 05:26 05:50-06:29/39<br>20:33 |
| 8                           | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33                | 05:49<br>20:06                | 05:26 05:50-06:29/39<br>20:34 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34                | 05:48<br>20:07                | 05:26 05:50-06:29/39<br>20:34 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35                | 05:47<br>20:08                | 05:25 05:51-06:29/38<br>20:35 |
| 11                          | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29 06:54-07:03/9<br>19:36  | 05:46<br>20:09                | 05:25 05:51-06:30/39<br>20:35 |
| 12                          | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27 06:52-07:06/14<br>19:37 | 05:45 06:10-06:15/5<br>20:10  | 05:25 05:51-06:30/39<br>20:36 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25 06:49-07:07/18<br>19:38 | 05:44 06:06-06:18/12<br>20:11 | 05:25 05:51-06:30/39<br>20:36 |
| 14                          | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24 06:49-07:08/19<br>19:40 | 05:43 06:04-06:20/16<br>20:12 | 05:25 05:51-06:30/39<br>20:37 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22 06:47-07:08/21<br>19:41 | 05:42 06:03-06:22/19<br>20:13 | 05:25 05:52-06:30/38<br>20:37 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:20 06:46-07:08/22<br>19:42 | 05:41 06:02-06:23/21<br>20:14 | 05:25 05:52-06:30/38<br>20:38 |
| 17                          | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19 06:46-07:09/23<br>19:43 | 05:40 06:01-06:24/23<br>20:15 | 05:25 05:52-06:30/38<br>20:38 |
| 18                          | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17 06:45-07:08/23<br>19:44 | 05:39 06:00-06:24/24<br>20:16 | 05:25 05:52-06:30/38<br>20:38 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16 06:45-07:08/23<br>19:45 | 05:38 06:00-06:26/26<br>20:17 | 05:25 05:52-06:30/38<br>20:39 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14 06:45-07:07/22<br>19:46 | 05:37 05:59-06:26/27<br>20:18 | 05:25 05:52-06:30/38<br>20:39 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13 06:46-07:07/21<br>19:47 | 05:36 05:59-06:26/27<br>20:19 | 05:25 05:52-06:30/38<br>20:39 |
| 22                          | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11 06:45-07:06/21<br>19:48 | 05:35 05:58-06:27/29<br>20:20 | 05:26 05:53-06:31/38<br>20:39 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10 06:47-07:05/18<br>19:49 | 05:34 05:58-06:28/30<br>20:21 | 05:26 05:53-06:31/38<br>20:40 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08 06:47-07:03/16<br>19:51 | 05:34 05:56-06:28/32<br>20:22 | 05:26 05:53-06:31/38<br>20:40 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07 06:49-07:02/13<br>19:52 | 05:33 05:54-06:28/34<br>20:23 | 05:26 05:53-06:31/38<br>20:40 |
| 26                          | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05 06:51-07:00/9<br>19:53  | 05:32 05:54-06:29/35<br>20:24 | 05:27 05:54-06:32/38<br>20:40 |
| 27                          | 07:19<br>17:08 | 06:40<br>17:47 | 05:54<br>18:20 | 06:04<br>19:54                | 05:31 05:53-06:28/35<br>20:25 | 05:27 05:54-06:32/38<br>20:40 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55                | 05:31 05:52-06:28/36<br>20:25 | 05:27 05:54-06:33/39<br>20:40 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56                | 05:30 05:52-06:29/37<br>20:26 | 05:28 05:54-06:33/39<br>20:40 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57                | 05:30 05:51-06:28/37<br>20:27 | 05:28 05:54-06:33/39<br>20:40 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 |                               | 05:29 05:51-06:29/38<br>20:28 |                               |
| Potential sun hours         | 295            | 296            | 369            | 400                           | 451                           | 455                           |
| Sum of minutes with flicker | 0              | 0              | 0              | 292                           | 543                           | 1154                          |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** LAR06 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (6)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | July  |                | August |                | September |               | October |       | November |  | December |  |
|-----------------------------|-------|----------------|--------|----------------|-----------|---------------|---------|-------|----------|--|----------|--|
| 1                           | 05:29 | 05:55-06:34/39 | 05:53  | 20:20          | 06:25     | 06:54-07:03/9 | 06:57   | 06:32 | 07:08    |  |          |  |
|                             | 20:40 |                | 20:19  |                | 19:36     |               | 18:44   | 16:56 | 16:31    |  |          |  |
| 2                           | 05:29 | 05:55-06:34/39 | 05:54  | 20:19          | 06:26     |               | 06:58   | 06:33 | 07:09    |  |          |  |
|                             | 20:40 |                | 20:19  |                | 19:34     |               | 18:42   | 16:55 | 16:31    |  |          |  |
| 3                           | 05:30 | 05:55-06:34/39 | 05:55  | 20:18          | 06:27     |               | 06:59   | 06:34 | 07:10    |  |          |  |
|                             | 20:39 |                | 20:18  |                | 19:33     |               | 18:41   | 16:54 | 16:30    |  |          |  |
| 4                           | 05:30 | 05:55-06:34/39 | 05:56  | 20:17          | 06:28     |               | 07:00   | 06:36 | 07:11    |  |          |  |
|                             | 20:39 |                | 20:17  |                | 19:31     |               | 18:39   | 16:52 | 16:30    |  |          |  |
| 5                           | 05:31 | 05:56-06:35/39 | 05:57  | 20:15          | 06:29     |               | 07:01   | 06:37 | 07:12    |  |          |  |
|                             | 20:39 |                | 20:15  |                | 19:29     |               | 18:37   | 16:51 | 16:30    |  |          |  |
| 6                           | 05:32 | 05:57-06:36/39 | 05:58  | 20:14          | 06:30     |               | 07:02   | 06:38 | 07:13    |  |          |  |
|                             | 20:39 |                | 20:14  |                | 19:27     |               | 18:36   | 16:50 | 16:30    |  |          |  |
| 7                           | 05:32 | 05:56-06:35/39 | 05:59  | 20:13          | 06:32     |               | 07:03   | 06:39 | 07:14    |  |          |  |
|                             | 20:38 |                | 20:13  |                | 19:26     |               | 18:34   | 16:49 | 16:30    |  |          |  |
| 8                           | 05:33 | 05:57-06:36/39 | 06:00  | 20:12          | 06:33     |               | 07:04   | 06:41 | 07:15    |  |          |  |
|                             | 20:38 |                | 20:12  |                | 19:24     |               | 18:32   | 16:48 | 16:30    |  |          |  |
| 9                           | 05:33 | 05:58-06:37/39 | 06:01  | 20:10          | 06:34     |               | 07:05   | 06:42 | 07:16    |  |          |  |
|                             | 20:38 |                | 20:10  |                | 19:22     |               | 18:31   | 16:47 | 16:30    |  |          |  |
| 10                          | 05:34 | 05:58-06:36/38 | 06:03  | 20:09          | 06:35     |               | 07:06   | 06:43 | 07:17    |  |          |  |
|                             | 20:37 |                | 20:09  |                | 19:21     |               | 18:29   | 16:46 | 16:30    |  |          |  |
| 11                          | 05:35 | 05:58-06:37/39 | 06:04  | 20:08          | 06:36     |               | 07:07   | 06:44 | 07:17    |  |          |  |
|                             | 20:37 |                | 20:08  |                | 19:19     |               | 18:27   | 16:45 | 16:30    |  |          |  |
| 12                          | 05:36 | 05:59-06:37/38 | 06:05  | 20:06          | 06:37     |               | 07:09   | 06:45 | 07:18    |  |          |  |
|                             | 20:36 |                | 20:06  |                | 19:17     |               | 18:26   | 16:44 | 16:30    |  |          |  |
| 13                          | 05:36 | 05:59-06:37/38 | 06:06  | 20:05          | 06:38     |               | 07:10   | 06:47 | 07:19    |  |          |  |
|                             | 20:36 |                | 20:05  |                | 19:15     |               | 18:24   | 16:43 | 16:30    |  |          |  |
| 14                          | 05:37 | 06:00-06:37/37 | 06:07  | 20:04          | 06:39     |               | 07:11   | 06:48 | 07:20    |  |          |  |
|                             | 20:35 |                | 20:04  |                | 19:14     |               | 18:22   | 16:42 | 16:30    |  |          |  |
| 15                          | 05:38 | 06:01-06:37/36 | 06:08  | 20:02          | 06:40     |               | 07:12   | 06:49 | 07:21    |  |          |  |
|                             | 20:35 |                | 20:02  |                | 19:12     |               | 18:21   | 16:41 | 16:30    |  |          |  |
| 16                          | 05:39 | 06:02-06:38/36 | 06:09  | 20:01          | 06:41     |               | 07:13   | 06:50 | 07:21    |  |          |  |
|                             | 20:34 |                | 20:01  |                | 19:10     |               | 18:19   | 16:40 | 16:30    |  |          |  |
| 17                          | 05:40 | 06:03-06:37/34 | 06:10  | 06:57-07:07/10 | 06:42     |               | 07:14   | 06:52 | 07:22    |  |          |  |
|                             | 20:34 |                | 19:59  |                | 19:08     |               | 18:18   | 16:39 | 16:31    |  |          |  |
| 18                          | 05:40 | 06:03-06:37/34 | 06:11  | 06:55-07:09/14 | 06:43     |               | 07:15   | 06:53 | 07:23    |  |          |  |
|                             | 20:33 |                | 19:58  |                | 19:07     |               | 18:16   | 16:38 | 16:31    |  |          |  |
| 19                          | 05:41 | 06:04-06:37/33 | 06:12  | 06:53-07:10/17 | 06:44     |               | 07:16   | 06:54 | 07:23    |  |          |  |
|                             | 20:32 |                | 19:56  |                | 19:05     |               | 18:15   | 16:37 | 16:31    |  |          |  |
| 20                          | 05:42 | 06:06-06:37/31 | 06:13  | 06:52-07:11/19 | 06:45     |               | 07:18   | 06:55 | 07:24    |  |          |  |
|                             | 20:31 |                | 19:55  |                | 19:03     |               | 18:13   | 16:37 | 16:32    |  |          |  |
| 21                          | 05:43 | 06:08-06:37/29 | 06:14  | 06:51-07:12/21 | 06:46     |               | 07:19   | 06:56 | 07:25    |  |          |  |
|                             | 20:31 |                | 19:53  |                | 19:01     |               | 18:12   | 16:36 | 16:32    |  |          |  |
| 22                          | 05:44 | 06:09-06:37/28 | 06:15  | 06:50-07:12/22 | 06:47     |               | 07:20   | 06:58 | 07:25    |  |          |  |
|                             | 20:30 |                | 19:52  |                | 19:00     |               | 18:10   | 16:35 | 16:33    |  |          |  |
| 23                          | 05:45 | 06:09-06:37/28 | 06:16  | 06:50-07:12/22 | 06:48     |               | 07:21   | 06:59 | 07:26    |  |          |  |
|                             | 20:29 |                | 19:50  |                | 18:58     |               | 18:09   | 16:35 | 16:33    |  |          |  |
| 24                          | 05:46 | 06:09-06:36/27 | 06:17  | 06:49-07:12/23 | 06:49     |               | 07:22   | 07:00 | 07:26    |  |          |  |
|                             | 20:28 |                | 19:49  |                | 18:56     |               | 18:07   | 16:34 | 16:34    |  |          |  |
| 25                          | 05:47 | 06:10-06:35/25 | 06:18  | 06:49-07:12/23 | 06:50     |               | 06:24   | 07:01 | 07:26    |  |          |  |
|                             | 20:27 |                | 19:47  |                | 18:54     |               | 17:06   | 16:34 | 16:34    |  |          |  |
| 26                          | 05:48 | 06:11-06:35/24 | 06:19  | 06:49-07:11/22 | 06:51     |               | 06:25   | 07:02 | 07:27    |  |          |  |
|                             | 20:26 |                | 19:46  |                | 18:53     |               | 17:04   | 16:33 | 16:35    |  |          |  |
| 27                          | 05:49 | 06:12-06:34/22 | 06:20  | 06:49-07:11/22 | 06:52     |               | 06:26   | 07:03 | 07:27    |  |          |  |
|                             | 20:25 |                | 19:44  |                | 18:51     |               | 17:03   | 16:32 | 16:36    |  |          |  |
| 28                          | 05:49 | 06:13-06:33/20 | 06:21  | 06:49-07:10/21 | 06:53     |               | 06:27   | 07:04 | 07:27    |  |          |  |
|                             | 20:24 |                | 19:42  |                | 18:49     |               | 17:01   | 16:32 | 16:36    |  |          |  |
| 29                          | 05:50 | 06:14-06:32/18 | 06:22  | 06:50-07:09/19 | 06:54     |               | 06:28   | 07:06 | 07:28    |  |          |  |
|                             | 20:23 |                | 19:41  |                | 18:48     |               | 17:00   | 16:32 | 16:37    |  |          |  |
| 30                          | 05:51 | 06:16-06:30/14 | 06:23  | 06:50-07:08/18 | 06:55     |               | 06:30   | 07:07 | 07:28    |  |          |  |
|                             | 20:22 |                | 19:39  |                | 18:46     |               | 16:59   | 16:31 | 16:38    |  |          |  |
| 31                          | 05:52 | 06:18-06:28/10 | 06:24  | 06:52-07:06/14 |           |               | 06:31   |       | 07:28    |  |          |  |
|                             | 20:21 |                | 19:37  |                |           |               | 16:57   |       | 16:39    |  |          |  |
| Potential sun hours         | 462   |                | 430    |                | 375       |               | 344     |       | 296      |  | 285      |  |
| Sum of minutes with flicker | 990   |                | 287    |                | 9         |               | 0       |       | 0        |  | 0        |  |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



### SHADOW - Calendar per WTG

WTG: LAR07 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (7)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January              | February             | March                | April                | May                  | June                 |
|-----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| 1                           | 07:28 09:36-11:05/89 | 07:14 15:19-16:18/59 | 06:37 07:00-08:09/69 | 06:45 07:09-08:19/70 | 05:58 06:56-07:22/26 | 05:29 06:18-07:12/54 |
| 2                           | 07:29 09:37-11:06/89 | 07:13 15:19-16:18/59 | 06:36 06:58-08:09/71 | 06:44 07:07-08:19/72 | 05:57 06:58-07:21/23 | 05:28 06:18-07:13/55 |
| 3                           | 07:29 09:37-11:06/89 | 07:12 15:18-16:18/60 | 06:34 06:56-08:08/72 | 06:42 07:05-08:20/75 | 05:56 06:59-07:18/19 | 05:28 06:19-07:13/54 |
| 4                           | 07:29 09:38-11:06/88 | 07:11 15:18-16:19/61 | 06:33 06:56-08:09/73 | 06:40 07:02-08:19/77 | 05:54 07:02-07:15/13 | 05:27 06:18-07:13/55 |
| 5                           | 07:29 09:38-11:07/89 | 07:10 15:18-16:19/61 | 06:31 06:55-08:08/73 | 06:39 07:00-08:19/79 | 05:53 06:30-07:00/30 | 05:27 06:19-07:13/54 |
| 6                           | 07:29 09:39-11:07/88 | 07:09 15:18-16:20/62 | 06:29 06:54-08:08/74 | 06:37 06:59-08:19/80 | 05:52 06:29-07:02/33 | 05:26 06:19-07:14/55 |
| 7                           | 07:28 09:40-11:08/88 | 07:08 15:18-16:21/63 | 06:28 06:54-08:08/74 | 06:35 06:56-08:18/82 | 05:51 06:27-07:03/36 | 05:26 06:19-07:13/54 |
| 8                           | 07:28 09:40-11:08/88 | 07:07 15:18-16:22/64 | 06:26 06:53-08:07/74 | 06:34 06:55-08:17/82 | 05:49 06:25-07:04/39 | 05:26 06:19-07:13/54 |
| 9                           | 07:28 09:40-11:08/88 | 07:05 15:17-16:21/64 | 06:24 06:53-08:06/73 | 06:32 06:54-08:18/84 | 05:48 06:24-07:05/41 | 05:26 06:20-07:14/54 |
| 10                          | 07:28 09:41-11:08/87 | 07:04 15:17-16:22/65 | 06:23 06:53-08:06/73 | 06:30 06:52-08:17/85 | 05:47 06:23-07:06/43 | 05:25 06:20-07:14/54 |
| 11                          | 07:28 15:38-15:46/8  | 07:03 15:17-16:22/65 | 06:21 06:53-08:05/72 | 06:29 06:51-08:15/84 | 05:46 06:22-07:07/45 | 05:25 06:21-07:14/53 |
| 12                          | 07:27 15:34-15:50/16 | 07:02 15:17-16:23/66 | 06:19 06:53-08:03/70 | 06:27 06:51-08:15/84 | 05:45 06:21-07:07/46 | 05:25 06:21-07:14/53 |
| 13                          | 07:27 15:33-15:53/20 | 07:00 15:17-16:22/65 | 06:18 06:55-08:03/68 | 06:25 06:50-08:14/84 | 05:44 06:21-07:08/47 | 05:25 06:21-07:14/53 |
| 14                          | 07:27 15:31-15:56/25 | 06:59 15:17-16:25/68 | 06:16 06:55-08:01/66 | 06:24 06:51-08:14/83 | 05:43 06:20-07:08/48 | 05:25 06:21-07:15/54 |
| 15                          | 07:26 15:30-15:57/27 | 06:58 15:17-16:30/73 | 06:14 06:56-08:00/64 | 06:22 06:50-08:12/82 | 05:42 06:20-07:09/49 | 05:25 06:22-07:15/53 |
| 16                          | 07:26 15:29-16:00/31 | 06:56 07:25-07:48/23 | 06:13 06:58-07:16/18 | 06:20 06:49-08:11/82 | 05:41 06:19-07:09/50 | 05:25 06:22-07:15/53 |
| 17                          | 07:26 15:27-16:01/34 | 06:55 07:24-07:54/30 | 06:11 07:00-07:13/13 | 06:19 06:50-08:10/80 | 05:40 06:18-07:10/52 | 05:25 06:22-07:15/53 |
| 18                          | 07:25 15:26-16:02/36 | 06:54 07:22-07:57/35 | 06:09 06:31-06:44/13 | 06:17 06:50-08:08/78 | 05:39 06:18-07:10/52 | 05:25 06:22-07:15/53 |
| 19                          | 07:24 15:26-16:04/38 | 06:52 07:20-08:00/40 | 06:08 06:28-07:01/33 | 06:16 06:51-08:07/76 | 05:38 06:19-07:11/52 | 05:25 06:22-07:15/53 |
| 20                          | 07:24 15:25-16:05/40 | 06:51 07:14-08:01/47 | 06:06 06:27-07:05/38 | 06:14 06:50-08:05/75 | 05:37 06:18-07:11/53 | 05:25 06:22-07:15/53 |
| 21                          | 07:23 15:24-16:06/42 | 06:49 07:12-08:03/51 | 06:04 06:25-07:07/42 | 06:13 06:50-08:04/74 | 05:36 06:18-07:11/53 | 05:25 06:22-07:15/53 |
| 22                          | 07:23 15:24-16:08/44 | 06:48 07:10-08:04/54 | 06:02 06:23-07:10/47 | 06:11 06:50-08:02/72 | 05:35 06:17-07:11/54 | 05:26 06:23-07:16/53 |
| 23                          | 07:22 15:23-16:09/46 | 06:46 07:09-08:05/56 | 06:01 06:22-07:12/50 | 06:10 06:50-08:00/70 | 05:34 06:18-07:12/54 | 05:26 06:23-07:16/53 |
| 24                          | 07:21 15:22-16:10/48 | 06:45 07:07-08:06/59 | 05:59 06:21-07:14/53 | 06:08 06:50-07:30/40 | 05:34 06:18-07:12/54 | 05:26 06:23-07:16/53 |
| 25                          | 07:20 15:21-16:11/50 | 06:43 07:07-08:07/60 | 05:57 06:20-07:15/55 | 06:07 06:51-07:29/38 | 05:33 06:17-07:12/55 | 05:26 06:23-07:16/53 |
| 26                          | 07:20 15:21-16:12/51 | 06:42 07:06-08:07/61 | 05:56 06:20-07:16/56 | 06:05 06:52-07:29/37 | 05:32 06:18-07:13/55 | 05:27 06:24-07:17/53 |
| 27                          | 07:19 15:21-16:14/53 | 06:40 07:04-08:08/64 | 05:54 06:20-07:18/58 | 06:04 06:52-07:27/35 | 05:31 06:18-07:12/54 | 05:27 06:24-07:17/53 |
| 28                          | 07:18 15:21-16:15/54 | 06:39 07:01-08:08/67 | 05:52 06:19-07:18/59 | 06:02 06:53-07:26/33 | 05:31 06:17-07:12/55 | 05:27 06:24-07:17/53 |
| 29                          | 07:17 15:20-16:15/55 | 06:37 07:01-08:08/67 | 05:50 06:19-07:18/59 | 06:01 06:54-07:25/31 | 05:30 06:18-07:13/55 | 05:28 06:24-07:17/53 |
| 30                          | 07:16 15:20-16:16/56 | 06:35 07:01-08:08/67 | 05:48 06:19-07:18/59 | 06:00 06:54-07:23/29 | 05:30 06:17-07:12/55 | 05:28 06:24-07:17/53 |
| 31                          | 07:15 15:20-16:17/57 | 06:33 07:01-08:08/67 | 05:46 06:19-07:18/59 | 05:59 06:54-07:23/29 | 05:29 06:18-07:13/55 | 05:29 06:24-07:17/53 |
|                             | 07:13 09:58-11:00/62 |                      | 19:24 17:09-17:18/9  |                      | 20:28 05:51-06:08/17 |                      |
| Potential sun hours         | 295                  | 296                  | 369                  | 400                  | 451                  | 455                  |
| Sum of minutes with flicker | 3355                 | 3097                 | 3810                 | 2110                 | 1507                 | 2418                 |

#### Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: LAR07 - Siemens Gamesa SG 6.0-170 6200 170.0 IO! hub: 165,0 m (TOT: 250,0 m) (7)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | July   | August                        | September                     | October                                      | November                                     | December                                    |
|-----------------------------|--|-------------------------------|-------------------------------|--|--|---|
| 1                           | 05:29 06:25-07:18/53<br>20:40 05:52-06:20/28 | 05:53 06:32-07:18/46<br>20:20 | 06:25 06:50-08:14/84<br>19:36 | 06:57 07:33-08:43/70<br>18:44 16:21-17:30/69 | 06:32 14:47-15:52/65<br>16:56                | 07:08 15:20-15:29/9<br>16:31 09:24-10:51/87 |
| 2                           | 05:29 06:24-07:18/54<br>20:40 05:52-06:19/27 | 05:54 06:33-07:17/44<br>20:19 | 06:26 06:50-08:15/85<br>19:34 | 06:58 07:32-08:43/71<br>18:42 16:21-17:30/69 | 06:33 14:47-15:51/64<br>16:55 09:49-10:03/14 | 07:09 09:24-10:51/87<br>16:31               |
| 3                           | 05:30 06:25-07:19/54<br>20:39 05:53-06:20/27 | 05:55 06:34-07:16/42<br>20:18 | 06:27 06:51-08:15/84<br>19:33 | 06:59 07:31-08:43/72<br>18:41 16:20-17:29/69 | 06:34 14:47-15:50/63<br>16:54 09:43-10:09/26 | 07:10 09:24-10:52/88<br>16:30               |
| 4                           | 05:30 06:25-07:18/53<br>20:39 05:53-06:19/26 | 05:56 06:35-07:15/40<br>20:17 | 06:28 06:52-08:14/82<br>19:31 | 07:00 07:31-08:44/73<br>18:39 16:19-17:29/70 | 06:36 14:48-15:51/63<br>16:52 09:40-10:14/34 | 07:11 09:25-10:52/87<br>16:30               |
| 5                           | 05:31 06:25-07:19/54<br>20:39 05:54-06:19/25 | 05:57 06:36-07:14/38<br>20:15 | 06:29 06:52-08:14/82<br>19:29 | 07:01 07:30-08:44/74<br>18:37 16:19-17:28/69 | 06:37 14:48-15:50/62<br>16:51 09:37-10:18/41 | 07:12 09:25-10:53/88<br>16:30               |
| 6                           | 05:32 06:26-07:20/54<br>20:39 05:55-06:20/25 | 05:58 06:37-07:12/35<br>20:14 | 06:30 06:54-08:14/80<br>19:27 | 07:02 07:30-08:44/74<br>18:36 16:18-17:28/70 | 06:38 14:48-15:49/61<br>16:50 09:35-10:20/45 | 07:13 09:25-10:53/88<br>16:30               |
| 7                           | 05:32 06:25-07:19/54<br>20:38 05:55-06:19/24 | 05:59 06:39-07:11/32<br>20:13 | 06:32 06:55-08:14/79<br>19:26 | 07:03 07:29-08:43/74<br>18:34 16:14-17:27/73 | 06:39 14:49-15:49/60<br>16:49 09:34-10:24/50 | 07:14 09:25-10:54/89<br>16:30               |
| 8                           | 05:33 06:26-07:20/54<br>20:38 05:56-06:19/23 | 06:00 07:15-07:21/6<br>20:02  | 06:33 06:56-08:13/77<br>19:24 | 07:04 07:30-08:44/74<br>18:32 16:11-17:28/77 | 06:41 14:49-15:49/60<br>16:48 09:32-10:26/54 | 07:15 09:26-10:54/88<br>16:30               |
| 9                           | 05:33 06:26-07:21/55<br>20:38 05:57-06:19/22 | 06:02 07:11-07:25/14<br>20:04 | 06:34 06:58-08:13/75<br>19:22 | 07:05 07:30-08:44/74<br>18:31 16:08-17:27/79 | 06:42 14:49-15:48/59<br>16:47 09:30-10:27/57 | 07:16 09:26-10:55/89<br>16:30               |
| 10                          | 05:34 06:25-07:20/55<br>20:37 05:57-06:18/21 | 06:03 07:08-07:28/20<br>20:09 | 06:35 07:00-08:12/72<br>19:21 | 07:06 07:31-08:43/72<br>18:29 16:05-17:26/81 | 06:43 14:50-15:48/58<br>16:46 09:30-10:30/60 | 07:17 09:27-10:56/89<br>16:30               |
| 11                          | 05:35 06:26-07:21/55<br>20:37 05:58-06:17/19 | 06:04 07:06-07:30/24<br>20:08 | 06:36 07:01-08:11/70<br>19:19 | 07:07 07:31-08:43/72<br>18:27 16:03-17:25/82 | 06:44 14:50-15:48/58<br>16:45 09:28-10:31/63 | 07:17 09:27-10:56/89<br>16:30               |
| 12                          | 05:36 06:26-07:21/55<br>20:36 05:59-06:17/18 | 06:05 07:04-07:31/27<br>20:06 | 06:37 07:03-08:11/68<br>19:17 | 07:09 07:32-08:42/70<br>18:26 16:01-17:24/83 | 06:45 14:51-15:47/56<br>16:44 09:27-10:33/66 | 07:18 09:27-10:56/89<br>16:30               |
| 13                          | 05:36 06:26-07:21/55<br>20:36 05:59-06:16/17 | 06:06 07:03-07:32/29<br>20:05 | 06:38 07:04-08:10/66<br>19:15 | 07:10 07:33-08:41/68<br>18:24 15:59-17:23/84 | 06:47 14:52-15:47/55<br>16:43 09:27-10:35/68 | 07:19 09:28-10:57/89<br>16:30               |
| 14                          | 05:37 06:26-07:21/55<br>20:35 06:01-06:15/14 | 06:07 07:01-07:33/32<br>20:04 | 06:39 07:07-08:09/62<br>19:14 | 07:11 07:35-08:41/66<br>18:22 15:57-17:22/85 | 06:48 14:53-15:47/54<br>16:42 09:26-10:36/70 | 07:20 09:28-10:57/89<br>16:30               |
| 15                          | 05:38 06:26-07:21/55<br>20:35 06:03-06:14/11 | 06:08 07:00-07:34/34<br>20:02 | 06:40 07:09-08:07/58<br>19:12 | 07:12 07:38-08:41/63<br>18:21 15:56-17:22/86 | 06:49 14:53-15:46/53<br>16:41 09:25-10:37/72 | 07:21 09:29-10:58/89<br>16:30               |
| 16                          | 05:39 06:27-07:22/55<br>20:34 06:06-06:11/5  | 06:09 06:59-07:35/36<br>20:01 | 06:41 07:08-08:06/58<br>19:10 | 07:13 07:38-08:40/62<br>18:19 15:55-17:21/86 | 06:50 14:55-15:46/51<br>16:40 09:25-10:39/74 | 07:21 09:29-10:58/89<br>16:30               |
| 17                          | 05:40 06:26-07:21/55<br>20:34                | 06:10 06:58-07:36/38<br>19:59 | 06:42 07:08-08:04/56<br>19:08 | 07:14 07:39-08:38/59<br>18:18 15:53-17:20/87 | 06:52 14:55-15:45/50<br>16:39 09:25-10:40/75 | 07:22 09:29-10:59/90<br>16:31               |
| 18                          | 05:40 06:27-07:21/54<br>20:33                | 06:11 06:58-07:36/38<br>19:58 | 06:43 07:08-08:03/55<br>19:07 | 07:15 07:39-08:37/58<br>18:16 15:52-17:18/86 | 06:53 14:56-15:44/48<br>16:38 09:24-10:40/76 | 07:23 09:30-11:00/90<br>16:31               |
| 19                          | 05:41 06:27-07:21/54<br>20:32                | 06:12 06:57-07:36/39<br>19:56 | 06:44 07:08-08:01/53<br>19:05 | 07:16 07:40-08:36/56<br>18:15 15:51-17:17/86 | 06:54 14:57-15:43/46<br>16:37 09:24-10:41/77 | 07:23 09:30-11:00/90<br>16:31               |
| 20                          | 05:42 06:27-07:22/55<br>20:31                | 06:13 06:56-08:06/70<br>19:55 | 06:45 07:08-07:59/51<br>19:03 | 07:18 07:42-08:35/53<br>18:13 15:51-17:16/85 | 06:55 14:59-15:43/44<br>16:37 09:24-10:43/79 | 07:24 09:31-11:00/89<br>16:32               |
| 21                          | 05:43 06:28-07:22/54<br>20:31                | 06:14 06:56-08:08/72<br>19:53 | 06:46 07:08-07:56/48<br>19:01 | 07:19 07:43-08:33/50<br>18:12 15:49-17:14/85 | 06:56 15:00-15:42/42<br>16:36 09:24-10:43/79 | 07:24 09:31-11:00/89<br>16:32               |
| 22                          | 05:44 06:28-07:22/54<br>20:30                | 06:15 06:55-08:09/74<br>19:52 | 06:47 07:09-07:53/44<br>19:00 | 07:20 07:46-08:31/45<br>18:10 15:49-17:12/83 | 06:58 15:01-15:41/40<br>16:35 09:23-10:44/81 | 07:25 09:32-11:01/89<br>16:33               |
| 23                          | 05:45 06:28-07:22/54<br>20:29                | 06:16 06:55-08:10/75<br>19:50 | 06:48 07:10-07:49/39<br>18:58 | 07:21 07:51-08:29/38<br>18:09 15:48-17:10/82 | 06:59 15:02-15:40/38<br>16:35 09:23-10:45/82 | 07:26 09:32-11:01/89<br>16:33               |
| 24                          | 05:46 06:28-07:21/53<br>20:28                | 06:17 06:54-08:11/77<br>19:49 | 06:49 07:12-07:45/33<br>18:56 | 07:22 07:53-08:27/34<br>18:07 15:48-17:09/81 | 07:00 15:04-15:40/36<br>16:34 09:23-10:46/83 | 07:26 09:33-11:02/89<br>16:34               |
| 25                          | 05:47 06:28-07:21/53<br>20:27                | 06:18 06:54-08:12/78<br>19:47 | 06:50 07:14-07:28/14<br>18:54 | 07:23 07:32-07:41/9<br>17:06 14:47-16:06/79  | 07:01 15:05-15:39/34<br>16:34 09:23-10:47/84 | 07:26 09:33-11:03/90<br>16:34               |
| 26                          | 05:48 06:29-07:20/51<br>20:26                | 06:19 06:53-08:13/80<br>19:46 | 06:51 07:44-07:54/10<br>18:53 | 08:05-08:38/33<br>17:04 06:56-07:11/15       | 07:02 15:07-15:38/31<br>16:33 09:23-10:47/84 | 07:27 09:33-11:03/90<br>16:35               |
| 27                          | 05:49 06:29-07:20/51<br>20:25                | 06:20 06:52-08:14/82<br>19:44 | 06:52 07:41-07:57/16<br>18:51 | 16:25-17:30/65<br>08:03-08:40/37             | 07:03 15:09-15:36/27<br>16:33 09:23-10:48/85 | 07:27 09:35-11:04/89<br>16:36               |
| 28                          | 05:49 06:30-07:20/50<br>20:24                | 06:21 06:52-08:14/82<br>19:42 | 06:53 07:38-07:58/20<br>18:49 | 16:24-17:30/66<br>07:59-08:41/42             | 07:04 15:10-15:35/25<br>16:32 09:23-10:48/85 | 07:27 09:35-11:04/89<br>16:36               |
| 29                          | 05:50 06:30-07:19/49<br>20:23                | 06:22 06:51-08:14/83<br>19:41 | 06:54 07:36-08:42/66<br>18:48 | 07:00-07:07/7<br>17:00 07:00-07:07/7         | 07:06 15:13-15:34/21<br>16:32 09:24-10:50/86 | 07:28 09:35-11:04/89<br>16:37               |
| 30                          | 05:51 06:31-07:19/48<br>20:22                | 06:23 06:51-08:14/83<br>19:39 | 06:55 07:35-08:42/67<br>18:46 | 16:22-17:30/68<br>16:59                      | 07:07 15:16-15:32/16<br>16:31 09:24-10:50/86 | 07:28 09:35-11:05/90<br>16:38               |
| 31                          | 05:52 06:32-07:18/46<br>20:21                | 06:24 06:51-08:14/83<br>19:37 | 18:46<br>16:57                | 14:47-15:52/65<br>16:57                      | 16:31<br>16:39                               | 07:28 09:36-11:05/89<br>16:39               |
| Potential sun hours         | 462  | 430                           | 375                           | 344  | 296  | 285   |
| Sum of minutes with flicker | 1983   | 1692                          | 2897                          | 3994   | 3376   | 2764  |

### Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: LAR08 - Siemens Gamesa SG 6.0-170 6200 170.0 IO! hub: 165,0 m (TOT: 250,0 m) (8)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|    | January  | February                                    | March  | April          | May   | June   |            |
|----|--|---|--|----------------|---|--|------------|
| 1  | 07:28 07:52-09:01/69<br>16:40                      | 07:14 07:45-09:13/88<br>17:15               | 06:37 07:28-08:30/62<br>17:50 06:58-06:59/1  | 06:45<br>19:25 | 05:58 06:18-06:40/22<br>19:58                   | 05:29 06:17-06:39/22<br>20:29 05:50-06:15/25 |            |
| 2  | 07:28 07:51-09:02/71<br>16:41                      | 07:13 07:44-09:13/89<br>17:16               | 06:36 07:28-08:29/61<br>17:51 06:55-07:05/10 | 06:44<br>19:26 | 05:57 06:17-06:42/25<br>19:59                   | 05:28 06:19-06:38/19<br>20:29 05:50-06:15/25 |            |
| 3  | 07:29 07:51-09:02/71<br>16:42                      | 07:12 07:44-09:13/89<br>17:17               | 06:34 07:27-08:29/62<br>17:52 06:53-07:07/14 | 06:42<br>19:27 | 05:56 06:15-06:42/27<br>20:00                   | 05:28 06:20-06:38/18<br>20:30 05:50-06:16/26 |            |
| 4  | 07:29 07:51-09:03/72<br>16:42                      | 07:11 07:42-09:13/91<br>17:19               | 06:33 07:27-08:29/62<br>17:53 06:52-07:09/17 | 06:40<br>19:28 | 05:54 06:14-06:43/29<br>20:01                   | 05:27 06:21-06:37/16<br>20:31 05:49-06:15/26 |            |
| 5  | 07:29 07:51-09:03/72<br>16:43                      | 07:10 07:42-09:13/91<br>17:20               | 06:31 07:27-08:29/62<br>17:55 06:50-07:09/19 | 06:39<br>19:30 | 05:53 06:13-06:44/31<br>20:03                   | 05:27 06:22-06:36/14<br>20:32 05:49-06:15/26 |            |
| 6  | 07:29 07:51-09:04/73<br>16:44                      | 07:09 07:42-09:13/91<br>17:21               | 06:29 07:26-08:28/62<br>17:56 06:48-07:10/22 | 06:37<br>19:31 | 05:52 06:12-06:45/33<br>20:04                   | 05:27 06:24-06:35/11<br>20:32 05:49-06:15/26 |            |
| 7  | 07:28 07:51-09:05/74<br>16:45                      | 07:08 07:41-09:14/93<br>17:22               | 06:28 07:27-08:28/61<br>17:57 06:47-07:11/24 | 06:35<br>19:32 | 05:51 06:11-06:45/34<br>20:05                   | 05:26 06:25-06:33/8<br>20:33 05:48-06:15/27  |            |
| 8  | 07:28 07:51-09:05/74<br>16:46                      | 07:07 07:41-09:14/93<br>17:24               | 06:26 07:27-08:27/60<br>17:58 06:45-07:11/26 | 06:34<br>19:33 | 05:49 06:10-06:45/35<br>20:06                   | 05:26 06:28-06:31/3<br>20:33 05:48-06:14/26  |            |
| 9  | 07:28 07:50-09:05/75<br>16:47                      | 07:05 07:40-09:13/93<br>17:25               | 06:24 07:26-08:26/60<br>17:59 06:43-07:11/28 | 06:32<br>19:34 | 05:48 06:09-06:45/36<br>20:07                   | 05:26 05:48-06:15/27<br>20:34                |            |
| 10 | 07:28 07:50-09:06/76<br>16:48                      | 07:04 07:41-09:13/92<br>17:26               | 06:23 07:27-08:26/59<br>18:01 06:42-07:11/29 | 06:30<br>19:35 | 05:47 06:09-06:45/36<br>20:08                   | 05:26 05:48-06:15/27<br>20:35                |            |
| 11 | 07:28 07:50-09:06/76<br>16:49                      | 07:03 07:41-09:13/92<br>17:28               | 06:21 07:27-08:24/57<br>18:02 06:42-07:11/29 | 06:29<br>19:36 | 05:46 06:09-06:46/37<br>20:09                   | 05:25 05:48-06:15/27<br>20:35                |            |
| 12 | 07:27 07:49-09:06/77<br>16:51                      | 07:02 07:41-09:13/92<br>17:29               | 06:19 07:27-08:23/56<br>18:03 06:41-07:10/29 | 06:27<br>19:37 | 05:45 06:09-06:46/37<br>20:10                   | 05:25 05:48-06:15/27<br>20:36                |            |
| 13 | 07:27 07:49-09:07/78<br>16:52                      | 07:00 07:41-09:12/91<br>17:30               | 06:18 07:28-08:23/55<br>18:04 06:42-07:10/28 | 06:25<br>19:38 | 05:44 06:09-06:46/37<br>20:11                   | 05:25 05:48-06:14/26<br>20:36                |            |
| 14 | 07:27 07:49-09:07/78<br>16:53                      | 06:59 07:41-09:11/90<br>17:31               | 06:16 07:29-08:21/52<br>18:05 06:42-07:09/27 | 06:24<br>19:40 | 05:43 06:03-06:46/43<br>20:12                   | 05:25 05:48-06:14/26<br>20:37                |            |
| 15 | 07:26 07:48-09:07/79<br>16:54                      | 06:58 07:42-09:11/89<br>17:33               | 06:14 07:29-08:19/50<br>18:06 06:42-07:07/25 | 06:22<br>19:41 | 05:42 06:02-06:46/44<br>20:13                   | 05:25 05:48-06:14/26<br>20:37                |            |
| 16 | 07:26 07:48-09:08/80<br>16:55                      | 06:56 07:40-09:10/90<br>17:34               | 06:13 07:30-08:18/48<br>18:07 06:44-07:07/23 | 06:21<br>19:42 | 05:41 06:01-06:45/44<br>20:14                   | 05:25 05:48-06:14/26<br>20:38                |            |
| 17 | 07:25 07:47-09:08/81<br>16:56                      | 06:55 07:39-09:09/90<br>17:35               | 06:11 07:31-08:16/45<br>18:09 06:45-07:05/20 | 06:19<br>19:43 | 05:40 06:00-06:45/45<br>20:15                   | 05:25 05:48-06:14/26<br>20:38                |            |
| 18 | 07:25 07:47-09:07/80<br>16:57                      | 06:54 07:37-09:08/91<br>17:36               | 06:09 07:32-08:14/42<br>18:10 06:46-07:02/16 | 06:17<br>19:44 | 05:39 06:00-06:46/46<br>20:16                   | 05:25 05:48-06:14/26<br>20:38                |            |
| 19 | 07:24 07:48-09:08/80<br>16:59                      | 06:52 07:36-09:07/91<br>17:38               | 06:08 07:33-08:12/39<br>18:11 06:48-06:58/10 | 06:16<br>19:45 | 05:38 05:59-06:45/46<br>20:17                   | 05:25 05:48-06:14/26<br>20:39                |            |
| 20 | 07:24 07:47-09:07/80<br>17:00                      | 06:51 07:34-09:05/91<br>17:39               | 06:06 07:35-08:10/35<br>18:12                | 06:14<br>19:46 | 05:37 05:58-06:45/47<br>20:18                   | 05:25 05:48-06:14/26<br>20:39                |            |
| 21 | 07:23 07:47-09:07/80<br>17:01                      | 06:49 07:34-09:04/90<br>17:40               | 06:04 07:37-08:07/30<br>18:13                | 06:13<br>19:47 | 05:36 05:57-06:44/47<br>20:19                   | 05:26 05:48-06:14/26<br>20:39                |            |
| 22 | 07:23 07:48-09:08/80<br>17:02                      | 06:48 07:32-09:02/90<br>17:41               | 06:02 07:39-08:03/24<br>18:14                | 06:11<br>19:48 | 05:35 05:56-06:44/48<br>20:20                   | 05:26 05:49-06:15/26<br>20:39                |            |
| 23 | 07:22 07:48-09:07/79<br>17:03                      | 06:46 07:32-09:01/89<br>17:43               | 06:01 07:43-07:58/15<br>18:15                | 06:10<br>19:49 | 05:34 05:56-06:44/48<br>20:21                   | 05:26 05:49-06:15/26<br>20:39                |            |
| 24 | 07:21 07:49-09:07/78<br>17:05                      | 06:45 07:31-08:58/87<br>17:44               | 05:59<br>18:16                               | 06:08<br>19:50 | 05:34 05:55-06:43/48<br>20:22                   | 05:26 05:49-06:15/26<br>20:40                |            |
| 25 | 07:20 07:49-09:08/79<br>17:06                      | 06:43 07:30-08:56/86<br>17:45               | 05:57<br>18:17                               | 06:07<br>19:52 | 05:33 05:54-06:43/49<br>20:23                   | 05:26 05:49-06:16/27<br>20:40                |            |
| 26 | 07:20 07:49-09:09/80<br>17:07                      | 06:42 07:29-08:53/84<br>17:46               | 05:56<br>18:19                               | 06:05<br>19:53 | 05:32 05:54-06:43/49<br>20:24                   | 05:27 05:50-06:16/26<br>20:40                |            |
| 27 | 07:19 07:51-09:10/79<br>17:08                      | 06:40 07:29-08:49/80<br>17:48               | 05:54<br>18:20                               | 06:04<br>19:54 | 05:31 05:53-06:42/49<br>20:24                   | 05:27 05:50-06:16/26<br>20:40                |            |
| 28 | 07:18 07:49-09:11/82<br>17:10                      | 06:39 08:36-08:41/5<br>17:49 07:28-08:29/61 | 05:52<br>18:21                               | 06:03<br>19:55 | 06:25-06:33/8<br>05:31 05:52-06:41/49<br>20:25  | 05:28 05:51-06:17/26<br>20:40                |            |
| 29 | 07:17 07:48-09:11/83<br>17:11                      |   | 06:50<br>19:22                               | 06:01<br>19:56 | 06:21-06:37/16<br>05:30 05:52-06:41/49<br>20:26 | 05:28 05:51-06:17/26<br>20:40                |            |
| 30 | 07:16 07:47-09:12/85<br>17:12                      |   | 06:49<br>19:23                               | 06:00<br>19:57 | 06:19-06:38/19<br>05:30 06:16-06:40/24<br>20:27 | 05:28 05:51-06:18/27<br>20:40                |            |
| 31 | 07:15 07:46-09:12/86<br>17:14                      |   | 06:47<br>19:24                               |                | 05:29 06:17-06:40/23<br>20:28 05:52-06:16/24    |  |            |
|    | Potential sun hours<br>Sum of minutes with flicker | 295<br>2407                                 | 296<br>2489                                  | 369<br>1556    | 400<br>43                                       | 450<br>1270                                  | 455<br>896 |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

**WTG:** LAR08 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (8)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | July                          | August                        | September                                    | October                                      | November                      | December                      |
|-----------------------------|-------------------------------|-------------------------------|--|--|-------------------------------|-------------------------------|
| 1                           | 05:29 05:52-06:19/27<br>20:40 | 05:53 06:19-06:56/37<br>20:20 | 06:25<br>19:36                               | 06:57 08:07-09:02/55<br>18:44 07:21-07:49/28 | 06:32 07:10-08:43/93<br>16:56 | 07:08 07:32-08:48/76<br>16:31 |
| 2                           | 05:29 05:52-06:19/27<br>20:40 | 05:54 06:20-06:56/36<br>20:19 | 06:26<br>19:34                               | 06:58 08:06-09:03/57<br>18:42 07:20-07:49/29 | 06:33 07:10-08:43/93<br>16:55 | 07:09 07:33-08:49/76<br>16:31 |
| 3                           | 05:30 05:53-06:20/27<br>20:39 | 05:55 06:20-06:56/36<br>20:18 | 06:27<br>19:32                               | 06:59 08:05-09:03/58<br>18:41 07:20-07:49/29 | 06:34 07:10-08:43/93<br>16:54 | 07:10 07:34-08:49/75<br>16:30 |
| 4                           | 05:30 05:54-06:20/26<br>20:39 | 05:56 06:20-06:56/36<br>20:17 | 06:28<br>19:31                               | 07:00 08:04-09:03/59<br>18:39 07:20-07:48/28 | 06:36 07:11-08:43/92<br>16:53 | 07:11 07:35-08:49/74<br>16:30 |
| 5                           | 05:31 06:32-06:38/6<br>20:39  | 05:57 06:20-06:55/35<br>20:15 | 06:29<br>19:29                               | 07:01 08:03-09:03/60<br>18:37 07:21-07:48/27 | 06:37 07:11-08:43/92<br>16:51 | 07:12 07:36-08:50/74<br>16:30 |
| 6                           | 05:32 06:31-06:41/10<br>20:39 | 05:59 06:21-06:55/34<br>20:14 | 06:31<br>19:27                               | 07:02 08:03-09:03/60<br>18:36 07:22-07:47/25 | 06:38 07:12-08:43/91<br>16:50 | 07:13 07:37-08:50/73<br>16:30 |
| 7                           | 05:32 06:29-06:42/13<br>20:38 | 06:00 06:22-06:54/32<br>20:13 | 06:32<br>19:26                               | 07:03 08:02-09:03/61<br>18:34 07:23-07:46/23 | 06:39 07:13-08:44/91<br>16:49 | 07:14 07:38-08:51/73<br>16:30 |
| 8                           | 05:33 06:28-06:43/15<br>20:38 | 06:01 06:23-06:53/30<br>20:12 | 06:33<br>19:24                               | 07:04 08:03-09:04/61<br>18:32 07:25-07:46/21 | 06:40 07:13-08:43/90<br>16:48 | 07:15 07:39-08:51/72<br>16:30 |
| 9                           | 05:34 06:28-06:45/17<br>20:38 | 06:02 06:24-06:52/28<br>20:10 | 06:34<br>19:22                               | 07:05 08:02-09:04/62<br>18:31 07:26-07:44/18 | 06:42 07:14-08:43/89<br>16:47 | 07:16 07:40-08:51/71<br>16:30 |
| 10                          | 05:34 06:26-06:45/19<br>20:37 | 06:03 06:25-06:51/26<br>20:09 | 06:35<br>19:21                               | 07:06 08:02-09:04/62<br>18:29 07:27-07:42/15 | 06:43 07:16-08:44/88<br>16:46 | 07:17 07:41-08:52/71<br>16:30 |
| 11                          | 05:35 06:26-06:47/21<br>20:37 | 06:04 06:26-06:50/24<br>20:08 | 06:36<br>19:19                               | 07:07 08:01-09:03/62<br>18:27 07:28-07:40/12 | 06:44 07:17-08:43/86<br>16:45 | 07:17 07:43-08:52/69<br>16:30 |
| 12                          | 05:36 06:26-06:48/22<br>20:36 | 06:05 06:27-06:48/21<br>20:06 | 06:37<br>19:17                               | 07:09 08:01-09:03/62<br>18:26 07:29-07:37/8  | 06:45 07:18-08:43/85<br>16:44 | 07:18 07:44-08:52/68<br>16:30 |
| 13                          | 05:36 06:00-06:24/24<br>20:36 | 06:06 06:28-06:46/18<br>20:05 | 06:38<br>19:15                               | 07:10 08:01-09:02/61<br>18:24                | 06:47 07:20-08:43/83<br>16:43 | 07:19 07:45-08:53/68<br>16:30 |
| 14                          | 05:37 06:00-06:49/49<br>20:35 | 06:07 06:30-06:44/14<br>20:04 | 06:39<br>19:14                               | 07:11 09:05-09:18/13<br>18:22 08:01-09:02/61 | 06:48 07:21-08:43/82<br>16:42 | 07:20 07:46-08:53/67<br>16:30 |
| 15                          | 05:38 06:01-06:50/49<br>20:35 | 06:08 06:35-06:38/3<br>20:02  | 06:40<br>19:12                               | 07:12 08:02-09:23/81<br>18:21                | 06:49 07:23-08:42/79<br>16:41 | 07:21 07:47-08:54/67<br>16:30 |
| 16                          | 05:39 06:02-06:51/49<br>20:34 | 06:09<br>20:01                | 06:41<br>19:10                               | 07:13 08:02-09:26/84<br>18:19                | 06:50 07:23-08:43/80<br>16:40 | 07:21 07:47-08:54/67<br>16:31 |
| 17                          | 05:40 06:03-06:52/49<br>20:33 | 06:10<br>19:59                | 06:42<br>19:08                               | 07:14 08:02-09:28/86<br>18:18                | 06:52 07:23-08:42/79<br>16:39 | 07:22 07:48-08:54/66<br>16:31 |
| 18                          | 05:40 06:03-06:52/49<br>20:33 | 06:11<br>19:58                | 06:43<br>19:07                               | 07:15 08:02-09:30/88<br>18:16                | 06:53 07:23-08:41/78<br>16:38 | 07:23 07:49-08:55/66<br>16:31 |
| 19                          | 05:41 06:04-06:53/49<br>20:32 | 06:12<br>19:56                | 06:44<br>19:05                               | 07:16 08:03-09:32/89<br>18:15                | 06:54 07:22-08:41/79<br>16:38 | 07:23 07:48-08:55/67<br>16:32 |
| 20                          | 05:42 06:05-06:53/48<br>20:31 | 06:13<br>19:55                | 06:45 08:31-08:43/12<br>19:03                | 07:18 08:04-09:34/90<br>18:13                | 06:55 07:23-08:43/80<br>16:37 | 07:24 07:49-08:56/67<br>16:32 |
| 21                          | 05:43 06:06-06:54/48<br>20:31 | 06:14<br>19:53                | 06:46 08:25-08:48/23<br>19:01                | 07:19 08:05-09:35/90<br>18:12                | 06:56 07:23-08:43/80<br>16:36 | 07:24 07:49-08:56/67<br>16:32 |
| 22                          | 05:44 06:07-06:55/48<br>20:30 | 06:15<br>19:52                | 06:47 08:22-08:51/29<br>19:00                | 07:20 08:05-09:36/91<br>18:10                | 06:58 07:23-08:43/80<br>16:35 | 07:25 07:50-08:57/67<br>16:33 |
| 23                          | 05:45 06:08-06:55/47<br>20:29 | 06:16<br>19:50                | 06:48 08:19-08:53/34<br>18:58                | 07:21 08:06-09:37/91<br>18:09                | 06:59 07:24-08:44/80<br>16:35 | 07:25 07:50-08:57/67<br>16:33 |
| 24                          | 05:46 06:09-06:56/47<br>20:28 | 06:17<br>19:49                | 06:49 08:17-08:55/38<br>18:56 07:34-07:41/7  | 07:22 08:08-09:39/91<br>18:07                | 07:00 07:25-08:45/80<br>16:34 | 07:26 07:51-08:58/67<br>16:34 |
| 25                          | 05:47 06:09-06:55/46<br>20:27 | 06:18<br>19:47                | 06:50 08:16-08:57/41<br>18:54 07:30-07:45/15 | 06:23 07:09-08:39/90<br>17:06                | 07:01 07:25-08:46/81<br>16:34 | 07:26 07:51-08:58/67<br>16:35 |
| 26                          | 05:48 06:10-06:55/45<br>20:26 | 06:19<br>19:46                | 06:51 08:14-08:58/44<br>18:53 07:28-07:47/19 | 06:25 07:10-08:40/90<br>17:04                | 07:02 07:26-08:46/80<br>16:33 | 07:27 07:52-08:58/66<br>16:35 |
| 27                          | 05:49 06:11-06:56/45<br>20:25 | 06:20<br>19:44                | 06:52 08:12-08:59/47<br>18:51 07:26-07:48/22 | 06:26 07:11-08:40/89<br>17:03                | 07:03 07:27-08:46/79<br>16:33 | 07:27 07:53-08:59/66<br>16:36 |
| 28                          | 05:50 06:12-06:56/44<br>20:24 | 06:21<br>19:42                | 06:53 08:11-09:00/49<br>18:49 07:24-07:48/24 | 06:27 07:11-08:41/90<br>17:02                | 07:04 07:28-08:47/79<br>16:32 | 07:27 07:53-09:00/67<br>16:36 |
| 29                          | 05:51 06:13-06:56/43<br>20:23 | 06:22<br>19:41                | 06:54 08:09-09:01/52<br>18:48 07:23-07:49/26 | 06:28 07:10-08:41/91<br>17:00                | 07:06 07:30-08:48/78<br>16:32 | 07:28 07:53-09:00/67<br>16:37 |
| 30                          | 05:52 06:14-06:56/42<br>20:22 | 06:23<br>19:39                | 06:55 08:08-09:02/54<br>18:46 07:22-07:49/27 | 06:29 07:10-08:42/92<br>16:59                | 07:07 07:31-08:48/77<br>16:31 | 07:28 07:53-09:00/67<br>16:38 |
| 31                          | 05:52 06:19-06:56/37<br>20:21 | 06:24<br>19:37                | 06:24<br>19:37                               | 06:31 07:11-08:43/92<br>16:58                | 07:08 07:32-08:49/76<br>16:31 | 07:28 07:53-09:01/68<br>16:39 |
| Potential sun hours         | 462                           | 429                           | 375  | 344  | 296                           | 285                           |
| Sum of minutes with flicker | 1321                          | 410                           | 563  | 2632   | 2517                          | 2143                          |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** LAR09 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (9)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July                    | August                  | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------------|-------------------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:29 | 05:29<br>20:40          | 05:57-06:21/24<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                           | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:52-06:14/22<br>20:40 | 05:57-06:20/23<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                           | 07:29<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:52-06:15/23<br>20:40 | 05:57-06:21/24<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                           | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53 | 06:40<br>19:29 | 05:54<br>20:02 | 05:27<br>20:31 | 05:51-06:14/23<br>20:39 | 05:57-06:21/24<br>20:17 | 06:28<br>19:31 | 07:00<br>18:39 | 06:36<br>16:52 | 07:11<br>16:30 |
| 5                           | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:52-06:15/23<br>20:39 | 05:58-06:21/23<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:26<br>20:32 | 05:52-06:15/23<br>20:39 | 05:58-06:22/24<br>20:14 | 06:30<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:29<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:51-06:15/24<br>20:39 | 05:58-06:21/23<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:06 | 05:26<br>20:34 | 05:52-06:15/23<br>20:38 | 05:58-06:22/24<br>20:12 | 06:00<br>19:24 | 06:33<br>18:32 | 07:04<br>16:48 | 07:15<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:52-06:16/24<br>20:38 | 05:59-06:22/23<br>20:10 | 06:01<br>19:22 | 06:34<br>18:31 | 07:05<br>16:47 | 07:16<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:35 | 05:52-06:16/24<br>20:37 | 05:59-06:21/22<br>20:09 | 06:03<br>19:21 | 06:35<br>18:29 | 07:06<br>16:46 | 07:17<br>16:30 |
| 11                          | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:53-06:16/23<br>20:37 | 05:59-06:22/23<br>20:08 | 06:04<br>19:19 | 06:36<br>18:27 | 07:07<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:53-06:17/24<br>20:36 | 06:00-06:22/22<br>20:06 | 06:05<br>19:17 | 06:37<br>18:26 | 07:09<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:53-06:17/24<br>20:36 | 06:00-06:21/21<br>20:05 | 06:06<br>19:15 | 06:38<br>18:24 | 07:10<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:54-06:17/23<br>20:35 | 06:00-06:21/21<br>20:04 | 06:07<br>19:14 | 06:39<br>18:22 | 07:11<br>16:42 | 07:20<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:54-06:17/23<br>20:35 | 06:01-06:21/20<br>20:02 | 06:08<br>19:12 | 06:40<br>18:21 | 07:12<br>16:41 | 07:21<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:20<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:54-06:17/23<br>20:34 | 06:02-06:21/19<br>20:01 | 06:09<br>19:10 | 06:41<br>18:19 | 07:13<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:54-06:18/24<br>20:34 | 06:03-06:20/17<br>19:59 | 06:10<br>19:08 | 06:42<br>18:18 | 07:14<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:54-06:18/24<br>20:33 | 06:03-06:19/16<br>19:58 | 06:11<br>19:07 | 06:43<br>18:16 | 07:15<br>16:38 | 07:23<br>16:31 |
| 19                          | 07:25<br>16:58 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:54-06:18/24<br>20:32 | 06:04-06:18/14<br>19:56 | 06:12<br>19:05 | 06:44<br>18:15 | 07:16<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:54-06:18/24<br>20:31 | 06:06-06:17/11<br>19:55 | 06:13<br>19:03 | 06:45<br>18:13 | 07:18<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:54-06:18/24<br>20:31 | 06:08-06:16/8<br>19:53  | 06:14<br>19:01 | 06:46<br>18:12 | 07:19<br>16:36 | 07:25<br>16:32 |
| 22                          | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:55-06:19/24<br>20:30 | 06:15<br>19:52          | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:40 | 05:55-06:19/24<br>20:29 | 06:16<br>19:50          | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:26<br>16:33 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:34<br>20:22 | 05:26<br>20:40 | 05:55-06:19/24<br>20:28 | 06:17<br>19:49          | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:26<br>20:40 | 05:55-06:19/24<br>20:27 | 06:18<br>19:47          | 06:50<br>18:54 | 06:24<br>17:06 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:56-06:20/24<br>20:26 | 06:19<br>19:46          | 06:51<br>18:53 | 06:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                          | 07:19<br>17:08 | 06:40<br>17:47 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>20:25 | 05:27<br>20:40 | 05:56-06:19/23<br>20:25 | 06:20<br>19:44          | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 05:57-06:20/23<br>20:24 | 06:21<br>19:42          | 06:53<br>18:49 | 06:27<br>17:01 | 07:05<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:56-06:20/24<br>20:23 | 06:22<br>19:41          | 06:54<br>18:48 | 06:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 05:56-06:20/24<br>20:22 | 06:23<br>19:39          | 06:55<br>18:46 | 06:30<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 | 05:59<br>20:28 | 05:29<br>20:28 |                | 05:52-06:13/21<br>20:21 | 06:24<br>19:38          |                | 06:31<br>16:57 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 451            | 455            | 462                     | 430                     | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 158            | 705            | 426                     | 0                       | 0              | 0              | 0              | 0              |

### Table layout: For each day in each month the following matrix apply

Day in month    Sun rise (hh:mm)    First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
 Sun set (hh:mm)    First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



### SHADOW - Calendar per WTG

WTG: LAR10 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (10)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:29 | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                           | 07:29<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                           | 07:29<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:40 | 05:55<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                           | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53 | 06:40<br>19:29 | 05:54<br>20:02 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 07:00<br>18:39 | 06:36<br>16:52 | 07:11<br>16:30 |
| 5                           | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:26<br>20:32 | 05:31<br>20:39 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:29<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:39 | 05:59<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:06 | 05:26<br>20:34 | 05:33<br>20:38 | 06:00<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:33<br>20:38 | 06:01<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:35 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                          | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:18<br>16:30 |
| 12                          | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:01<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:57<br>17:34 | 06:13<br>18:07 | 06:20<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:39<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                          | 07:25<br>16:58 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:17<br>18:15 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:25<br>16:32 |
| 22                          | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:47<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:40 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:26<br>16:33 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:33<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:21<br>17:06 | 06:44<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:26<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 07:23<br>17:06 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:24<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                          | 07:19<br>17:08 | 06:40<br>17:47 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>20:25 | 05:27<br>20:40 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:25<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:26<br>17:01 | 07:05<br>16:32 | 07:28<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:50<br>18:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:27<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:35<br>17:49 | 05:49<br>18:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:28<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:33<br>17:49 | 05:47<br>18:24 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:40 | 05:52<br>20:21 | 06:24<br>19:38 | 06:57<br>18:44 | 07:29<br>16:57 | 07:08<br>16:30 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 430            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: LAR11 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (11)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:29 | 05:29<br>20:40 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                           | 07:29<br>16:40 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:40 | 05:54<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                           | 07:29<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:27<br>20:30 | 05:30<br>20:40 | 05:55<br>20:18 | 06:27<br>19:33 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                           | 07:29<br>16:42 | 07:11<br>17:19 | 06:33<br>17:53 | 06:40<br>19:29 | 05:54<br>20:02 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:17 | 06:28<br>19:31 | 07:00<br>18:39 | 06:36<br>16:52 | 07:11<br>16:30 |
| 5                           | 07:29<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:38<br>19:30 | 05:53<br>20:03 | 05:27<br>20:32 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:29<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:04 | 05:26<br>20:32 | 05:31<br>20:39 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:29<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:26<br>20:33 | 05:32<br>20:39 | 05:59<br>20:13 | 06:31<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:07<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:06 | 05:26<br>20:34 | 05:33<br>20:38 | 06:00<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:41<br>16:48 | 07:15<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:06<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:33<br>20:38 | 06:01<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:16<br>16:29 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:35 | 05:34<br>20:37 | 06:02<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:17<br>16:29 |
| 11                          | 07:28<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:03<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:28<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:40 | 05:43<br>20:12 | 05:25<br>20:37 | 05:37<br>20:35 | 06:07<br>20:04 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:35 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:20<br>19:42 | 05:41<br>20:14 | 05:25<br>20:38 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:26<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:39<br>20:34 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                          | 07:25<br>16:58 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:39 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:31 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:25<br>16:32 |
| 22                          | 07:23<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:30 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:58<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:40 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:59<br>16:35 | 07:26<br>16:33 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:51 | 05:33<br>20:22 | 05:26<br>20:40 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:21<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:52 | 05:33<br>20:23 | 05:26<br>20:40 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 07:24<br>17:06 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:20<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:05<br>19:53 | 05:32<br>20:24 | 05:27<br>20:40 | 05:47<br>20:26 | 06:19<br>19:46 | 06:51<br>18:53 | 07:25<br>17:04 | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                          | 07:19<br>17:08 | 06:40<br>17:47 | 05:54<br>18:20 | 06:04<br>19:54 | 05:31<br>20:25 | 05:27<br>20:40 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 07:26<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 07:27<br>17:01 | 07:05<br>16:32 | 07:28<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:50<br>18:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 07:28<br>17:00 | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:35<br>17:49 | 05:49<br>18:23 | 06:00<br>19:57 | 05:29<br>20:27 | 05:28<br>20:40 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 07:29<br>16:59 | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:33<br>17:49 | 05:47<br>18:24 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:40 | 05:52<br>20:21 | 06:24<br>19:38 | 06:57<br>18:44 | 07:30<br>16:57 | 07:08<br>16:30 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 430            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** LAR12 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (12)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February                      | March                         | April                         | May                           | June                          |  |
|-----------------------------|----------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--|
| 1                           | 07:29<br>16:40 | 07:14<br>17:15                | 06:37 17:07-17:29/22<br>17:50 | 06:45 17:47-18:56/69<br>19:25 | 05:59 19:07-19:33/26<br>19:58 | 05:29 19:43-20:03/20<br>20:29 |  |
| 2                           | 07:29<br>16:41 | 07:13<br>17:16                | 06:36 17:06-17:30/24<br>17:51 | 06:44 17:47-18:54/67<br>19:26 | 05:57 19:08-19:32/24<br>19:59 | 05:28 19:44-20:03/19<br>20:30 |  |
| 3                           | 07:29<br>16:42 | 07:12<br>17:18                | 06:34 17:05-17:30/25<br>17:52 | 06:42 17:47-18:52/65<br>19:28 | 05:56 19:08-19:31/23<br>20:01 | 05:28 19:45-20:04/19<br>20:30 |  |
| 4                           | 07:29<br>16:43 | 07:11<br>17:19                | 06:33 17:05-17:32/27<br>17:54 | 06:40 17:46-18:47/61<br>19:29 | 05:55 19:09-19:30/21<br>20:02 | 05:27 19:45-20:03/18<br>20:31 |  |
| 5                           | 07:29<br>16:43 | 07:10<br>17:20                | 06:31 17:05-17:33/28<br>17:55 | 06:39 17:45-18:43/58<br>19:30 | 05:53 19:10-19:29/19<br>20:03 | 05:27 19:46-20:03/17<br>20:32 |  |
| 6                           | 07:29<br>16:44 | 07:09<br>17:21                | 06:29 17:05-17:34/29<br>17:56 | 06:37 17:46-18:43/57<br>19:31 | 05:52 19:12-19:27/15<br>20:04 | 05:27 19:47-20:03/16<br>20:32 |  |
| 7                           | 07:29<br>16:45 | 07:08<br>17:23                | 06:28 17:06-17:36/30<br>17:57 | 06:35 19:05-19:10/5<br>19:32  | 05:51 19:14-19:25/11<br>20:05 | 05:26 19:47-20:01/14<br>20:33 |  |
| 8                           | 07:29<br>16:46 | 07:07<br>17:24                | 06:26 17:06-17:37/31<br>17:58 | 06:34 19:02-19:11/9<br>19:33  | 05:50 19:30-19:43/13<br>20:06 | 05:26 19:48-20:01/13<br>20:34 |  |
| 9                           | 07:28<br>16:47 | 07:06<br>17:25                | 06:25 17:06-17:38/32<br>18:00 | 06:32 19:01-19:13/12<br>19:34 | 05:48 19:28-19:43/15<br>20:07 | 05:26 19:49-20:01/12<br>20:34 |  |
| 10                          | 07:28<br>16:48 | 07:04<br>17:27                | 06:23 17:08-17:39/31<br>18:01 | 06:30 18:59-19:13/14<br>19:35 | 05:47 19:28-19:44/16<br>20:08 | 05:26 19:50-20:01/11<br>20:35 |  |
| 11                          | 07:28<br>16:50 | 07:03<br>17:28                | 06:21 17:10-17:40/30<br>18:02 | 06:29 18:57-19:14/17<br>19:36 | 05:46 19:28-19:45/17<br>20:09 | 05:25 19:51-20:01/10<br>20:35 |  |
| 12                          | 07:28<br>16:51 | 07:02<br>17:29                | 06:20 17:15-17:41/26<br>18:03 | 06:27 18:57-19:16/19<br>19:38 | 05:45 19:28-19:46/18<br>20:10 | 05:25 19:52-20:00/8<br>20:36  |  |
| 13                          | 07:27<br>16:52 | 07:01<br>17:30                | 06:18 17:16-17:43/27<br>18:04 | 06:26 18:56-19:16/20<br>19:39 | 05:44 19:28-19:47/19<br>20:11 | 05:25 19:53-20:00/7<br>20:36  |  |
| 14                          | 07:27<br>16:53 | 06:59<br>17:32                | 06:16 17:16-17:44/28<br>18:05 | 06:24 18:56-19:18/22<br>19:40 | 05:43 19:29-19:48/19<br>20:12 | 05:25 19:54-19:59/5<br>20:37  |  |
| 15                          | 07:27<br>16:54 | 06:58<br>17:33                | 06:15 17:17-17:45/28<br>18:06 | 06:22 18:55-19:18/23<br>19:41 | 05:42 19:29-19:49/20<br>20:13 | 05:25 19:55-19:58/3<br>20:37  |  |
| 16                          | 07:26<br>16:55 | 06:57<br>17:34                | 06:13 17:19-17:46/27<br>18:08 | 06:21 18:55-19:20/25<br>19:42 | 05:41 19:29-19:50/21<br>20:14 | 05:25 19:55-19:58/3<br>20:38  |  |
| 17                          | 07:26<br>16:56 | 06:55<br>17:35                | 06:11 17:22-17:45/23<br>18:09 | 06:19 18:55-19:21/26<br>19:43 | 05:40 19:30-19:50/20<br>20:15 | 05:25 19:55-19:58/3<br>20:38  |  |
| 18                          | 07:25<br>16:57 | 06:54<br>17:37                | 06:09 17:17-17:44/27<br>18:10 | 06:18 18:55-19:21/26<br>19:44 | 05:39 19:31-19:52/21<br>20:16 | 05:25 19:55-19:58/3<br>20:38  |  |
| 19                          | 07:25<br>16:59 | 06:52<br>17:38                | 06:08 17:09-17:43/34<br>18:11 | 06:16 18:55-19:23/28<br>19:45 | 05:38 19:32-19:53/21<br>20:17 | 05:25 19:55-19:58/3<br>20:39  |  |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39                | 06:06 17:06-17:42/36<br>18:12 | 06:14 18:55-19:23/28<br>19:46 | 05:37 19:32-19:54/22<br>20:18 | 05:25 19:55-19:58/3<br>20:39  |  |
| 21                          | 07:23<br>17:01 | 06:50<br>17:40                | 06:04 17:03-17:52/49<br>18:13 | 06:13 18:56-19:25/29<br>19:47 | 05:36 19:33-19:54/21<br>20:19 | 05:26 19:55-19:58/3<br>20:39  |  |
| 22                          | 07:23<br>17:02 | 06:48<br>17:42                | 06:03 17:00-17:37/37<br>18:14 | 06:11 18:56-19:25/29<br>19:49 | 05:35 19:34-19:55/21<br>20:20 | 05:26 19:55-19:58/3<br>20:40  |  |
| 23                          | 07:22<br>17:04 | 06:47<br>17:43                | 06:01 16:59-17:55/56<br>18:15 | 06:10 18:58-19:27/29<br>19:50 | 05:35 19:36-19:57/21<br>20:21 | 05:26 19:55-19:58/3<br>20:40  |  |
| 24                          | 07:21<br>17:05 | 06:45 17:16-17:21/5<br>17:44  | 05:59 16:57-17:55/58<br>18:17 | 06:08 19:00-19:28/28<br>19:51 | 05:34 19:38-19:57/19<br>20:22 | 05:26 19:55-19:58/3<br>20:40  |  |
| 25                          | 07:21<br>17:06 | 06:44 17:12-17:23/11<br>17:45 | 05:57 16:55-17:56/61<br>18:18 | 06:07 19:01-19:29/28<br>19:52 | 05:33 19:41-19:58/17<br>20:23 | 05:27 19:55-19:58/3<br>20:40  |  |
| 26                          | 07:20<br>17:07 | 06:42 17:10-17:24/14<br>17:46 | 05:56 16:53-17:57/64<br>18:19 | 06:06 19:06-19:30/24<br>19:53 | 05:32 19:41-19:59/18<br>20:24 | 05:27 19:55-19:58/3<br>20:40  |  |
| 27                          | 07:19<br>17:09 | 06:41 17:09-17:26/17<br>17:48 | 05:54 16:52-17:59/67<br>18:20 | 06:04 19:06-19:31/25<br>19:54 | 05:32 19:41-20:00/19<br>20:25 | 05:27 19:55-19:58/3<br>20:40  |  |
| 28                          | 07:18<br>17:10 | 06:39 17:07-17:27/20<br>17:49 | 05:52 16:51-18:00/69<br>18:21 | 06:03 19:06-19:32/26<br>19:55 | 05:31 19:41-20:00/19<br>20:26 | 05:28 19:57-20:02/5<br>20:40  |  |
| 29                          | 07:17<br>17:11 |                               | 06:51 17:50-18:59/69<br>19:22 | 06:01 19:06-19:33/27<br>19:56 | 05:30 19:42-20:01/19<br>20:26 | 05:28 19:56-20:02/6<br>20:40  |  |
| 30                          | 07:16<br>17:12 |                               | 06:49 17:50-18:59/69<br>19:23 | 06:00 19:06-19:33/27<br>19:57 | 05:30 19:42-20:02/20<br>20:27 | 05:29 19:55-20:03/8<br>20:40  |  |
| 31                          | 07:15<br>17:14 |                               | 06:47 17:48-18:57/69<br>19:24 |                               | 05:29 19:43-20:03/20<br>20:28 |                               |  |
| Potential sun hours         | 295            | 296                           | 369                           | 400                           | 451                           | 455                           |  |
| Sum of minutes with flicker | 0              | 67                            | 1259                          | 1752                          | 633                           | 213                           |  |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: LAR12 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (12)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | July                          | August                                       | September                                    | October                       | November       | December       |
|-----------------------------|-------------------------------|--|--|-------------------------------|----------------|----------------|
| 1                           | 05:29 19:55-20:04/9<br>20:40  | 05:54 19:39-19:56/17<br>20:20                | 06:26 18:57-19:14/17<br>19:36 17:45-18:40/55 | 06:57 17:55-18:21/26<br>18:44 | 06:32<br>16:56 | 07:08<br>16:31 |
| 2                           | 05:30 19:54-20:05/11<br>20:40 | 05:55 19:39-19:55/16<br>20:19                | 06:27 18:58-19:12/14<br>19:34 17:45-18:40/55 | 06:58 17:51-18:20/29<br>18:43 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                           | 05:30 19:54-20:06/12<br>20:40 | 05:56 19:39-19:54/15<br>20:18                | 06:28 18:59-19:11/12<br>19:33 17:44-18:40/56 | 06:59 17:47-18:18/31<br>18:41 | 06:35<br>16:54 | 07:10<br>16:31 |
| 4                           | 05:31 19:54-20:07/13<br>20:39 | 05:57 19:39-19:53/14<br>20:17                | 06:29 19:00-19:09/9<br>19:31 17:43-18:40/57  | 07:00 17:45-18:16/31<br>18:39 | 06:36<br>16:53 | 07:11<br>16:30 |
| 5                           | 05:31 19:53-20:07/14<br>20:39 | 05:58 19:26-19:32/6<br>20:16 19:39-19:52/13  | 06:30 19:02-19:07/5<br>19:29 17:43-18:40/57  | 07:01 17:43-18:14/31<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 05:32 19:53-20:09/16<br>20:39 | 05:59 19:23-19:35/12<br>20:14 19:40-19:51/11 | 06:31 19:05-19:06/1<br>19:28 17:42-18:39/57  | 07:02 17:42-18:12/30<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 05:32 19:52-20:09/17<br>20:39 | 06:00 19:21-19:37/16<br>20:13 19:40-19:50/10 | 06:32 17:42-18:39/57<br>19:26                | 07:03 17:42-18:11/29<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                           | 05:33 19:52-20:10/18<br>20:38 | 06:01 19:19-19:39/20<br>20:12 19:41-19:48/7  | 06:33 17:41-18:41/60<br>19:24                | 07:04 17:41-18:10/29<br>18:32 | 06:41<br>16:48 | 07:15<br>16:30 |
| 9                           | 05:34 19:52-20:11/19<br>20:38 | 06:02 19:18-19:40/22<br>20:11 19:42-19:47/5  | 06:34 17:41-18:45/64<br>19:22                | 07:05 17:40-18:08/28<br>18:31 | 06:42<br>16:47 | 07:16<br>16:30 |
| 10                          | 05:34 19:51-20:11/20<br>20:38 | 06:03 19:17-19:40/23<br>20:09 19:44-19:46/2  | 06:35 17:40-18:47/67<br>19:21                | 07:06 17:40-18:06/26<br>18:29 | 06:43<br>16:46 | 07:17<br>16:30 |
| 11                          | 05:35 19:51-20:11/20<br>20:37 | 06:04 19:16-19:41/25<br>20:08                | 06:36 17:40-18:48/68<br>19:19                | 07:08 17:39-18:04/25<br>18:27 | 06:44<br>16:45 | 07:18<br>16:30 |
| 12                          | 05:36 19:52-20:11/19<br>20:37 | 06:05 19:15-19:42/27<br>20:07                | 06:37 17:40-18:48/68<br>19:17                | 07:09 17:39-18:02/23<br>18:26 | 06:46<br>16:44 | 07:18<br>16:30 |
| 13                          | 05:37 19:51-20:10/19<br>20:36 | 06:06 19:15-19:42/27<br>20:05                | 06:38 17:40-18:49/69<br>19:16                | 07:10 17:39-18:00/21<br>18:24 | 06:47<br>16:43 | 07:19<br>16:30 |
| 14                          | 05:37 19:51-20:10/19<br>20:36 | 06:07 19:14-19:41/27<br>20:04                | 06:39 17:40-18:49/69<br>19:14                | 07:11 17:41-18:00/19<br>18:23 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                          | 05:38 19:51-20:10/19<br>20:35 | 06:08 19:14-19:39/25<br>20:02                | 06:40 17:40-18:49/69<br>19:12                | 07:12 17:42-17:58/16<br>18:21 | 06:49<br>16:41 | 07:21<br>16:30 |
| 16                          | 05:39 19:51-20:09/18<br>20:34 | 06:09 19:13-19:38/25<br>20:01                | 06:41 17:40-18:47/67<br>19:10                | 07:13 17:43-17:56/13<br>18:19 | 06:51<br>16:40 | 07:22<br>16:31 |
| 17                          | 05:40 19:51-20:09/18<br>20:34 | 06:10 19:12-19:37/25<br>20:00                | 06:42 17:41-18:46/65<br>19:09                | 07:14 17:45-17:54/9<br>18:18  | 06:52<br>16:39 | 07:22<br>16:31 |
| 18                          | 05:41 19:50-20:07/17<br>20:33 | 06:11 19:08-19:35/27<br>19:58 18:10-18:25/15 | 06:43 17:42-18:44/62<br>19:07                | 07:16<br>18:16                | 06:53<br>16:38 | 07:23<br>16:31 |
| 19                          | 05:41 19:50-20:07/17<br>20:32 | 06:12 19:05-19:34/29<br>19:57 18:06-18:28/22 | 06:44 17:44-18:42/58<br>19:05                | 07:17<br>18:15                | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 05:42 19:47-20:06/19<br>20:32 | 06:13 19:04-19:32/28<br>19:55 18:03-18:30/27 | 06:45 17:45-18:40/55<br>19:03                | 07:18<br>18:13                | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 05:43 19:45-20:06/21<br>20:31 | 06:14 19:02-19:31/29<br>19:54 18:01-18:32/31 | 06:46 17:46-18:38/52<br>19:02                | 07:19<br>18:12                | 06:57<br>16:36 | 07:25<br>16:33 |
| 22                          | 05:44 19:44-20:05/21<br>20:30 | 06:15 19:01-19:29/28<br>19:52 17:59-18:34/35 | 06:47 17:48-18:38/50<br>19:00                | 07:20<br>18:10                | 06:58<br>16:36 | 07:25<br>16:33 |
| 23                          | 05:45 19:43-20:05/22<br>20:29 | 06:16 19:00-19:28/28<br>19:50 17:57-18:35/38 | 06:48 17:50-18:36/46<br>18:58                | 07:21<br>18:09                | 06:59<br>16:35 | 07:26<br>16:34 |
| 24                          | 05:46 19:42-20:04/22<br>20:28 | 06:17 18:59-19:26/27<br>19:49 17:55-18:36/41 | 06:49 17:52-18:27/35<br>18:56 18:29-18:34/5  | 07:23<br>18:07                | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 05:47 19:41-20:02/21<br>20:27 | 06:18 18:58-19:25/27<br>19:47 17:53-18:37/44 | 06:50 17:57-18:27/30<br>18:55                | 06:24<br>17:06                | 07:01<br>16:34 | 07:27<br>16:35 |
| 26                          | 05:48 19:40-20:01/21<br>20:26 | 06:19 18:58-19:23/25<br>19:46 17:52-18:38/46 | 06:51 18:04-18:28/24<br>18:53                | 06:25<br>17:04                | 07:02<br>16:33 | 07:27<br>16:35 |
| 27                          | 05:49 19:40-20:01/21<br>20:25 | 06:20 18:57-19:22/25<br>19:44 17:51-18:38/47 | 06:52 18:02-18:27/25<br>18:51                | 06:26<br>17:03                | 07:04<br>16:33 | 07:27<br>16:36 |
| 28                          | 05:50 19:40-20:00/20<br>20:24 | 06:21 18:57-19:20/23<br>19:43 17:49-18:39/50 | 06:54 17:59-18:27/28<br>18:49                | 06:27<br>17:02                | 07:05<br>16:32 | 07:28<br>16:37 |
| 29                          | 05:51 19:39-19:59/20<br>20:23 | 06:22 18:57-19:19/22<br>19:41 17:48-18:39/51 | 06:55 17:57-18:25/28<br>18:48                | 06:28<br>17:00                | 07:06<br>16:32 | 07:28<br>16:37 |
| 30                          | 05:52 19:39-19:58/19<br>20:22 | 06:23 18:57-19:17/20<br>19:39 17:47-18:40/53 | 06:56 17:56-18:23/27<br>18:46                | 06:30<br>16:59                | 07:07<br>16:31 | 07:28<br>16:38 |
| 31                          | 05:53 19:39-19:57/18<br>20:21 | 06:24 18:57-19:15/18<br>19:38 17:46-18:40/54 |  | 06:31<br>16:58                |                | 07:28<br>16:39 |
| Potential sun hours         | 462                           | 429  | 375  | 344                           | 296            | 285            |
| Sum of minutes with flicker | 560                           | 1300   | 1643   | 416                           | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

**WTG:** LAR13 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (13)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January                       | February                                     | March                         | April                                 | May                           | June                          |
|-----------------------------|-------------------------------|--|-------------------------------|---------------------------------------|-------------------------------|-------------------------------|
| 1                           | 07:29 15:35-16:05/30<br>16:40 | 07:14 16:27-16:44/17<br>17:15 16:47-16:51/4  | 06:37 17:09-17:29/20<br>17:50 | 06:45 18:45-19:04/19<br>19:25         | 05:59 19:25-19:35/10<br>19:58 | 05:29 19:54-20:03/9<br>20:29  |
| 2                           | 07:29 15:36-16:07/31<br>16:41 | 07:13 16:28-16:44/16<br>17:16 16:46-16:52/6  | 06:36 17:08-17:30/22<br>17:51 | 06:44 18:50-19:04/14<br>19:26         | 05:57 19:25-19:36/11<br>19:59 | 05:28 19:54-20:04/10<br>20:30 |
| 3                           | 07:29 15:36-16:07/31<br>16:42 | 07:12 16:29-16:43/14<br>17:18 16:45-16:54/9  | 06:34 17:08-17:30/22<br>17:52 | 06:42 18:50-19:06/16<br>19:28         | 05:56 19:24-19:37/13<br>20:01 | 05:28 19:55-20:05/10<br>20:30 |
| 4                           | 07:29 15:36-16:08/32<br>16:43 | 07:11 16:30-16:41/11<br>17:19 16:43-16:54/11 | 06:33 17:09-17:32/23<br>17:54 | 06:40 18:48-19:07/19<br>19:29         | 05:55 19:24-19:38/14<br>20:02 | 05:27 19:54-20:05/11<br>20:31 |
| 5                           | 07:29 15:36-16:09/33<br>16:44 | 07:10 16:33-16:38/5<br>17:20 16:43-16:56/13  | 06:31 17:09-17:33/24<br>17:55 | 06:39 18:46-19:08/22<br>19:30         | 05:53 19:25-19:39/14<br>20:03 | 05:27 19:55-20:06/11<br>20:32 |
| 6                           | 07:29 15:36-16:09/33<br>16:44 | 07:09 16:42-16:57/15<br>17:21                | 06:29 17:10-17:34/24<br>17:56 | 06:37 18:46-19:09/23<br>19:31         | 05:52 19:25-19:40/15<br>20:04 | 05:27 19:55-20:07/12<br>20:32 |
| 7                           | 07:29 15:37-16:10/33<br>16:45 | 07:08 16:42-16:59/17<br>17:23                | 06:28 17:12-17:36/24<br>17:57 | 06:35 18:45-19:10/25<br>19:32         | 05:51 19:25-19:41/16<br>20:05 | 05:26 19:56-20:08/12<br>20:33 |
| 8                           | 07:29 15:37-16:11/34<br>16:46 | 07:07 16:43-17:01/18<br>17:24                | 06:26 17:14-17:37/23<br>17:58 | 06:34 18:43-19:11/28<br>19:33         | 05:50 19:26-19:43/17<br>20:06 | 05:26 19:55-20:08/13<br>20:34 |
| 9                           | 07:28 15:37-16:12/35<br>16:47 | 07:06 16:43-17:02/19<br>17:25                | 06:25 17:18-17:39/21<br>18:00 | 06:32 18:43-19:13/30<br>19:34         | 05:48 19:26-19:43/17<br>20:07 | 05:26 19:56-20:08/12<br>20:34 |
| 10                          | 07:28 15:37-16:12/35<br>16:49 | 07:04 16:43-17:03/20<br>17:27                | 06:23 17:17-17:39/22<br>18:01 | 06:30 18:43-19:13/30<br>19:35         | 05:47 19:27-19:44/17<br>20:08 | 05:26 19:56-20:09/13<br>20:35 |
| 11                          | 07:28 15:37-16:13/36<br>16:50 | 07:03 16:43-17:05/22<br>17:28                | 06:21 17:17-17:40/23<br>18:02 | 06:29 18:42-19:14/32<br>19:36         | 05:46 19:28-19:45/17<br>20:09 | 05:26 19:56-20:10/14<br>20:35 |
| 12                          | 07:28 15:38-16:14/36<br>16:51 | 07:02 16:44-17:06/22<br>17:29                | 06:20 17:17-17:40/23<br>18:03 | 06:27 18:42-19:16/34<br>19:33         | 05:45 19:30-19:46/16<br>20:10 | 05:25 19:57-20:10/13<br>20:36 |
| 13                          | 07:27 15:37-16:14/37<br>16:52 | 07:01 16:45-17:07/22<br>17:30                | 06:18 17:19-17:39/20<br>18:04 | 06:26 18:42-19:16/34<br>19:39         | 05:44 19:33-19:47/14<br>20:11 | 05:25 19:57-20:11/14<br>20:36 |
| 14                          | 07:27 15:38-16:15/37<br>16:53 | 06:59 16:46-17:09/23<br>17:32                | 06:16 17:19-17:38/19<br>18:05 | 06:24 18:42-19:18/36<br>19:40         | 05:43 19:35-19:48/13<br>20:12 | 05:25 19:57-20:11/14<br>20:37 |
| 15                          | 07:27 15:38-16:15/37<br>16:54 | 06:58 16:49-17:10/21<br>17:33                | 06:15 17:20-17:35/15<br>18:06 | 06:22 18:41-19:18/37<br>19:41         | 05:42 19:35-19:49/14<br>20:13 | 05:25 19:58-20:12/14<br>20:37 |
| 16                          | 07:26 15:38-16:16/38<br>16:55 | 06:57 16:53-17:11/18<br>17:34                | 06:13 17:24-17:33/9<br>18:08  | 06:21 18:42-19:20/38<br>19:42         | 05:41 19:35-19:50/15<br>20:14 | 05:25 19:58-20:12/14<br>20:38 |
| 17                          | 07:26 15:38-16:16/38<br>16:56 | 06:55 16:54-17:13/19<br>17:35                | 06:11 17:24-17:33/9<br>18:09  | 06:19 18:41-19:21/40<br>19:43         | 05:40 19:35-19:50/15<br>20:15 | 05:25 19:58-20:12/14<br>20:38 |
| 18                          | 07:25 16:29-16:32/3<br>16:58  | 06:54 16:53-17:14/21<br>17:37                | 06:09 17:24-17:33/9<br>18:10  | 06:18 18:41-19:21/40<br>19:44         | 05:39 19:37-19:52/15<br>20:16 | 05:25 19:58-20:13/15<br>20:38 |
| 19                          | 07:25 16:27-16:33/6<br>16:59  | 06:52 16:54-17:14/20<br>17:38                | 06:08 17:24-17:33/9<br>18:11  | 06:16 18:42-19:23/41<br>19:45         | 05:38 19:37-19:53/16<br>20:17 | 05:25 19:58-20:13/15<br>20:39 |
| 20                          | 07:24 16:26-16:34/8<br>17:00  | 06:51 16:54-17:13/19<br>17:39                | 06:06 17:48-17:51/3<br>18:12  | 06:14 18:41-19:23/42<br>19:46         | 05:37 19:38-19:54/16<br>20:18 | 05:25 19:58-20:13/15<br>20:39 |
| 21                          | 07:23 16:26-16:36/10<br>17:01 | 06:50 16:55-17:13/18<br>17:40                | 06:04 17:46-17:52/6<br>18:13  | 06:13 18:42-19:25/43<br>19:47         | 05:36 19:38-19:54/16<br>20:19 | 05:26 19:58-20:13/15<br>20:39 |
| 22                          | 07:23 16:25-16:37/12<br>17:02 | 06:48 16:57-17:12/15<br>17:42                | 06:03 17:44-17:53/9<br>18:14  | 06:11 18:42-19:25/43<br>19:49         | 05:35 19:39-19:53/14<br>20:20 | 05:26 19:59-20:14/15<br>20:40 |
| 23                          | 07:22 16:24-16:38/14<br>17:04 | 06:47 16:58-17:10/12<br>17:43                | 06:01 17:43-17:55/12<br>18:15 | 06:10 18:43-19:27/44<br>19:50         | 05:35 19:41-19:52/11<br>20:21 | 05:26 19:59-20:14/15<br>20:40 |
| 24                          | 07:21 16:24-16:39/15<br>17:05 | 06:45 17:01-17:05/4<br>17:44                 | 05:59 17:42-17:55/13<br>18:17 | 06:08 18:45-19:28/43<br>19:51         | 05:34 19:42-19:50/8<br>20:22  | 05:26 19:59-20:14/15<br>20:40 |
| 25                          | 07:21 16:24-16:41/17<br>17:06 | 06:44 17:10-17:23/13<br>17:45                | 05:57 17:41-17:56/15<br>18:18 | 06:07 18:45-19:26/41<br>19:52         | 05:33 19:56-19:58/2<br>20:23  | 05:27 20:00-20:14/14<br>20:40 |
| 26                          | 07:20 16:24-16:43/19<br>17:07 | 06:42 17:09-17:24/15<br>17:46                | 05:56 17:41-17:57/16<br>18:19 | 06:06 18:47-19:10/23<br>19:53         | 05:32 19:56-19:59/3<br>20:24  | 05:27 20:00-20:14/14<br>20:40 |
| 27                          | 07:19 16:24-16:44/20<br>17:09 | 06:41 17:09-17:26/17<br>17:48                | 05:54 17:41-17:59/18<br>18:20 | 06:04 18:48-19:07/19<br>19:29-19:31/2 | 05:32 19:55-20:00/5<br>20:25  | 05:27 20:00-20:14/14<br>20:40 |
| 28                          | 07:18 16:25-16:45/20<br>17:10 | 06:39 17:08-17:27/19<br>17:49                | 05:52 17:41-18:00/19<br>18:21 | 06:03 18:51-19:04/13<br>19:55         | 05:31 19:54-20:00/6<br>20:26  | 05:28 20:01-20:14/13<br>20:40 |
| 29                          | 07:17 16:25-16:45/20<br>17:11 | 06:38 17:08-17:27/19<br>17:50                | 05:51 18:41-19:00/19<br>19:22 | 06:01 19:27-19:33/6<br>19:56          | 05:30 19:55-20:01/6<br>20:26  | 05:28 20:00-20:14/14<br>20:40 |
| 30                          | 07:16 16:25-16:45/20<br>17:12 | 06:37 17:08-17:27/19<br>17:51                | 06:49 18:43-19:02/19<br>19:23 | 06:00 19:26-19:34/8<br>19:57          | 05:30 19:54-20:02/8<br>20:27  | 05:29 20:01-20:15/14<br>20:40 |
| 31                          | 07:15 16:26-16:45/19<br>17:14 | 06:36 17:08-17:27/19<br>17:52                | 06:47 18:44-19:03/19<br>19:24 | 06:00 19:26-19:34/8<br>19:57          | 05:29 19:54-20:03/9<br>20:28  | 05:29 20:01-20:15/14<br>20:40 |
| Potential sun hours         | 295                           | 296  | 369                           | 400                                   | 451                           | 455                           |
| Sum of minutes with flicker | 1282                          | 630  | 502                           | 910                                   | 384                           | 398                           |

### Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



## SHADOW - Calendar per WTG

**WTG:** LAR13 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (13)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | July                                       | August  | September                     | October                                     | November  | December                      |
|-----------------------------|--|---|-------------------------------|---|---|-------------------------------|
| 1                           | 05:29 20:01-20:14/13<br>20:40              | 05:54 19:40-19:56/16<br>20:20                             | 06:26 18:42-19:14/32<br>19:36 | 06:57 17:57-18:19/22<br>18:44               | 06:32 16:12-16:32/20<br>16:56                               | 07:08 15:19-15:55/36<br>16:31 |
| 2                           | 05:30 20:00-20:13/13<br>20:40              | 05:55 19:38-19:55/17<br>20:19                             | 06:27 18:42-19:12/30<br>19:34 | 06:58 17:56-18:19/23<br>18:43               | 06:33 16:12-16:31/19<br>16:55                               | 07:09 15:20-15:55/35<br>16:31 |
| 3                           | 05:30 20:01-20:14/13<br>20:40              | 05:56 19:37-19:54/17<br>20:18                             | 06:28 18:42-19:11/29<br>19:33 | 06:59 17:55-18:18/23<br>18:41               | 06:35 16:12-16:30/18<br>16:54                               | 07:10 15:20-15:55/35<br>16:31 |
| 4                           | 05:31 20:01-20:14/13<br>20:39              | 05:57 19:36-19:53/17<br>20:17                             | 06:29 18:42-19:09/27<br>19:31 | 07:00 17:55-18:16/21<br>18:39               | 06:36 16:12-16:29/17<br>16:53                               | 07:11 15:21-15:55/34<br>16:30 |
| 5                           | 05:31 20:01-20:13/12<br>20:39              | 05:58 19:35-19:52/17<br>20:16                             | 06:30 18:42-19:07/25<br>19:29 | 07:01 17:54-18:14/20<br>18:37               | 06:37 16:12-16:27/15<br>16:52                               | 07:12 15:22-15:55/33<br>16:30 |
| 6                           | 05:32 20:01-20:13/12<br>20:39              | 05:59 19:35-19:51/16<br>20:14                             | 06:31 18:42-19:06/24<br>19:28 | 07:02 17:49-18:12/23<br>18:36               | 06:38 16:03-16:10/7 15:28-15:37/9<br>16:50 16:13-16:26/13   | 07:13 15:22-15:55/33<br>16:30 |
| 7                           | 05:32 20:01-20:13/12<br>20:39              | 06:00 19:34-19:50/16<br>20:13                             | 06:32 18:42-19:04/22<br>19:26 | 07:03 17:47-18:11/24<br>18:34               | 06:39 16:00-16:12/12 15:25-15:40/15<br>16:49 16:14-16:25/11 | 07:14 15:23-15:56/33<br>16:30 |
| 8                           | 05:33 20:02-20:13/11<br>20:38              | 06:01 19:34-19:48/14<br>20:12                             | 06:33 18:43-19:02/19<br>19:24 | 07:04 17:46-18:10/24<br>18:32               | 06:41 15:59-16:13/14 15:22-15:42/20<br>16:48 16:15-16:24/9  | 07:15 15:24-15:56/32<br>16:30 |
| 9                           | 05:34 20:02-20:13/11<br>20:38              | 06:02 19:34-19:47/13<br>20:11                             | 06:34 18:43-18:59/16<br>19:23 | 07:05 17:44-18:08/24<br>18:31               | 06:42 15:57-16:14/17 15:20-15:44/24<br>16:47 16:16-16:22/6  | 07:16 15:25-15:56/31<br>16:30 |
| 10                          | 05:34 20:02-20:12/10<br>20:38              | 06:03 19:34-19:46/12<br>20:09                             | 06:35 18:43-18:58/15<br>19:21 | 07:06 17:43-18:06/23<br>18:29               | 06:43 15:57-16:15/18 15:19-15:46/27<br>16:46 16:19-16:22/3  | 07:17 15:25-15:56/31<br>16:30 |
| 11                          | 05:35 20:02-20:11/9<br>20:37               | 06:04 19:34-19:45/11<br>20:08                             | 06:36 18:38-18:56/18<br>19:19 | 07:08 17:42-18:04/22<br>18:27               | 06:44 15:57-16:16/19<br>16:45 15:18-15:47/29                | 07:18 15:26-15:57/31<br>16:30 |
| 12                          | 05:36 20:03-20:11/8<br>20:37               | 06:05 19:34-19:43/9<br>20:07                              | 06:37 18:35-18:54/19<br>19:17 | 07:09 17:41-18:02/21<br>18:26               | 06:46 15:56-16:16/20<br>16:44 15:17-15:47/30                | 07:19 15:27-15:57/30<br>16:30 |
| 13                          | 05:37 20:03-20:11/8<br>20:36               | 06:06 19:34-19:42/8<br>20:05                              | 06:38 18:33-18:53/20<br>19:16 | 07:10 17:41-18:00/19<br>18:24               | 06:47 15:57-16:17/20<br>16:43 15:17-15:49/32                | 07:19 15:27-15:56/29<br>16:30 |
| 14                          | 05:37 20:03-20:10/7<br>20:36               | 06:07 19:03-19:08/5<br>20:04 19:35-19:41/6                | 06:39 18:32-18:51/19<br>19:14 | 07:11 17:42-18:00/18<br>18:23               | 06:48 15:56-16:17/21<br>16:42 15:16-15:49/33                | 07:20 15:28-15:57/29<br>16:30 |
| 15                          | 05:38 20:03-20:10/7<br>20:35               | 06:08 18:58-19:13/15<br>20:02 19:36-19:39/3               | 06:40 18:31-18:49/18<br>19:12 | 07:12 17:42-17:58/16<br>18:21               | 06:49 15:56-16:16/20<br>16:41 15:15-15:50/35                | 07:21 15:29-15:57/28<br>16:30 |
| 16                          | 05:39 20:04-20:09/5<br>20:34               | 06:09 18:56-19:15/19 19:37-19:38/1<br>20:01 19:21-19:30/9 | 06:41 18:30-18:47/17<br>19:10 | 07:13 17:42-17:56/14<br>18:19               | 06:51 15:57-16:16/19<br>16:40 15:16-15:51/35                | 07:22 15:30-15:58/28<br>16:31 |
| 17                          | 05:40 20:05-20:09/4<br>20:34               | 06:10 18:54-19:17/23<br>20:00 19:18-19:32/14              | 06:42 18:29-18:46/17<br>19:09 | 07:14 17:42-17:54/12<br>18:18               | 06:52 15:58-16:15/17<br>16:39 15:15-15:51/36                | 07:22 15:30-15:57/27<br>16:31 |
| 18                          | 05:41 20:05-20:07/2<br>20:33               | 06:11 18:52-19:33/41<br>19:58                             | 06:43 18:29-18:44/15<br>19:07 | 07:16 17:31-17:39/8<br>18:16 17:43-17:52/9  | 06:53 15:58-16:13/15<br>16:39 15:15-15:52/37                | 07:23 15:31-15:58/27<br>16:31 |
| 19                          | 05:41 19:53-19:59/6<br>20:32 20:05-20:07/2 | 06:12 18:50-19:34/44<br>19:57                             | 06:44 18:29-18:42/13<br>19:05 | 07:17 17:29-17:42/13<br>18:15 17:45-17:52/7 | 06:54 15:59-16:13/14<br>16:38 15:16-15:53/37                | 07:23 15:31-15:58/27<br>16:32 |
| 20                          | 05:42 19:51-20:01/10<br>20:32              | 06:13 18:49-19:32/43<br>19:55                             | 06:45 18:29-18:40/11<br>19:03 | 07:18 17:27-17:43/16<br>18:13 17:46-17:50/4 | 06:55 16:00-16:12/12<br>16:37 15:15-15:53/38                | 07:24 15:32-15:59/27<br>16:32 |
| 21                          | 05:43 19:50-20:02/12<br>20:31              | 06:14 18:48-19:31/43<br>19:54                             | 06:46 18:29-18:38/9<br>19:02  | 07:19 17:25-17:44/19<br>18:12               | 06:57 16:01-16:11/10<br>16:36 15:15-15:53/38                | 07:25 15:32-15:59/27<br>16:33 |
| 22                          | 05:44 19:49-20:04/15<br>20:30              | 06:15 18:47-19:29/42<br>19:52                             | 06:47 18:31-18:38/7<br>19:00  | 07:20 17:24-17:44/20<br>18:10               | 06:58 16:02-16:10/8<br>16:36 15:15-15:53/38                 | 07:25 15:33-16:00/27<br>16:33 |
| 23                          | 05:45 19:48-20:05/17<br>20:29              | 06:16 18:46-19:28/42<br>19:50                             | 06:48 18:32-18:36/4<br>18:58  | 07:21 17:23-17:44/21<br>18:09               | 06:59 16:04-16:10/6<br>16:35 15:16-15:54/38                 | 07:26 15:33-16:00/27<br>16:34 |
| 24                          | 05:46 19:48-20:04/16<br>20:28              | 06:17 18:45-19:26/41<br>19:49                             | 06:49 18:56<br>18:07          | 07:23 17:24-17:44/20<br>18:07               | 07:00 16:06-16:09/3<br>16:34 15:16-15:54/38                 | 07:26 15:34-16:01/27<br>16:34 |
| 25                          | 05:47 19:47-20:03/16<br>20:27              | 06:18 18:45-19:25/40<br>19:47                             | 06:50 18:55<br>18:55          | 06:24 16:23-16:42/19<br>17:06               | 07:01 15:16-15:54/38<br>16:34                               | 07:27 15:34-16:01/27<br>16:35 |
| 26                          | 05:48 19:46-20:01/15<br>20:26              | 06:19 18:44-19:23/39<br>19:46                             | 06:51 18:53<br>17:05          | 06:25 16:23-16:40/17<br>17:05               | 07:02 15:17-15:54/37<br>16:33                               | 07:27 15:34-16:01/27<br>16:35 |
| 27                          | 05:49 19:46-20:01/15<br>20:25              | 06:20 18:44-19:22/38<br>19:44                             | 06:52 18:07-18:13/6<br>18:51  | 06:26 16:18-16:40/22<br>17:03               | 07:04 15:17-15:54/37<br>16:33                               | 07:27 15:35-16:03/28<br>16:36 |
| 28                          | 05:50 19:45-20:00/15<br>20:24              | 06:21 18:43-19:20/37<br>19:43                             | 06:54 18:03-18:16/13<br>18:49 | 06:27 16:16-16:38/22<br>17:02               | 07:05 15:18-15:55/37<br>16:32                               | 07:28 15:35-16:03/28<br>16:37 |
| 29                          | 05:51 19:45-19:59/14<br>20:23              | 06:22 18:43-19:19/36<br>19:41                             | 06:55 18:00-18:17/17<br>18:48 | 06:28 16:14-16:36/22<br>17:00               | 07:06 15:18-15:55/37<br>16:32                               | 07:28 15:35-16:04/29<br>16:37 |
| 30                          | 05:52 19:45-19:58/13<br>20:22              | 06:23 18:43-19:17/34<br>19:39                             | 06:56 17:59-18:18/19<br>18:46 | 06:30 16:13-16:35/22<br>16:59               | 07:07 15:19-15:55/36<br>16:31                               | 07:28 15:35-16:04/29<br>16:38 |
| 31                          | 05:53 19:42-19:57/15<br>20:21              | 06:25 18:42-19:15/33<br>19:38                             |                               | 06:31 16:13-16:34/21<br>16:58               |   | 07:28 15:35-16:05/30<br>16:39 |
| Potential sun hours         | 462  | 429   | 375                           | 344   | 296   | 285                           |
| Sum of minutes with flicker | 351  | 831   | 481                           | 631   | 1214  | 922                           |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** LAR14 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (14)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January                       | February                       | March  | April  | May   | June                          |  |
|-----------------------------|-------------------------------|--------------------------------|--|--|---|-------------------------------|--|
| 1                           | 07:28 08:07-09:35/88<br>16:40 | 07:14 07:49-09:05/76<br>17:15  | 06:37 07:33-09:04/91<br>17:50                | 06:45 09:00-09:21/21<br>19:25 07:11-08:35/84 | 05:58 07:32-08:14/42 06:18-06:32/14<br>19:58 07:06-07:29/23 | 05:29 05:59-06:54/55<br>20:29 |  |
| 2                           | 07:29 08:08-09:35/87<br>16:41 | 07:13 07:50-09:06/76<br>17:16  | 06:36 07:43-09:04/81<br>17:51                | 06:44 09:07-09:11/4<br>19:26 07:10-08:35/85  | 05:57 07:34-08:12/38 06:17-06:32/15<br>19:59 07:08-07:26/18 | 05:28 05:58-06:55/57<br>20:29 |  |
| 3                           | 07:29 08:06-09:35/89<br>16:41 | 07:12 07:42-07:49/7<br>17:17   | 06:34 07:42-09:04/82<br>17:52                | 06:42 07:10-08:36/86<br>19:27                | 05:56 07:35-08:10/35 06:15-06:32/17<br>20:00 07:11-07:21/10 | 05:28 05:58-06:56/58<br>20:30 |  |
| 4                           | 07:29 08:05-09:35/90<br>16:42 | 07:11 07:37-09:06/89<br>17:19  | 06:33 07:43-09:04/81<br>17:53                | 06:40 07:08-08:36/88<br>19:29                | 05:54 07:37-08:08/31<br>20:01 06:14-06:32/18                | 05:27 05:56-06:56/60<br>20:31 |  |
| 5                           | 07:29 08:04-09:35/91<br>16:43 | 07:10 07:35-09:06/91<br>17:20  | 06:31 07:42-09:03/81<br>17:55                | 06:39 07:06-08:36/90<br>19:30                | 05:53 07:39-08:05/26<br>20:03 06:13-06:32/19                | 05:27 05:56-06:57/61<br>20:32 |  |
| 6                           | 07:29 08:04-08:38/34<br>16:44 | 07:09 07:34-09:06/92<br>17:21  | 06:29 07:41-09:03/82<br>17:56                | 06:37 07:05-08:36/91<br>19:31                | 05:52 07:42-08:02/20<br>20:04 06:12-06:32/20                | 05:26 05:56-06:58/62<br>20:32 |  |
| 7                           | 07:28 08:03-08:39/36<br>16:45 | 07:08 07:33-09:07/94<br>17:22  | 06:28 07:42-09:03/81<br>17:57                | 06:35 07:03-08:36/93<br>19:32                | 05:51 07:47-07:58/11<br>20:05 06:11-06:32/21                | 05:26 05:54-06:57/63<br>20:33 |  |
| 8                           | 07:28 08:02-08:39/37<br>16:46 | 07:07 07:32-09:07/95<br>17:24  | 06:26 07:41-09:02/81<br>17:58                | 06:34 07:02-08:35/93<br>19:33                | 05:49 06:11-06:31/20<br>20:06                               | 05:26 05:54-06:58/64<br>20:34 |  |
| 9                           | 07:28 08:00-08:39/39<br>16:47 | 07:05 07:30-09:06/96<br>17:25  | 06:24 07:40-09:02/82<br>17:59                | 06:32 07:01-08:35/94<br>19:34                | 05:48 06:11-06:30/19<br>20:07                               | 05:26 05:54-06:59/65<br>20:34 |  |
| 10                          | 07:28 07:59-08:41/42<br>16:48 | 07:04 07:29-08:00/31<br>17:26  | 06:23 07:41-09:02/81<br>18:00                | 06:30 07:00-08:35/95<br>19:35                | 05:47 06:12-06:30/18<br>20:08                               | 05:25 05:54-06:59/65<br>20:35 |  |
| 11                          | 07:28 07:57-08:43/46<br>16:49 | 07:03 07:28-08:01/33<br>17:28  | 06:21 07:41-09:01/80<br>18:02                | 06:29 06:59-08:34/95<br>19:36                | 05:46 06:13-06:29/16<br>20:09                               | 05:25 05:54-07:00/66<br>20:35 |  |
| 12                          | 07:27 07:53-09:31/98<br>16:50 | 07:02 07:27-08:02/35<br>17:29  | 06:19 07:40-09:00/80<br>18:03                | 06:27 06:59-08:34/95<br>19:37                | 05:45 06:14-06:28/14<br>20:10                               | 05:25 05:54-07:00/66<br>20:36 |  |
| 13                          | 07:27 07:52-09:30/98<br>16:52 | 07:00 07:26-09:05/99<br>17:30  | 06:18 07:41-08:59/78<br>18:04                | 06:25 06:58-08:33/95<br>19:38                | 05:44 06:16-06:26/10<br>20:11                               | 05:25 05:54-07:00/66<br>20:36 |  |
| 14                          | 07:27 07:52-09:28/96<br>16:53 | 06:59 07:25-09:05/100<br>17:31 | 06:16 07:41-08:58/77<br>18:05                | 06:24 06:58-08:33/95<br>19:40                | 05:43 06:18-06:23/5<br>20:12                                | 05:25 05:54-07:01/67<br>20:37 |  |
| 15                          | 07:26 07:51-09:24/93<br>16:54 | 06:58 07:25-09:04/99<br>17:33  | 06:14 07:40-08:57/77<br>18:06                | 06:22 06:57-08:32/95<br>19:41                | 05:42 20:13   | 05:25 05:54-07:01/67<br>20:37 |  |
| 16                          | 07:26 07:50-09:17/87<br>16:55 | 06:56 07:24-09:03/99<br>17:34  | 06:13 07:41-08:56/75<br>18:07                | 06:21 06:56-08:31/95<br>19:42                | 05:41 20:14   | 05:25 05:54-07:01/67<br>20:38 |  |
| 17                          | 07:26 07:49-09:16/87<br>16:56 | 06:55 07:24-09:02/98<br>17:35  | 06:11 07:41-08:55/74<br>18:08                | 06:19 06:57-08:31/94<br>19:43                | 05:40 06:23-06:33/10<br>20:15                               | 05:25 05:54-07:02/68<br>20:38 |  |
| 18                          | 07:25 07:49-09:14/85<br>16:57 | 06:54 07:23-09:01/98<br>17:36  | 06:09 07:41-08:53/72<br>18:10                | 06:17 06:56-08:29/93<br>19:44                | 05:39 06:19-06:37/18<br>20:16                               | 05:25 05:54-07:02/68<br>20:38 |  |
| 19                          | 07:24 07:49-08:55/66<br>16:58 | 06:52 07:24-09:00/96<br>17:38  | 06:08 07:41-08:52/71<br>18:11                | 06:16 06:57-08:29/92<br>19:45                | 05:38 06:17-06:41/24<br>20:17                               | 05:25 05:54-07:02/68<br>20:39 |  |
| 20                          | 07:24 07:48-08:56/68<br>17:00 | 06:51 07:23-08:59/96<br>17:39  | 06:06 07:43-08:51/68<br>18:12                | 06:14 06:56-08:28/92<br>19:46                | 05:37 06:15-06:43/28<br>20:18                               | 05:25 05:54-07:02/68<br>20:39 |  |
| 21                          | 07:23 07:48-08:56/68<br>17:01 | 06:49 07:24-09:01/97<br>17:40  | 06:04 07:43-08:49/66<br>18:13                | 06:13 06:57-08:27/90<br>19:47                | 05:36 06:13-06:44/31<br>20:19                               | 05:25 05:54-07:02/68<br>20:39 |  |
| 22                          | 07:23 07:48-08:58/70<br>17:02 | 06:48 07:23-09:01/98<br>17:41  | 06:02 07:43-08:47/64 06:33-06:43/10<br>18:14 | 06:11 06:57-08:26/89<br>19:48                | 05:35 06:11-06:45/34<br>20:20                               | 05:26 05:55-07:03/68<br>20:39 |  |
| 23                          | 07:22 07:48-08:59/71<br>17:03 | 06:46 07:24-09:02/98<br>17:43  | 06:01 07:44-08:45/61<br>18:15                | 06:10 06:58-08:25/87<br>19:49                | 05:34 06:11-06:47/36<br>20:21                               | 05:26 05:55-07:03/68<br>20:40 |  |
| 24                          | 07:21 07:47-09:00/73<br>17:05 | 06:45 07:24-09:02/98<br>17:44  | 05:59 07:45-08:44/59<br>18:16                | 06:08 06:58-08:23/85<br>19:51                | 05:34 06:10-06:48/38<br>20:22                               | 05:26 05:55-07:03/68<br>20:40 |  |
| 25                          | 07:20 07:47-09:00/73<br>17:06 | 06:43 07:26-09:03/97<br>17:45  | 05:57 07:46-08:42/56<br>18:17                | 06:07 06:59-08:23/84<br>19:52                | 05:33 06:08-06:49/41<br>20:23                               | 05:26 05:55-07:03/68<br>20:40 |  |
| 26                          | 07:20 07:48-09:01/73<br>17:07 | 06:42 07:26-09:03/97<br>17:46  | 05:56 07:47-08:39/52<br>18:19                | 06:05 07:00-08:22/82<br>19:53                | 05:32 06:08-06:51/43<br>20:24                               | 05:27 05:56-07:03/67<br>20:40 |  |
| 27                          | 07:19 07:48-09:03/75<br>17:08 | 06:40 07:28-09:04/96<br>17:47  | 05:54 07:49-08:38/49<br>18:20                | 06:04 07:00-08:20/80<br>19:54                | 05:31 06:07-06:51/44<br>20:25                               | 05:27 05:56-07:03/67<br>20:40 |  |
| 28                          | 07:18 07:48-09:03/75<br>17:10 | 06:39 07:30-09:04/94<br>17:49  | 05:52 07:50-08:35/45<br>18:21                | 06:02 07:01-08:19/78<br>19:55                | 05:31 06:06-06:52/46<br>20:25                               | 05:27 05:57-07:04/67<br>20:40 |  |
| 29                          | 07:17 07:48-09:04/76<br>17:11 |                                | 05:50 08:51-09:32/41<br>19:22                | 06:01 07:03-08:18/75<br>19:56                | 05:30 06:06-06:53/47<br>20:26                               | 05:28 05:57-07:04/67<br>20:40 |  |
| 30                          | 07:16 07:49-09:04/75<br>17:12 |                                | 06:49 08:53-09:28/35<br>19:23                | 06:00 07:31-08:15/44 06:19-06:31/12<br>19:57 | 05:30 06:04-06:53/49<br>20:27                               | 05:28 05:57-07:03/66<br>20:40 |  |
| 31                          | 07:15 07:49-09:05/76<br>17:13 |                                | 06:47 08:56-09:25/29<br>19:24                |  | 05:29 06:02-06:54/52<br>20:28                               |                               |  |
| Potential sun hours         | 295                           | 296                            | 369  | 400  | 451   | 455                           |  |
| Sum of minutes with flicker | 2600                          | 2642                           | 2887   | 2718   | 1021  | 1955                          |  |

### Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

**WTG:** LAR14 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (14)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | July                          | August  | September   | October                                      | November                                     | December                                     |
|-----------------------------|-------------------------------|---|---|--|--|--|
| 1                           | 05:29 05:58-07:04/66<br>20:40 | 05:53 06:24-06:39/15<br>20:20                               | 06:25 06:58-08:33/95<br>19:36                               | 06:57 08:20-09:39/79<br>18:44                | 06:32 06:59-08:36/97<br>16:56                | 07:08 07:38-09:14/96<br>16:31                |
| 2                           | 05:29 05:58-07:03/65<br>20:40 | 05:54 06:23-06:40/17<br>20:19                               | 06:26 06:58-08:33/95<br>19:34                               | 06:58 08:19-09:39/80<br>18:42                | 06:33 07:00-08:36/96<br>16:55                | 07:09 07:42-08:24/42<br>16:31 08:26-09:16/50 |
| 3                           | 05:30 05:59-07:04/65<br>20:39 | 05:55 06:23-06:40/17<br>20:18                               | 06:27 06:58-08:32/94<br>19:33                               | 06:59 08:19-09:39/80<br>18:41                | 06:34 07:02-08:36/94<br>16:54                | 07:10 07:44-08:23/39<br>16:30 08:26-09:17/51 |
| 4                           | 05:30 05:59-07:03/64<br>20:39 | 05:56 06:22-06:41/19<br>20:17                               | 06:28 06:59-08:32/93<br>19:31                               | 07:00 08:18-09:39/81<br>18:39                | 06:36 07:03-08:36/93<br>16:52                | 07:11 07:46-08:23/37<br>16:30 08:26-09:18/52 |
| 5                           | 05:31 06:00-07:04/64<br>20:39 | 05:57 06:21-06:41/20<br>20:15                               | 06:29 06:59-08:32/93<br>19:29                               | 07:01 08:18-09:39/81<br>18:37                | 06:37 07:04-08:36/92<br>16:51                | 07:12 07:48-08:24/36<br>16:30 08:26-09:19/53 |
| 6                           | 05:32 06:01-07:04/63<br>20:39 | 05:58 07:55-08:09/14<br>20:14 06:21-06:42/21                | 06:31 07:00-08:31/91<br>19:27                               | 07:02 08:17-09:39/82<br>18:36                | 06:38 07:05-08:36/91<br>16:50                | 07:13 07:48-08:24/34<br>16:30 08:26-09:21/55 |
| 7                           | 05:32 06:02-07:03/61<br>20:38 | 05:59 07:51-08:13/22<br>20:13 06:22-06:42/20                | 06:32 07:01-08:31/90<br>19:26                               | 07:03 08:17-09:39/82<br>18:34                | 06:39 07:08-08:37/89<br>16:49                | 07:14 07:51-09:22/91<br>16:30                |
| 8                           | 05:33 06:03-07:04/61<br>20:38 | 06:01 07:48-08:16/28<br>20:12 06:23-06:42/19                | 06:33 07:02-08:30/88<br>19:24                               | 07:04 08:18-09:39/81<br>18:32                | 06:41 07:12-07:18/6<br>16:48 07:21-08:36/75  | 07:15 07:53-09:23/90<br>16:30                |
| 9                           | 05:34 06:04-07:04/60<br>20:38 | 06:02 07:46-08:18/32<br>20:10 06:24-06:42/18                | 06:34 07:03-08:29/86<br>19:22                               | 07:05 08:17-09:39/82<br>18:31                | 06:42 07:20-08:36/76<br>16:47                | 07:16 07:55-09:24/89<br>16:30                |
| 10                          | 05:34 06:05-07:03/58<br>20:37 | 06:03 07:44-08:20/36 06:25-06:41/16<br>20:09 07:20-07:33/13 | 06:35 07:03-08:28/85<br>19:21                               | 07:06 08:17-09:38/81<br>18:29                | 06:43 07:20-08:36/76<br>16:46                | 07:17 07:58-09:25/87<br>16:30                |
| 11                          | 05:35 06:07-07:03/56<br>20:37 | 06:04 07:42-08:22/40 06:26-06:41/15<br>20:08 07:16-07:36/20 | 06:36 08:52-09:12/20<br>19:19 07:03-08:27/84                | 07:07 08:17-09:38/81<br>18:27                | 06:44 07:20-08:36/76<br>16:45                | 07:17 07:58-09:26/88<br>16:30                |
| 12                          | 05:36 06:09-07:03/54<br>20:36 | 06:05 07:41-08:23/42 06:27-06:40/13<br>20:06 07:14-07:38/24 | 06:37 08:48-09:16/28<br>19:17 07:04-08:26/82                | 07:09 08:09-08:13/4<br>18:26 08:17-09:37/80  | 06:45 07:20-08:35/75<br>16:44                | 07:18 07:58-09:26/88<br>16:30                |
| 13                          | 05:36 06:11-07:02/51<br>20:36 | 06:06 07:12-08:24/72<br>20:05 06:28-06:39/11                | 06:38 08:45-09:19/34<br>19:15 07:04-08:25/81                | 07:10 08:04-09:37/93<br>18:24                | 06:47 07:20-08:36/76<br>16:43                | 07:19 07:58-09:26/88<br>16:30                |
| 14                          | 05:37 06:14-07:02/48<br>20:35 | 06:07 07:10-08:26/76<br>20:04 06:29-06:38/9                 | 06:39 08:42-09:22/40<br>19:14 07:05-08:24/79                | 07:11 08:02-09:36/94<br>18:22                | 06:48 07:20-08:35/75<br>16:42                | 07:20 07:59-09:27/88<br>16:30                |
| 15                          | 05:38 06:15-07:01/46<br>20:35 | 06:08 07:09-08:27/78<br>20:02 06:30-06:36/6                 | 06:40 08:39-09:24/45<br>19:12 07:06-08:23/77                | 07:12 08:00-09:36/96<br>18:21                | 06:49 07:20-08:35/75<br>16:41                | 07:21 07:59-09:28/89<br>16:30 14:50-14:56/6  |
| 16                          | 05:39 06:16-07:01/45<br>20:34 | 06:09 07:07-08:28/81<br>20:01 06:31-06:34/3                 | 06:41 08:37-09:26/49<br>19:10 07:07-08:21/74                | 07:13 07:58-09:35/97<br>18:19                | 06:50 07:21-08:35/74<br>16:40                | 07:21 07:59-09:28/89<br>16:31 14:49-14:57/8  |
| 17                          | 05:40 06:17-07:00/43<br>20:33 | 06:10 07:06-08:29/83<br>19:59                               | 06:42 08:35-09:27/52<br>19:08 07:09-08:19/70                | 07:14 07:57-09:34/97<br>18:18                | 06:52 07:21-08:34/73<br>16:39                | 07:22 08:00-09:29/89<br>16:31 14:49-14:59/10 |
| 18                          | 05:40 06:17-06:59/42<br>20:33 | 06:11 07:05-08:30/85<br>19:58                               | 06:43 08:33-09:29/56<br>19:07 07:10-08:17/67                | 07:15 07:56-09:33/97<br>18:16                | 06:53 07:21-08:34/73<br>16:38                | 07:23 08:01-09:30/89<br>16:31 14:49-15:00/11 |
| 19                          | 05:41 06:18-06:58/40<br>20:32 | 06:12 07:04-08:30/86<br>19:56                               | 06:44 08:32-09:30/58<br>19:05 07:11-08:15/64                | 07:16 07:55-09:32/97<br>18:15                | 06:54 07:22-08:33/71<br>16:38                | 07:23 08:01-09:30/89<br>16:31 14:49-15:00/11 |
| 20                          | 05:42 06:20-06:57/37<br>20:31 | 06:13 07:03-08:31/88<br>19:55                               | 06:45 08:30-09:31/61<br>19:03 07:13-08:13/60                | 07:18 07:55-09:32/97<br>18:13                | 06:55 07:23-08:33/70<br>16:37                | 07:24 08:02-09:31/89<br>16:32 14:49-15:01/12 |
| 21                          | 05:43 06:21-06:57/36<br>20:31 | 06:14 07:02-08:32/90<br>19:53                               | 06:46 08:29-09:32/63 07:17-07:30/13<br>19:01 07:33-08:10/37 | 07:19 07:54-09:31/97<br>18:12                | 06:56 07:24-08:32/68<br>16:36                | 07:24 08:01-09:31/90<br>16:32 14:49-15:01/12 |
| 22                          | 05:44 06:23-06:55/32<br>20:30 | 06:15 07:02-08:32/90<br>19:52                               | 06:47 08:28-09:33/65<br>19:00 07:35-08:07/32                | 07:20 07:54-09:29/95<br>18:10                | 06:58 07:24-08:32/68<br>16:35 08:35-08:46/11 | 07:25 08:02-09:32/90<br>16:33 14:50-15:02/12 |
| 23                          | 05:45 06:24-06:54/30<br>20:29 | 06:16 07:01-08:33/92<br>19:50                               | 06:48 08:26-09:34/68<br>18:58 07:38-08:03/25                | 07:21 07:53-09:30/97<br>18:09                | 06:59 07:25-08:31/66<br>16:35 08:32-08:49/17 | 07:26 08:03-09:32/89<br>16:33 14:50-15:02/12 |
| 24                          | 05:46 06:25-06:51/26<br>20:28 | 06:17 07:01-08:33/92<br>19:49                               | 06:49 08:25-09:35/70<br>18:56 07:44-07:57/13                | 07:22 07:54-09:32/98<br>18:07                | 07:00 07:27-08:52/85<br>16:34                | 07:26 08:04-09:33/89<br>16:34 14:51-15:03/12 |
| 25                          | 05:47 06:28-06:49/21<br>20:27 | 06:18 07:00-08:33/93<br>19:47                               | 06:50 08:25-09:37/72<br>18:54                               | 06:24 06:54-08:32/98<br>17:06                | 07:01 07:27-08:54/87<br>16:34                | 07:26 08:04-09:33/89<br>16:34 14:52-15:03/11 |
| 26                          | 05:48 06:31-06:46/15<br>20:26 | 06:19 07:00-08:34/94<br>19:46                               | 06:51 08:24-09:37/73<br>18:53                               | 06:25 06:54-08:33/99<br>17:04                | 07:02 07:28-08:55/87<br>16:33                | 07:27 08:04-09:33/89<br>16:35 14:53-15:03/10 |
| 27                          | 05:49 06:25<br>20:25          | 06:20 06:59-08:34/95<br>19:44                               | 06:52 08:23-09:38/75<br>18:51                               | 06:26 06:54-08:33/99<br>17:03                | 07:03 07:30-09:03/93<br>16:33                | 07:27 08:05-09:34/89<br>16:36 14:54-15:03/9  |
| 28                          | 05:50 06:24<br>20:24          | 06:21 06:59-08:34/95<br>19:42                               | 06:53 08:22-09:38/76<br>18:49                               | 06:27 06:55-08:34/99<br>17:02                | 07:04 07:31-09:07/96<br>16:32                | 07:27 08:05-09:34/89<br>16:36 14:55-15:02/6  |
| 29                          | 05:50 06:23<br>20:23          | 06:22 06:59-08:34/95<br>19:41                               | 06:54 08:21-09:38/77<br>18:48                               | 06:28 06:55-08:35/100<br>17:00               | 07:06 07:33-09:11/98<br>16:32                | 07:28 08:06-09:34/88<br>16:37 14:58-15:01/3  |
| 30                          | 05:51 06:28-06:35/7<br>20:22  | 06:23 06:59-08:33/94<br>19:39                               | 06:55 08:21-09:39/78<br>18:46                               | 06:30 06:56-07:30/34<br>16:59 07:33-08:35/62 | 07:07 07:35-09:12/97<br>16:31                | 07:28 08:06-09:34/88<br>16:38 14:58-15:01/3  |
| 31                          | 05:52 06:26-06:37/11<br>20:21 | 06:24 06:58-08:33/95<br>19:37                               | 06:56 08:21-09:39/78<br>18:46                               | 06:31 06:58-07:31/33<br>16:58 07:32-08:36/64 | 07:08 07:36-09:13/98<br>16:31                | 07:28 08:06-09:34/88<br>16:39 14:59-15:02/6  |
| Potential sun hours         | 462                           | 429   | 375   | 344  | 296  | 285  |
| Sum of minutes with flicker | 1267                          | 2184  | 2928  | 2817   | 2496   | 2911   |

### Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 15 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (20)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:55<br>20:00 | 05:27<br>20:29 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:09<br>17:20 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:37<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:37 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:33 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:08 | 06:34<br>19:20 | 07:06<br>18:29 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:02 | 06:27<br>19:37 | 05:45<br>20:09 | 05:25<br>20:35 | 05:36<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:18<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:12 | 05:25<br>20:36 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:21 | 06:48<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:13 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:39<br>20:14 | 05:25<br>20:37 | 05:39<br>20:33 | 06:10<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:31 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:39<br>20:15 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:16<br>19:44 | 05:38<br>20:16 | 05:25<br>20:38 | 05:41<br>20:31 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>17:00 | 06:50<br>17:39 | 06:05<br>18:11 | 06:14<br>19:46 | 05:37<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:54 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:38 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:45<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:46<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:06 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:07 | 06:40<br>17:47 | 05:53<br>18:19 | 06:04<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:51 | 06:25<br>17:03 | 07:03<br>16:32 | 07:26<br>16:36 |
| 28                          | 07:17<br>17:08 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:31<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:16<br>17:09 | 06:36<br>17:49 | 05:50<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:10 | 06:34<br>17:50 | 05:48<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:59 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:11 | 06:32<br>17:51 | 05:46<br>18:23 | 05:57<br>19:57 | 05:29<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:27<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: 16 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (21)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:42<br>16:46 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:02 | 06:27<br>19:37 | 05:45<br>20:09 | 05:25<br>20:35 | 05:36<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:39<br>19:12 | 07:11<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:31 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:57 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>17:00 | 06:50<br>17:39 | 06:05<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:54 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:24<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:45<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:31<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:48 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:36<br>17:49 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:59 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:50 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



## SHADOW - Calendar per WTG

**WTG:** 17 - REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (22)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:09<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:27<br>20:30 | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:52 | 07:11<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:22 | 06:27<br>17:57 | 06:35<br>19:32 | 05:50<br>20:04 | 05:26<br>20:33 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:29 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:03<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:39<br>20:15 | 05:25<br>20:38 | 05:39<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:22 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:40 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:54 | 05:31<br>20:24 | 05:27<br>20:40 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:09 | 06:39<br>17:48 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:50<br>18:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:35<br>17:50 | 05:48<br>18:23 | 06:00<br>19:57 | 05:29<br>20:27 | 05:28<br>20:40 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:33<br>17:51 | 05:46<br>18:24 | 05:59<br>19:58 | 05:28<br>20:28 | 05:29<br>20:40 | 05:52<br>20:21 | 06:24<br>19:37 | 06:57<br>18:45 | 06:30<br>16:57 | 07:07<br>16:30 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** 18 - REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (23)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:52 | 07:11<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:22 | 06:27<br>17:57 | 06:35<br>19:32 | 05:50<br>20:04 | 05:26<br>20:33 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:29 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:03<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:39<br>20:15 | 05:25<br>20:38 | 05:39<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:22 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:06 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:40 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:07 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:54 | 05:31<br>20:24 | 05:27<br>20:40 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:09 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:50<br>18:22 | 06:00<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:35<br>17:48 | 05:48<br>18:23 | 06:00<br>19:57 | 05:29<br>20:27 | 05:28<br>20:40 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:33<br>17:47 | 05:46<br>18:24 | 06:00<br>19:58 | 05:29<br>20:28 | 05:29<br>20:40 | 05:52<br>20:21 | 06:24<br>19:37 | 06:30<br>18:44 | 06:30<br>16:57 | 07:07<br>16:30 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** 19 - REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (24)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 06:59<br>18:39 | 06:35<br>16:52 | 07:11<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:22 | 06:27<br>17:57 | 06:35<br>19:32 | 05:50<br>20:04 | 05:26<br>20:33 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:29 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:03<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:39<br>20:15 | 05:25<br>20:38 | 05:39<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:58 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:06 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:40 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:07 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:54 | 05:31<br>20:24 | 05:27<br>20:40 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:09 | 06:39<br>17:48 | 05:52<br>18:20 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:50<br>18:21 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:35<br>17:50 | 05:48<br>18:22 | 05:59<br>19:57 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:33<br>17:51 | 05:46<br>18:23 | 05:57<br>19:58 | 05:29<br>20:28 | 05:29<br>20:40 | 05:52<br>20:21 | 06:24<br>19:37 | 06:57<br>18:45 | 06:30<br>16:57 | 07:07<br>16:32 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 20 - REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (25)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 06:59<br>18:39 | 06:35<br>16:52 | 07:11<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:22 | 06:27<br>17:57 | 06:35<br>19:32 | 05:50<br>20:04 | 05:26<br>20:33 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:29 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:03<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:10<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:39<br>20:15 | 05:25<br>20:38 | 05:39<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:58 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:06 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:40 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:07 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:54 | 05:31<br>20:24 | 05:27<br>20:40 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:09 | 06:39<br>17:48 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:50<br>18:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:35<br>17:50 | 05:48<br>18:23 | 06:00<br>19:57 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:33<br>17:51 | 05:46<br>18:24 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:40 | 05:52<br>20:21 | 06:24<br>19:37 | 06:30<br>18:44 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 21 - REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (26)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 06:59<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:33 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:29 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:03<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:39<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:38 | 05:39<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:58 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:53 | 05:31<br>20:24 | 05:27<br>20:40 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:09 | 06:39<br>17:48 | 05:52<br>18:20 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:48 | 05:50<br>18:21 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:35<br>17:49 | 05:48<br>18:22 | 05:59<br>19:57 | 05:29<br>20:27 | 05:28<br>20:40 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:33<br>17:50 | 05:46<br>18:23 | 05:57<br>19:58 | 05:29<br>20:28 | 05:29<br>20:40 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>18:45 | 06:30<br>16:57 | 07:07<br>16:32 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 22 - REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (27)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:52 | 07:11<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:22 | 06:27<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:33 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:03<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:04<br>20:06 | 06:37<br>19:17 | 07:08<br>18:25 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:39<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:33 | 06:11<br>19:58 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:22 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:54 | 05:31<br>20:24 | 05:27<br>20:40 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



## SHADOW - Calendar per WTG

WTG: 23 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (28)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:26<br>19:36 | 06:57<br>18:44 | 06:32<br>16:57 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:29<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:27<br>19:34 | 06:58<br>18:43 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:18 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:28 | 05:55<br>20:01 | 05:28<br>20:31 | 05:31<br>20:39 | 05:57<br>20:16 | 06:29<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:11<br>16:31 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:52 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:22 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:05 | 05:27<br>20:33 | 05:33<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:07<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:12 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:49<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:27 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:35<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:26<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:09<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:26<br>19:38 | 05:44<br>20:11 | 05:26<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:38<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:31 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:57 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:54<br>17:37 | 06:09<br>18:10 | 06:18<br>19:44 | 05:39<br>20:16 | 05:26<br>20:38 | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:39 | 07:22<br>16:32 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:26<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:15<br>19:46 | 05:37<br>20:18 | 05:26<br>20:39 | 05:43<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:02 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:03 | 06:48<br>17:42 | 06:02<br>18:14 | 06:12<br>19:48 | 05:36<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:09<br>19:50 | 05:34<br>20:22 | 05:27<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:35 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:06<br>19:53 | 05:33<br>20:23 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:25<br>17:05 | 07:02<br>16:33 | 07:26<br>16:36 |
| 27                          | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:28<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:33 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:51<br>19:22 | 06:01<br>19:56 | 05:31<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:38 |
| 30                          | 07:16<br>17:13 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:40 | 05:52<br>20:22 | 06:24<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:30<br>20:28 |                | 05:53<br>20:21 | 06:25<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: 24 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (29)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:26<br>19:36 | 06:57<br>18:44 | 06:32<br>16:57 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:29<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:27<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:09<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:18 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:33<br>17:54 | 06:40<br>19:28 | 05:55<br>20:01 | 05:28<br>20:31 | 05:31<br>20:39 | 05:57<br>20:16 | 06:29<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:11<br>16:31 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:52 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:27<br>20:33 | 05:33<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:49<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:27 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:35<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:26<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:26<br>19:38 | 05:44<br>20:11 | 05:26<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:38<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:31 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:57 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:54<br>17:37 | 06:09<br>18:10 | 06:18<br>19:44 | 05:39<br>20:16 | 05:26<br>20:38 | 05:41<br>20:33 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:39 | 07:22<br>16:32 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:26<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:15<br>19:46 | 05:37<br>20:18 | 05:26<br>20:39 | 05:43<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:42 | 06:02<br>18:14 | 06:11<br>19:48 | 05:36<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:09<br>19:50 | 05:34<br>20:22 | 05:27<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:35 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:06<br>19:53 | 05:33<br>20:23 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:25<br>17:05 | 07:02<br>16:33 | 07:26<br>16:36 |
| 27                          | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:28<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:51<br>19:22 | 06:01<br>19:56 | 05:31<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:38 |
| 30                          | 07:16<br>17:13 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:24<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:30<br>20:28 |                | 05:53<br>20:21 | 06:25<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: 25 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (30)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:26<br>19:36 | 06:57<br>18:44 | 06:32<br>16:57 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:29<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:27<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:18 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:54 | 06:40<br>19:28 | 05:55<br>20:01 | 05:28<br>20:31 | 05:31<br>20:39 | 05:57<br>20:16 | 06:29<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:11<br>16:31 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:52 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:27<br>20:33 | 05:33<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:49<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:27 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:35<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:26<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:26<br>19:38 | 05:44<br>20:11 | 05:26<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:27<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:38<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:31 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:57 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:54<br>17:37 | 06:09<br>18:10 | 06:18<br>19:44 | 05:39<br>20:16 | 05:26<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:53<br>16:39 | 07:22<br>16:32 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:26<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:15<br>19:46 | 05:37<br>20:18 | 05:26<br>20:39 | 05:43<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:03 | 06:48<br>17:42 | 06:02<br>18:14 | 06:11<br>19:48 | 05:36<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:09<br>19:50 | 05:34<br>20:22 | 05:27<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:35 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:06<br>19:53 | 05:33<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:25<br>17:05 | 07:02<br>16:33 | 07:26<br>16:36 |
| 27                          | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:28<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:51<br>19:22 | 06:01<br>19:56 | 05:31<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:38 |
| 30                          | 07:16<br>17:13 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:30<br>20:28 |                | 05:53<br>20:21 | 06:25<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: 26 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (31)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:26<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:29<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:27<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:18 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:54 | 06:40<br>19:28 | 05:55<br>20:01 | 05:28<br>20:31 | 05:31<br>20:39 | 05:57<br>20:16 | 06:29<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:11<br>16:31 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:52 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:27<br>20:33 | 05:33<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:49<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:27 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:35<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:26<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:26<br>19:38 | 05:44<br>20:11 | 05:26<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:38<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:41 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:57 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:54<br>17:37 | 06:09<br>18:10 | 06:18<br>19:44 | 05:39<br>20:16 | 05:26<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:39 | 07:22<br>16:32 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:26<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:43<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:03 | 06:48<br>17:42 | 06:02<br>18:14 | 06:11<br>19:48 | 05:36<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:22 | 05:27<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:35 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:06<br>19:53 | 05:33<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:25<br>17:05 | 07:02<br>16:33 | 07:26<br>16:36 |
| 27                          | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:28<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:51<br>19:22 | 06:01<br>19:56 | 05:31<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:38 |
| 30                          | 07:16<br>17:13 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:53<br>20:21 | 06:25<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: 27 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (32)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:26<br>19:36 | 06:57<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:29<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:27<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:18 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:54 | 06:40<br>19:28 | 05:55<br>20:01 | 05:28<br>20:30 | 05:31<br>20:39 | 05:57<br>20:16 | 06:29<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:11<br>16:31 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:52 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:27<br>20:33 | 05:33<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:49<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:27 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:35<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:26<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:26<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:38<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:57 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:54<br>17:37 | 06:09<br>18:10 | 06:18<br>19:44 | 05:39<br>20:16 | 05:26<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:39 | 07:22<br>16:32 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:26<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:43<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:42 | 06:02<br>18:14 | 06:11<br>19:48 | 05:36<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:27<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:55 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:06<br>19:53 | 05:33<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:25<br>17:05 | 07:02<br>16:33 | 07:26<br>16:36 |
| 27                          | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:28<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:31<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:38 |
| 30                          | 07:16<br>17:13 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 28 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (33)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:26<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:27<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:18 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:09<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:54 | 06:40<br>19:28 | 05:55<br>20:01 | 05:28<br>20:30 | 05:31<br>20:39 | 05:57<br>20:16 | 06:29<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:11<br>16:31 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:52 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:27<br>20:33 | 05:33<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:49<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:27 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:35<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:26<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:38<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:54<br>17:37 | 06:09<br>18:10 | 06:18<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:39 | 07:22<br>16:32 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:26<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:43<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:42 | 06:02<br>18:14 | 06:11<br>19:48 | 05:36<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:27<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:06<br>19:53 | 05:33<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:25<br>17:05 | 07:02<br>16:33 | 07:26<br>16:36 |
| 27                          | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:28<br>20:39 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:31<br>20:26 | 05:28<br>20:39 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:38 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



## SHADOW - Calendar per WTG

WTG: 29 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (34)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:27<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:18 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:54 | 06:40<br>19:28 | 05:55<br>20:01 | 05:28<br>20:31 | 05:31<br>20:39 | 05:57<br>20:16 | 06:29<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:11<br>16:30 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:52 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:27<br>20:33 | 05:33<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:27 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:35<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:26<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
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| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
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| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:54<br>17:37 | 06:09<br>18:10 | 06:18<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:39 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:26<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:18<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
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| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:31<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:38 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 30 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (35)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:18 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:54 | 06:40<br>19:28 | 05:55<br>20:01 | 05:28<br>20:31 | 05:31<br>20:39 | 05:57<br>20:16 | 06:29<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:11<br>16:30 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:30 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:52 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:27<br>20:33 | 05:33<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:42<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:27 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:35<br>20:37 | 06:03<br>20:09 | 06:35<br>19:21 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:26<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:38<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:09 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:54<br>17:37 | 06:09<br>18:10 | 06:18<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:39 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:26<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:42 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:22 | 05:27<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:56<br>18:19 | 06:06<br>19:53 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:25<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:31<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 31 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (36)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:18 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:28<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:09<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:54 | 06:40<br>19:28 | 05:55<br>20:01 | 05:28<br>20:30 | 05:31<br>20:39 | 05:57<br>20:16 | 06:29<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:11<br>16:30 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:27<br>20:33 | 05:33<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:35<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:26<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:39 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:08<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:26<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:42 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:56<br>18:18 | 06:06<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:25<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:31<br>20:26 | 05:28<br>20:39 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:31<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: 32 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (37)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:26<br>19:34 | 06:58<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:18 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:17 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:09<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:54 | 06:40<br>19:28 | 05:55<br>20:01 | 05:28<br>20:30 | 05:31<br>20:39 | 05:57<br>20:16 | 06:29<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:27<br>20:32 | 05:33<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:26 | 06:23<br>18:01 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:35<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:36 | 06:04<br>20:07 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:23 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:54<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:39 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:56<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:39 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:39 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

### SHADOW - Calendar per WTG

WTG: 33 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (38)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:18 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:17 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:09<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:54 | 06:40<br>19:28 | 05:55<br>20:01 | 05:28<br>20:30 | 05:31<br>20:39 | 05:57<br>20:16 | 06:29<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:27<br>20:32 | 05:33<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:35<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:36 | 06:04<br>20:07 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:10<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:53<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:39 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:56<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:39 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:39 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:48 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 34 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (39)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:17 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:09<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:55<br>20:01 | 05:28<br>20:30 | 05:31<br>20:39 | 05:57<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:32 | 05:33<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:35<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:36 | 06:04<br>20:07 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:37 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:53<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:39 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:56<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:39 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:39 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



## SHADOW - Calendar per WTG

WTG: 35 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (40)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:17 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:09<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:55<br>20:01 | 05:27<br>20:30 | 05:31<br>20:39 | 05:57<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:30<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:46 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:47 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:36 | 06:04<br>20:07 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:32 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:37 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:53<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:23<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:20 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:39 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:39 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: 36 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (41)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:17 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:09<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:55<br>20:01 | 05:27<br>20:30 | 05:31<br>20:39 | 05:57<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:23 | 06:27<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:36 | 06:04<br>20:07 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:37 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:53<br>17:37 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:23<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:20 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:39 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:39 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:32 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 37 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (42)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:17 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:09<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:55<br>20:01 | 05:27<br>20:30 | 05:31<br>20:39 | 05:57<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:23 | 06:27<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:48 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:49 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:36 | 06:04<br>20:07 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:11<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:37 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:53<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:42<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:23<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:20 | 05:26<br>20:39 | 05:45<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:09 | 06:40<br>17:47 | 05:54<br>18:20 | 06:04<br>19:53 | 05:32<br>20:24 | 05:27<br>20:39 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:39 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:50<br>18:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:35<br>17:49 | 05:49<br>18:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:14 | 06:33<br>17:49 | 05:47<br>18:24 | 05:59<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:53<br>20:21 | 06:24<br>19:37 | 06:57<br>18:45 | 06:30<br>16:58 | 07:07<br>16:30 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

### SHADOW - Calendar per WTG

WTG: 38 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (43)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:35<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:17 | 06:27<br>19:32 | 06:58<br>18:41 | 06:34<br>16:54 | 07:09<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:55<br>20:01 | 05:27<br>20:30 | 05:31<br>20:39 | 05:57<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:30<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:23 | 06:27<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:36 | 06:04<br>20:07 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:11<br>18:22 | 06:47<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:31 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:21<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:37 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:58 | 06:53<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:23<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:24<br>16:33 |
| 23                          | 07:21<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:20 | 05:26<br>20:39 | 05:45<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:09 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:53 | 05:32<br>20:24 | 05:27<br>20:39 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:39 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 | 06:37<br>19:22 | 05:50<br>19:56 | 06:01<br>19:57 | 05:30<br>20:26 | 05:28<br>20:39 | 05:51<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:35<br>19:23 | 05:49<br>19:57 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:14 | 06:34<br>19:24 | 05:48<br>19:58 | 05:29<br>20:27 | 05:29<br>20:27 | 05:29<br>20:27 | 05:53<br>20:21 | 06:24<br>19:37 | 06:30<br>16:58 | 06:30<br>16:58 | 07:07<br>16:32 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 345            | 296            | 286            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 39 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (44)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:17 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:09<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:55<br>20:01 | 05:27<br>20:30 | 05:31<br>20:39 | 05:57<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:31<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:36 | 06:04<br>20:07 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:09 | 06:40<br>17:48 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:39 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:39 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: 40 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (45)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:30<br>20:39 | 05:55<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:17 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:09<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:31<br>20:39 | 05:57<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:44 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:45 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:30<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:26<br>20:35 | 05:35<br>20:36 | 06:04<br>20:07 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:26<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:36 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:04 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:35<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:34 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:09 | 06:40<br>17:47 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:39 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:39 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



## SHADOW - Calendar per WTG

WTG: 41 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (46)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:54<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:55<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:56<br>20:18 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:31 |
| 4                           | 07:28<br>16:43 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:11<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:39<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:30<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:23 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:13 | 06:32<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:34<br>19:33 | 05:50<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:50 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:21<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:54<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:33 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:22 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:40 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:08 | 06:40<br>17:47 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:03<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 | 06:37<br>19:22 | 05:50<br>19:56 | 06:01<br>19:57 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:35<br>19:23 | 05:49<br>19:57 | 06:00<br>19:57 | 05:30<br>20:27 | 05:29<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 | 06:34<br>19:24 | 05:48<br>19:58 | 05:59<br>20:28 | 05:29<br>20:30 | 05:28<br>20:40 | 05:53<br>20:21 | 06:24<br>19:37 | 06:56<br>16:58 | 06:30<br>16:58 | 07:07<br>16:31 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: 42 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (47)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:44<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:32 | 06:59<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:31 | 05:31<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:53 | 07:11<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:58<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:59<br>20:14 | 06:30<br>19:27 | 07:02<br>18:36 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:22 | 06:28<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:13 | 06:31<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:01<br>20:11 | 06:33<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:34<br>19:22 | 07:05<br>18:31 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:29<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:07 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:51 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:37<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:14 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:13<br>18:07 | 06:20<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:10 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:26<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:12 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:22 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:27<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:35 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:08 | 06:40<br>17:47 | 05:54<br>18:20 | 06:04<br>19:54 | 05:32<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:02 | 07:04<br>16:32 | 07:27<br>16:37 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:51<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:39 | 05:52<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:14 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:53<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:58 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 43 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (48)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:24 | 06:24<br>17:59 | 06:32<br>19:33 | 05:48<br>20:06 | 05:26<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:25 | 06:22<br>18:00 | 06:30<br>19:34 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:42<br>16:46 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:26 | 06:21<br>18:01 | 06:28<br>19:35 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:27 | 06:19<br>18:02 | 06:27<br>19:36 | 05:45<br>20:09 | 05:25<br>20:35 | 05:36<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:18<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:39<br>19:12 | 07:11<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:10<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:31 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:57 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>17:00 | 06:50<br>17:39 | 06:05<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:54 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:24<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:45<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:46<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:06 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:07 | 06:40<br>17:47 | 05:53<br>18:19 | 06:04<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:17<br>17:08 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:31<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:09 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:10 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:59 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:11 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:29<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>18:44 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

### SHADOW - Calendar per WTG

**WTG:** 44 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (49)  
**Assumptions for shadow calculations** Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:54 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:32<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:10<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:57<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:40<br>20:15 | 05:25<br>20:37 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:58 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
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| 20                          | 07:23<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:10<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:48<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

# SHADOW - Calendar per WTG

WTG: 45 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (50)

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

## Assumptions for shadow calculations

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:54 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:32<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 06:59<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:51<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:34 | 05:34<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
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| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:40<br>20:15 | 05:25<br>20:37 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:58 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
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| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:48<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



### SHADOW - Calendar per WTG

WTG: 46 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (51)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

| January | February | March | April | May | June | July | August | September | October | November | December |
|---------|----------|-------|-------|-----|------|------|--------|-----------|---------|----------|----------|
|---------|----------|-------|-------|-----|------|------|--------|-----------|---------|----------|----------|

|                             |                |                |                |                |                |                |                |                |                |                |                |                |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:54 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:32<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 06:59<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:51<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 06:35<br>18:30 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:06<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:10<br>18:22 | 06:47<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:57<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:40<br>20:15 | 05:25<br>20:37 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:57 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:38 | 06:07<br>18:10 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:10<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:45<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:48 | 05:52<br>18:20 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:48<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



## SHADOW - Calendar per WTG

WTG: 47 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (52)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:54 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:32<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:06<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:40<br>20:15 | 05:25<br>20:37 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:57 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>17:00 | 06:50<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:54 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:24<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:10<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:45<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:31<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:48<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 48 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (53)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:54 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 06:59<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:29 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:39<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:40<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:57 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>17:00 | 06:50<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:54 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:24<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:10<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:45<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:31<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:36<br>17:50 | 05:50<br>18:22 | 06:00<br>19:56 | 05:30<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:59<br>19:57 | 05:29<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>18:45 | 06:30<br>16:57 | 07:07<br>16:30 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 49 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (54)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:41 | 06:34<br>16:54 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:22 | 06:27<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:33 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:34<br>20:37 | 06:03<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:28 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:07 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:11<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:58 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:54 | 05:31<br>20:24 | 05:27<br>20:39 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:50<br>18:22 | 06:00<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:35<br>17:49 | 05:49<br>18:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:33<br>17:49 | 05:47<br>18:24 | 06:00<br>19:58 | 05:29<br>20:28 | 05:29<br>20:40 | 05:52<br>20:21 | 06:24<br>19:37 | 06:30<br>18:44 | 06:30<br>16:57 | 07:07<br>16:30 | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 50 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (55)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:41 | 06:34<br>16:54 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:52 | 07:11<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:22 | 06:27<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:33 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:34 | 05:34<br>20:37 | 06:03<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:07 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:11<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:58 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>19:00 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:43 | 06:01<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:19<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:54 | 05:31<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

### SHADOW - Calendar per WTG

**WTG:** 51 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (56)  
**Assumptions for shadow calculations** Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:41 | 06:34<br>16:54 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:32<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:22 | 06:27<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:33 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:11<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:58 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:10<br>19:49 | 05:34<br>20:21 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:54 | 05:31<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:27<br>20:40 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 52 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (57)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:36<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:42 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:18 | 06:27<br>19:32 | 06:58<br>18:41 | 06:34<br>16:54 | 07:10<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:31 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:52 | 07:11<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:55 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:37<br>16:51 | 07:12<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:31 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:13<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:08<br>17:22 | 06:27<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:33 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:26 | 07:03<br>18:34 | 06:39<br>16:49 | 07:14<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:06 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:07 | 05:26<br>20:34 | 05:34<br>20:37 | 06:02<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:23<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:26<br>20:34 | 05:34<br>20:37 | 06:03<br>20:09 | 06:35<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:28 | 06:21<br>18:02 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:37 | 06:04<br>20:08 | 06:36<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:02<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:18<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:36 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:27<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:11<br>18:22 | 06:48<br>16:42 | 07:20<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:42 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:01 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:58 | 06:43<br>19:07 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:59 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:15 | 06:54<br>16:38 | 07:23<br>16:32 |
| 20                          | 07:24<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:39 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:24<br>16:32 |
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| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:22 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:49 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
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| 27                          | 07:19<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:54 | 05:31<br>20:24 | 05:27<br>20:40 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:28<br>20:40 | 05:50<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:40 | 05:50<br>20:23 | 06:22<br>19:41 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:40 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:28 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



## SHADOW - Calendar per WTG

WTG: 53 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (58)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:29<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:36 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:41 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:19 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:31 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:56<br>20:00 | 05:28<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:41 | 06:34<br>16:54 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:19 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:31 | 07:00<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:01<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:56 | 06:37<br>19:30 | 05:52<br>20:03 | 05:27<br>20:32 | 05:32<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:32 | 05:51<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:24 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:30 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:34 | 05:34<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:30 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:08 | 05:25<br>20:34 | 05:34<br>20:37 | 06:03<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:46 | 07:16<br>16:30 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:28 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:07 | 06:35<br>19:19 | 07:07<br>18:27 | 06:44<br>16:45 | 07:17<br>16:30 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:03 | 06:27<br>19:37 | 05:45<br>20:10 | 05:25<br>20:35 | 05:36<br>20:36 | 06:05<br>20:06 | 06:37<br>19:17 | 07:08<br>18:26 | 06:45<br>16:44 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:52 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:06<br>20:05 | 06:38<br>19:15 | 07:09<br>18:24 | 06:46<br>16:43 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:53 | 06:59<br>17:31 | 06:16<br>18:05 | 06:24<br>19:39 | 05:43<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:07<br>20:03 | 06:39<br>19:13 | 07:11<br>18:22 | 06:48<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:58<br>17:33 | 06:14<br>18:06 | 06:22<br>19:40 | 05:42<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:02 | 06:40<br>19:12 | 07:12<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:41<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:41<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:31 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:43 | 05:40<br>20:15 | 05:25<br>20:38 | 05:40<br>20:33 | 06:10<br>19:59 | 06:42<br>19:08 | 07:14<br>18:18 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:39<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:58 | 06:43<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:38 | 06:07<br>18:11 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:32 |
| 20                          | 07:23<br>17:00 | 06:51<br>17:39 | 06:06<br>18:12 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:55 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:13<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:19<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:26<br>20:39 | 05:44<br>20:29 | 06:15<br>19:52 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:22<br>17:03 | 06:46<br>17:43 | 06:00<br>18:15 | 06:10<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:45<br>20:29 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:09 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:05 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:34<br>20:21 | 05:26<br>20:39 | 05:46<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 07:00<br>16:34 | 07:26<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:47<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:06 | 07:01<br>16:34 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:48<br>20:26 | 06:19<br>19:45 | 06:51<br>18:53 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:54<br>18:19 | 06:04<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:49<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:26<br>17:03 | 07:03<br>16:33 | 07:27<br>16:36 |
| 28                          | 07:18<br>17:10 | 06:39<br>17:49 | 05:52<br>18:21 | 06:02<br>19:55 | 05:31<br>20:25 | 05:28<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:22 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:32 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:49<br>19:23 | 06:00<br>19:57 | 05:30<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:46 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** 54 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (59)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:15 | 06:35<br>17:51 | 06:43<br>19:26 | 05:56<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:09<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:30<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:37<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:56 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:48 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:37 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:24 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:08 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:20<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:23 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:15<br>18:05 | 06:23<br>19:39 | 05:42<br>20:11 | 05:24<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:12 | 05:24<br>20:37 | 05:37<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:48<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:54 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:13 | 05:24<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:12<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:55 | 06:54<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:14 | 05:24<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:56 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:15 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:57 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:16 | 05:25<br>20:38 | 05:41<br>20:31 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:58 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:35<br>20:18 | 05:25<br>20:38 | 05:42<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:43<br>20:29 | 06:14<br>19:51 | 06:46<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:15<br>19:50 | 06:47<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:16<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:44 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:32 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:26<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:26<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:16<br>17:10 |                | 06:50<br>19:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:48<br>19:22 | 05:59<br>19:56 | 05:29<br>20:26 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 |                | 06:46<br>19:23 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

**Table layout: For each day in each month the following matrix apply**

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: 55 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (60)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:15 | 06:35<br>17:51 | 06:43<br>19:26 | 05:56<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:09<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:30<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:37<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:56 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:48 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:37 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:24 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:08 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:20<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:23 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:15<br>18:05 | 06:23<br>19:39 | 05:42<br>20:11 | 05:24<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:12 | 05:24<br>20:37 | 05:37<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:54 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:13 | 05:24<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:12<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:24<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:15 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:16 | 05:25<br>20:38 | 05:41<br>20:31 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:35<br>20:18 | 05:25<br>20:39 | 05:42<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:43<br>20:29 | 06:14<br>19:51 | 06:46<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:15<br>19:50 | 06:47<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:32 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:26<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:16<br>17:10 |                | 06:50<br>19:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:48<br>19:22 | 05:59<br>19:57 | 05:29<br>20:26 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 |                | 06:46<br>19:24 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 56 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (61)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:56<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:29 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:09<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:30<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:37<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:56 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:48 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:37 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:33 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:08 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:20<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:23 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:15<br>18:05 | 06:23<br>19:39 | 05:42<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:12 | 05:24<br>20:37 | 05:37<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:48<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:54 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:13 | 05:24<br>20:37 | 05:38<br>20:33 | 06:08<br>20:00 | 06:40<br>19:10 | 07:12<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:54<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:14 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:15 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:16 | 05:25<br>20:38 | 05:41<br>20:31 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:38 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:43<br>20:29 | 06:14<br>19:51 | 06:46<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:15<br>19:50 | 06:47<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:26<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:26<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:16<br>17:10 |                | 06:50<br>19:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:48<br>19:22 | 05:59<br>19:56 | 05:29<br>20:26 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 |                | 06:46<br>19:23 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:27<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 57 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (62)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:09<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:37<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:56 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:48 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:37 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:33 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:08 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:20<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:15<br>18:05 | 06:23<br>19:39 | 05:42<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:12 | 05:24<br>20:37 | 05:37<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:48<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:54 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:13 | 05:24<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:12<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:14 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:15 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:16 | 05:25<br>20:38 | 05:41<br>20:31 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:38 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:43<br>20:29 | 06:14<br>19:51 | 06:46<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:26<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:26<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:16<br>17:10 |                | 06:50<br>19:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:48<br>19:22 | 05:59<br>19:57 | 05:29<br>20:26 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 |                | 06:46<br>19:24 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: 58 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (63)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:09<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:37<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:56 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:37 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:15<br>18:05 | 06:23<br>19:39 | 05:42<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:12 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:12<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:15 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:16 | 05:25<br>20:38 | 05:41<br>20:31 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:38 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:43<br>20:29 | 06:14<br>19:51 | 06:46<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>18:44 | 06:30<br>16:57 | 07:07<br>16:32 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



## SHADOW - Calendar per WTG

WTG: 59 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (64)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 06:59<br>18:35 | 06:37<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
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| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
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| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** 60 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (65)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:51 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** 61 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (66)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

**[January | February | March | April | May | June | July | August | September | October | November | December]**

|                             |                |                |                |                |                |                |                |                |                |                |                |                |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:27<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:51 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:47 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:36<br>17:46 | 05:50<br>18:22 | 06:00<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:45 | 05:49<br>18:23 | 05:59<br>19:57 | 05:29<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

**Table layout: For each day in each month the following matrix apply**

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** 62 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (67)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:43<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:51 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:48 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:49 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:12 | 06:35<br>17:50 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 63 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (68)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:42 | 06:02<br>18:15 | 06:11<br>19:49 | 05:35<br>20:20 | 05:25<br>20:39 | 05:43<br>20:28 | 06:15<br>19:50 | 06:47<br>18:57 | 07:19<br>18:08 | 06:57<br>16:34 | 07:24<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:44 | 06:00<br>18:16 | 06:09<br>19:50 | 05:34<br>20:21 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:48 | 06:48<br>18:56 | 07:21<br>18:07 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:51 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 64 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (69)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:43<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:51 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:47 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:46 | 05:50<br>18:22 | 06:00<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:45 | 05:49<br>18:23 | 05:59<br>19:57 | 05:29<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker



## SHADOW - Calendar per WTG

WTG: 65 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (70)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:37<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:43<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:47 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:46 | 05:50<br>18:22 | 06:00<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:45 | 05:49<br>18:23 | 05:59<br>19:57 | 05:29<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG: 66 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (71)**

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:37<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:56 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:48 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:15<br>18:05 | 06:23<br>19:39 | 05:42<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:24<br>20:37 | 05:37<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:54 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:24<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:12<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
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| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
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| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 67 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (72)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:56<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:09<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:30<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:37<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:56 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:48 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:15<br>18:05 | 06:23<br>19:39 | 05:42<br>20:11 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:12 | 05:24<br>20:37 | 05:37<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:54 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:24<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:12<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:16 | 05:25<br>20:38 | 05:41<br>20:31 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:43<br>20:29 | 06:14<br>19:51 | 06:46<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 68 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (73)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:56<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:30<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:37<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:56 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:48 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:20<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:15<br>18:05 | 06:23<br>19:39 | 05:42<br>20:11 | 05:24<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:24<br>20:37 | 05:37<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:54 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:24<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:12<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:24<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:35<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:43<br>20:29 | 06:14<br>19:51 | 06:46<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:15<br>19:50 | 06:48<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 69 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (74)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:56<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:30<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:37<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:56 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:48 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:15<br>18:05 | 06:23<br>19:39 | 05:42<br>20:11 | 05:24<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:24<br>20:37 | 05:37<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:54 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:24<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:12<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:24<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:35<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:42 | 06:02<br>18:15 | 06:11<br>19:49 | 05:35<br>20:20 | 05:25<br>20:39 | 05:43<br>20:28 | 06:14<br>19:50 | 06:46<br>18:57 | 07:19<br>18:08 | 06:57<br>16:34 | 07:24<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:44 | 06:00<br>18:16 | 06:09<br>19:50 | 05:34<br>20:21 | 05:25<br>20:39 | 05:44<br>20:27 | 06:16<br>19:48 | 06:48<br>18:56 | 07:21<br>18:07 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 70 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (75)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:30<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:56 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:48 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:15<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:24<br>20:37 | 05:37<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:54 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:24<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:43<br>20:29 | 06:14<br>19:51 | 06:46<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



## SHADOW - Calendar per WTG

**WTG: 71 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (76)**  
 Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
 981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:24<br>20:37 | 05:37<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:54 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:24<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:42 | 06:02<br>18:15 | 06:11<br>19:49 | 05:35<br>20:20 | 05:25<br>20:39 | 05:43<br>20:28 | 06:14<br>19:50 | 06:47<br>18:57 | 07:19<br>18:08 | 06:57<br>16:34 | 07:24<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:44 | 06:00<br>18:16 | 06:09<br>19:50 | 05:34<br>20:21 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:48 | 06:48<br>18:56 | 07:21<br>18:07 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>18:44 | 06:30<br>16:57 | 07:07<br>16:32 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
 Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

WTG: 72 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (77)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

[January] [February] [March] [April] [May] [June] [July] [August] [September] [October] [November] [December]

|                             |                |                |                |                |                |                |                |                |                |                |                |                |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:42 | 06:02<br>18:15 | 06:11<br>19:49 | 05:35<br>20:20 | 05:25<br>20:39 | 05:43<br>20:28 | 06:15<br>19:50 | 06:47<br>18:57 | 07:19<br>18:08 | 06:57<br>16:34 | 07:24<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:44 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:51 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:47 | 05:51<br>18:19 | 06:01<br>19:53 | 05:30<br>20:24 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:46 | 05:50<br>18:18 | 05:59<br>19:52 | 05:29<br>20:23 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:45 | 05:49<br>18:17 | 05:58<br>19:51 | 05:28<br>20:22 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>18:44 | 06:30<br>16:57 | 07:07<br>16:32 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG: 73 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (78)**

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:22<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:43<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:57 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:51 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:11 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:12 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

### SHADOW - Calendar per WTG

**WTG: 74 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (79)**  
 Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

[January | February | March | April | May | June | July | August | September | October | November | December

|                             |                |                |                |                |                |                |                |                |                |                |                |                |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:27<br>19:37 | 05:44<br>20:10 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:22<br>16:30 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:43 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:18<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:10 |                | 06:50<br>19:21 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:48<br>19:23 | 05:59<br>19:57 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG: 75 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (80)**

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:27<br>19:37 | 05:44<br>20:10 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:22<br>16:30 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:39 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:54 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:43 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:18<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 451            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

**Table layout: For each day in each month the following matrix apply**

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

### SHADOW - Calendar per WTG

WTG: 76 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (81)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:27<br>19:37 | 05:44<br>20:10 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:22<br>16:30 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:39 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:54 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:43 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:03 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:18<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



## SHADOW - Calendar per WTG

**WTG: 77 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (82)**

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

### Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

**[January | February | March | April | May | June | July | August | September | October | November | December]**

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:27<br>19:37 | 05:44<br>20:10 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:22<br>16:30 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:25<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:43 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:02 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

### Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

WTG: 78 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (83)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

### Operational time

| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:27<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:39 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:43 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:03 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:47 | 05:51<br>18:19 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:36<br>17:46 | 05:50<br>18:18 | 05:59<br>19:57 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:45 | 05:49<br>18:17 | 05:58<br>19:56 | 05:28<br>20:27 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>18:44 | 06:30<br>16:57 | 07:07<br>16:32 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG

**WTG:** 79 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (84)

### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
981 393 245 98 116 178 202 368 932 441 576 1.600 6.130

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:33 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:32<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:27<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:10<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:39 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:43 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:03 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:30 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

### SHADOW - Calendar per WTG

**WTG: 80 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (85)**

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:31<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:27<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:49<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:11<br>19:56 | 06:43<br>19:05 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:39 | 06:05<br>18:11 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:54 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:32 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:44<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:43 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:04<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:03 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:49 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:36<br>17:50 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:51 | 05:49<br>18:23 | 05:58<br>19:57 | 05:29<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:30 | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

### SHADOW - Calendar per WTG

WTG: 81 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (86)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:32<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:31<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:39 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:09<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:02<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:13 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:33 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:25<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:28<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:43<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:02 | 06:27<br>19:37 | 05:44<br>20:10 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:43<br>20:11 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:19<br>16:30 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:12 | 07:11<br>18:20 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:26<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:38<br>20:34 | 06:08<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:22<br>16:31 |
| 18                          | 07:25<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:44 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:45 | 05:37<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:54<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:39 | 06:05<br>18:11 | 06:14<br>19:46 | 05:37<br>20:18 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:54 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:19 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:48<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:20 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:20<br>18:10 | 06:57<br>16:35 | 07:25<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:45<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:43 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:28 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:01<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:42<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:04<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:03 | 07:03<br>16:32 | 07:27<br>16:35 |
| 28                          | 07:18<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:31<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 |                | 06:50<br>19:21 | 06:01<br>19:56 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:48<br>19:23 | 05:59<br>19:57 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:59 | 07:06<br>16:31 | 07:27<br>16:38 |
| 31                          | 07:15<br>17:13 |                | 06:47<br>19:24 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

### SHADOW - Calendar per WTG

WTG: 82 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (87)

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:39 | 07:14<br>17:14 | 06:37<br>17:49 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:28<br>20:39 | 05:53<br>20:19 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:30 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:56<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:54 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:41<br>19:27 | 05:55<br>20:00 | 05:27<br>20:29 | 05:29<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:38 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:09<br>17:19 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:26<br>20:31 | 05:30<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:29 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:36<br>19:30 | 05:51<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:37<br>16:50 | 07:12<br>16:29 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:56 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:02<br>18:33 | 06:39<br>16:48 | 07:13<br>16:29 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:25<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:25<br>20:33 | 05:32<br>20:37 | 06:00<br>20:11 | 06:32<br>19:23 | 07:04<br>18:32 | 06:40<br>16:47 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:24 | 06:24<br>17:59 | 06:31<br>19:33 | 05:48<br>20:06 | 05:25<br>20:33 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:46 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:08 | 06:34<br>19:20 | 07:06<br>18:28 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:02<br>17:27 | 06:20<br>18:01 | 06:28<br>19:36 | 05:45<br>20:08 | 05:25<br>20:35 | 05:34<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:28 | 06:19<br>18:02 | 06:26<br>19:37 | 05:44<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:29 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:03 | 06:25<br>19:38 | 05:43<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:04 | 06:37<br>19:15 | 07:09<br>18:23 | 06:46<br>16:42 | 07:18<br>16:29 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:15<br>18:05 | 06:23<br>19:39 | 05:42<br>20:11 | 05:24<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:41 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:53 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:12 | 05:24<br>20:37 | 05:37<br>20:34 | 06:07<br>20:02 | 06:39<br>19:11 | 07:11<br>18:20 | 06:48<br>16:40 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:54 | 06:56<br>17:33 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:13 | 05:24<br>20:37 | 05:38<br>20:33 | 06:08<br>20:00 | 06:40<br>19:10 | 07:12<br>18:19 | 06:50<br>16:39 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:54<br>17:35 | 06:10<br>18:08 | 06:18<br>19:42 | 05:39<br>20:14 | 05:24<br>20:37 | 05:39<br>20:33 | 06:09<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:30 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:15 | 05:25<br>20:38 | 05:40<br>20:32 | 06:10<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:15<br>19:44 | 05:37<br>20:16 | 05:25<br>20:38 | 05:41<br>20:31 | 06:11<br>19:56 | 06:43<br>19:04 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:38 | 06:05<br>18:11 | 06:14<br>19:46 | 05:36<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:12<br>19:54 | 06:44<br>19:03 | 07:17<br>18:13 | 06:55<br>16:36 | 07:23<br>16:31 |
| 21                          | 07:23<br>17:00 | 06:49<br>17:40 | 06:04<br>18:12 | 06:12<br>19:47 | 05:35<br>20:18 | 05:25<br>20:38 | 05:43<br>20:30 | 06:13<br>19:53 | 06:45<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:42 | 06:02<br>18:15 | 06:11<br>19:49 | 05:35<br>20:20 | 05:25<br>20:39 | 05:43<br>20:28 | 06:14<br>19:50 | 06:46<br>18:57 | 07:19<br>18:08 | 06:57<br>16:34 | 07:24<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:43 | 06:00<br>18:16 | 06:09<br>19:50 | 05:34<br>20:21 | 05:25<br>20:39 | 05:44<br>20:27 | 06:15<br>19:48 | 06:47<br>18:56 | 07:21<br>18:07 | 06:58<br>16:34 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:44<br>17:43 | 05:58<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:45<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:33 |
| 25                          | 07:20<br>17:05 | 06:43<br>17:45 | 05:57<br>18:17 | 06:06<br>19:51 | 05:32<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:26<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:03<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:43 | 06:52<br>18:50 | 06:25<br>17:02 | 07:03<br>16:32 | 07:26<br>16:35 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:30<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:26<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:16<br>17:10 |                | 06:50<br>19:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:27<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 |                | 06:48<br>19:22 | 05:59<br>19:56 | 05:29<br>20:26 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:58 | 07:06<br>16:31 | 07:27<br>16:37 |
| 31                          | 07:15<br>17:13 |                | 06:46<br>19:23 |                | 05:29<br>20:27 |                | 05:52<br>20:21 | 06:24<br>19:37 |                | 06:30<br>16:57 |                | 07:28<br>16:38 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 462            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |



### SHADOW - Calendar per WTG

WTG: 83 - VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (88)

#### Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
| 4,21 | 4,83 | 5,24 | 6,37 | 6,76 | 8,17 | 9,01 | 9,23 | 7,23 | 4,84 | 4,00 | 3,35 |

#### Operational time

|     |     |     |    |     |     |     |     |     |     |     |       |       |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| N   | NNE | ENE | E  | ESE | SSE | S   | SSW | WSW | W   | WNW | NNW   | Sum   |
| 981 | 393 | 245 | 98 | 116 | 178 | 202 | 368 | 932 | 441 | 576 | 1.600 | 6.130 |

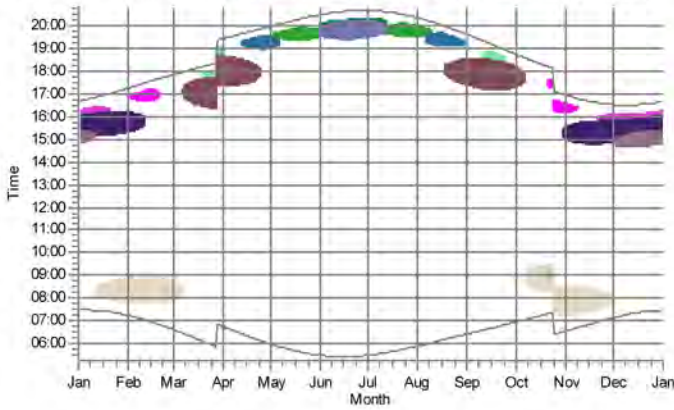
|                             | January        | February       | March          | April          | May            | June           | July           | August         | September      | October        | November       | December       |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1                           | 07:28<br>16:40 | 07:14<br>17:15 | 06:37<br>17:50 | 06:45<br>19:25 | 05:58<br>19:58 | 05:28<br>20:28 | 05:29<br>20:39 | 05:53<br>20:20 | 06:25<br>19:35 | 06:56<br>18:44 | 06:31<br>16:56 | 07:07<br>16:31 |
| 2                           | 07:28<br>16:40 | 07:13<br>17:16 | 06:35<br>17:51 | 06:43<br>19:26 | 05:57<br>19:59 | 05:28<br>20:29 | 05:29<br>20:39 | 05:54<br>20:18 | 06:26<br>19:34 | 06:57<br>18:42 | 06:33<br>16:55 | 07:08<br>16:30 |
| 3                           | 07:28<br>16:41 | 07:12<br>17:17 | 06:34<br>17:52 | 06:42<br>19:27 | 05:55<br>20:00 | 05:27<br>20:30 | 05:30<br>20:39 | 05:55<br>20:17 | 06:27<br>19:32 | 06:58<br>18:40 | 06:34<br>16:53 | 07:09<br>16:30 |
| 4                           | 07:28<br>16:42 | 07:11<br>17:18 | 06:32<br>17:53 | 06:40<br>19:28 | 05:54<br>20:01 | 05:27<br>20:30 | 05:30<br>20:39 | 05:56<br>20:16 | 06:28<br>19:30 | 06:59<br>18:39 | 06:35<br>16:52 | 07:10<br>16:30 |
| 5                           | 07:28<br>16:43 | 07:10<br>17:20 | 06:30<br>17:54 | 06:38<br>19:29 | 05:53<br>20:02 | 05:27<br>20:31 | 05:31<br>20:38 | 05:57<br>20:15 | 06:29<br>19:29 | 07:00<br>18:37 | 06:36<br>16:51 | 07:11<br>16:30 |
| 6                           | 07:28<br>16:44 | 07:08<br>17:21 | 06:29<br>17:55 | 06:37<br>19:30 | 05:52<br>20:03 | 05:26<br>20:32 | 05:31<br>20:38 | 05:58<br>20:14 | 06:30<br>19:27 | 07:01<br>18:35 | 06:38<br>16:50 | 07:12<br>16:30 |
| 7                           | 07:28<br>16:45 | 07:07<br>17:22 | 06:27<br>17:57 | 06:35<br>19:31 | 05:50<br>20:04 | 05:26<br>20:32 | 05:32<br>20:38 | 05:59<br>20:12 | 06:31<br>19:25 | 07:03<br>18:34 | 06:39<br>16:49 | 07:13<br>16:30 |
| 8                           | 07:28<br>16:46 | 07:06<br>17:23 | 06:26<br>17:58 | 06:33<br>19:32 | 05:49<br>20:05 | 05:26<br>20:33 | 05:33<br>20:38 | 06:00<br>20:11 | 06:32<br>19:24 | 07:04<br>18:32 | 06:40<br>16:48 | 07:14<br>16:29 |
| 9                           | 07:28<br>16:47 | 07:05<br>17:25 | 06:24<br>17:59 | 06:32<br>19:34 | 05:48<br>20:06 | 05:26<br>20:34 | 05:33<br>20:37 | 06:01<br>20:10 | 06:33<br>19:22 | 07:05<br>18:30 | 06:41<br>16:47 | 07:15<br>16:29 |
| 10                          | 07:27<br>16:48 | 07:04<br>17:26 | 06:22<br>18:00 | 06:30<br>19:35 | 05:47<br>20:07 | 05:25<br>20:34 | 05:34<br>20:37 | 06:02<br>20:09 | 06:34<br>19:20 | 07:06<br>18:29 | 06:42<br>16:45 | 07:16<br>16:29 |
| 11                          | 07:27<br>16:49 | 07:03<br>17:27 | 06:21<br>18:01 | 06:28<br>19:36 | 05:46<br>20:08 | 05:25<br>20:35 | 05:35<br>20:36 | 06:03<br>20:07 | 06:35<br>19:18 | 07:07<br>18:27 | 06:44<br>16:44 | 07:17<br>16:29 |
| 12                          | 07:27<br>16:50 | 07:01<br>17:29 | 06:19<br>18:02 | 06:27<br>19:37 | 05:45<br>20:09 | 05:25<br>20:35 | 05:35<br>20:36 | 06:04<br>20:06 | 06:36<br>19:17 | 07:08<br>18:25 | 06:45<br>16:43 | 07:18<br>16:30 |
| 13                          | 07:27<br>16:51 | 07:00<br>17:30 | 06:17<br>18:04 | 06:25<br>19:38 | 05:44<br>20:10 | 05:25<br>20:36 | 05:36<br>20:35 | 06:05<br>20:05 | 06:37<br>19:15 | 07:09<br>18:24 | 06:46<br>16:42 | 07:18<br>16:30 |
| 14                          | 07:26<br>16:52 | 06:59<br>17:31 | 06:16<br>18:05 | 06:23<br>19:39 | 05:42<br>20:12 | 05:25<br>20:36 | 05:37<br>20:35 | 06:06<br>20:03 | 06:38<br>19:13 | 07:10<br>18:22 | 06:47<br>16:42 | 07:19<br>16:30 |
| 15                          | 07:26<br>16:54 | 06:57<br>17:32 | 06:14<br>18:06 | 06:22<br>19:40 | 05:41<br>20:13 | 05:25<br>20:37 | 05:38<br>20:34 | 06:07<br>20:02 | 06:39<br>19:12 | 07:11<br>18:21 | 06:49<br>16:41 | 07:20<br>16:30 |
| 16                          | 07:25<br>16:55 | 06:56<br>17:34 | 06:12<br>18:07 | 06:20<br>19:41 | 05:40<br>20:14 | 05:25<br>20:37 | 05:39<br>20:34 | 06:09<br>20:00 | 06:40<br>19:10 | 07:13<br>18:19 | 06:50<br>16:40 | 07:21<br>16:30 |
| 17                          | 07:25<br>16:56 | 06:55<br>17:35 | 06:11<br>18:08 | 06:19<br>19:42 | 05:39<br>20:15 | 05:25<br>20:37 | 05:39<br>20:33 | 06:10<br>19:59 | 06:41<br>19:08 | 07:14<br>18:17 | 06:51<br>16:39 | 07:21<br>16:31 |
| 18                          | 07:24<br>16:57 | 06:53<br>17:36 | 06:09<br>18:09 | 06:17<br>19:43 | 05:38<br>20:16 | 05:25<br>20:38 | 05:40<br>20:32 | 06:11<br>19:57 | 06:42<br>19:06 | 07:15<br>18:16 | 06:52<br>16:38 | 07:22<br>16:31 |
| 19                          | 07:24<br>16:58 | 06:52<br>17:37 | 06:07<br>18:10 | 06:16<br>19:45 | 05:38<br>20:17 | 05:25<br>20:38 | 05:41<br>20:32 | 06:12<br>19:56 | 06:44<br>19:05 | 07:16<br>18:14 | 06:53<br>16:37 | 07:23<br>16:31 |
| 20                          | 07:23<br>16:59 | 06:50<br>17:39 | 06:05<br>18:11 | 06:14<br>19:46 | 05:37<br>20:17 | 05:25<br>20:38 | 05:42<br>20:31 | 06:13<br>19:54 | 06:45<br>19:03 | 07:17<br>18:13 | 06:55<br>16:37 | 07:23<br>16:32 |
| 21                          | 07:23<br>17:01 | 06:49<br>17:40 | 06:04<br>18:13 | 06:12<br>19:47 | 05:36<br>20:18 | 05:25<br>20:39 | 05:43<br>20:30 | 06:14<br>19:53 | 06:46<br>19:01 | 07:18<br>18:11 | 06:56<br>16:36 | 07:24<br>16:32 |
| 22                          | 07:22<br>17:02 | 06:47<br>17:41 | 06:02<br>18:14 | 06:11<br>19:48 | 05:35<br>20:19 | 05:25<br>20:39 | 05:44<br>20:29 | 06:15<br>19:51 | 06:47<br>18:59 | 07:19<br>18:10 | 06:57<br>16:35 | 07:24<br>16:33 |
| 23                          | 07:21<br>17:03 | 06:46<br>17:42 | 06:00<br>18:15 | 06:09<br>19:49 | 05:34<br>20:20 | 05:26<br>20:39 | 05:45<br>20:28 | 06:16<br>19:50 | 06:48<br>18:58 | 07:21<br>18:08 | 06:58<br>16:35 | 07:25<br>16:33 |
| 24                          | 07:21<br>17:04 | 06:45<br>17:44 | 05:59<br>18:16 | 06:08<br>19:50 | 05:33<br>20:21 | 05:26<br>20:39 | 05:46<br>20:27 | 06:17<br>19:48 | 06:49<br>18:56 | 07:22<br>18:07 | 06:59<br>16:34 | 07:25<br>16:34 |
| 25                          | 07:20<br>17:06 | 06:43<br>17:45 | 05:57<br>18:17 | 06:07<br>19:51 | 05:33<br>20:22 | 05:26<br>20:39 | 05:46<br>20:27 | 06:18<br>19:47 | 06:50<br>18:54 | 06:23<br>17:05 | 07:00<br>16:33 | 07:26<br>16:34 |
| 26                          | 07:19<br>17:07 | 06:41<br>17:46 | 05:55<br>18:18 | 06:05<br>19:52 | 05:32<br>20:23 | 05:27<br>20:39 | 05:47<br>20:26 | 06:19<br>19:45 | 06:51<br>18:52 | 06:24<br>17:04 | 07:02<br>16:33 | 07:26<br>16:35 |
| 27                          | 07:18<br>17:08 | 06:40<br>17:47 | 05:53<br>18:19 | 06:04<br>19:53 | 05:31<br>20:24 | 05:27<br>20:39 | 05:48<br>20:25 | 06:20<br>19:44 | 06:52<br>18:51 | 06:25<br>17:03 | 07:03<br>16:32 | 07:27<br>16:36 |
| 28                          | 07:17<br>17:09 | 06:38<br>17:48 | 05:52<br>18:20 | 06:02<br>19:54 | 05:31<br>20:25 | 05:27<br>20:39 | 05:49<br>20:24 | 06:21<br>19:42 | 06:53<br>18:49 | 06:27<br>17:01 | 07:04<br>16:32 | 07:27<br>16:36 |
| 29                          | 07:17<br>17:11 | 06:37<br>17:48 | 05:51<br>18:21 | 06:01<br>19:55 | 05:30<br>20:26 | 05:28<br>20:39 | 05:50<br>20:23 | 06:22<br>19:40 | 06:54<br>18:47 | 06:28<br>17:00 | 07:05<br>16:31 | 07:27<br>16:37 |
| 30                          | 07:16<br>17:12 | 06:36<br>17:49 | 05:50<br>18:22 | 05:59<br>19:56 | 05:29<br>20:27 | 05:28<br>20:39 | 05:51<br>20:22 | 06:23<br>19:39 | 06:55<br>18:45 | 06:29<br>16:59 | 07:06<br>16:31 | 07:28<br>16:38 |
| 31                          | 07:15<br>17:13 | 06:35<br>17:50 | 05:49<br>18:23 | 05:58<br>19:57 | 05:28<br>20:28 | 05:29<br>20:39 | 05:52<br>20:21 | 06:24<br>19:37 | 06:56<br>16:57 | 06:30<br>16:57 | 07:07<br>16:31 | 07:29<br>16:39 |
| Potential sun hours         | 295            | 296            | 369            | 400            | 450            | 455            | 461            | 429            | 375            | 344            | 296            | 285            |
| Sum of minutes with flicker | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |

Table layout: For each day in each month the following matrix apply

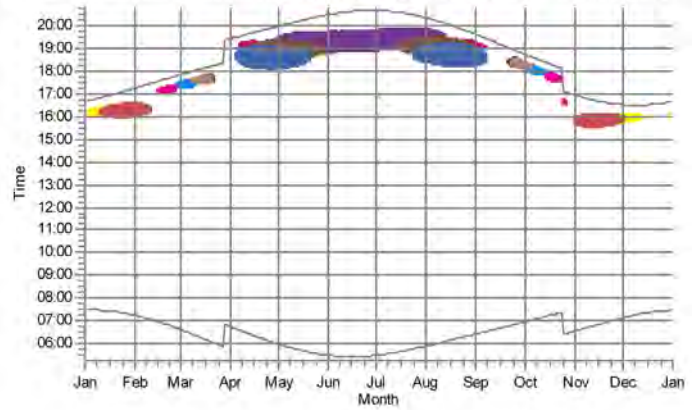
|              |                  |                                 |                                |                      |
|--------------|------------------|---------------------------------|--------------------------------|----------------------|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |
|              | Sun set (hh:mm)  | First time (hh:mm) with flicker | Last time (hh:mm) with flicker | Minutes with flicker |

## SHADOW - Calendar per WTG, graphical

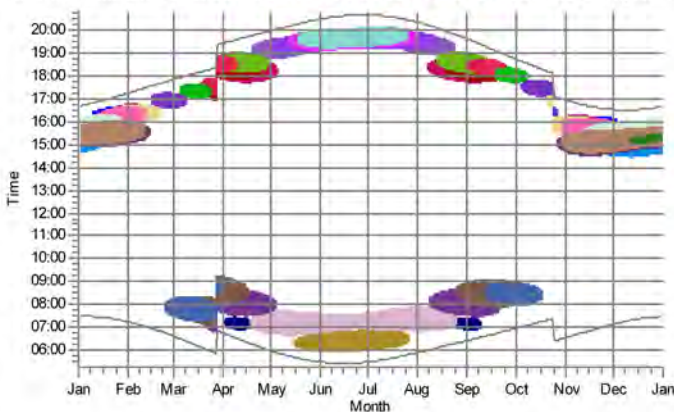
LAR01: Siemens Gamesa SG 6.0-170 6200 170.0 IO! hub: 165,0 m (TOT: :)



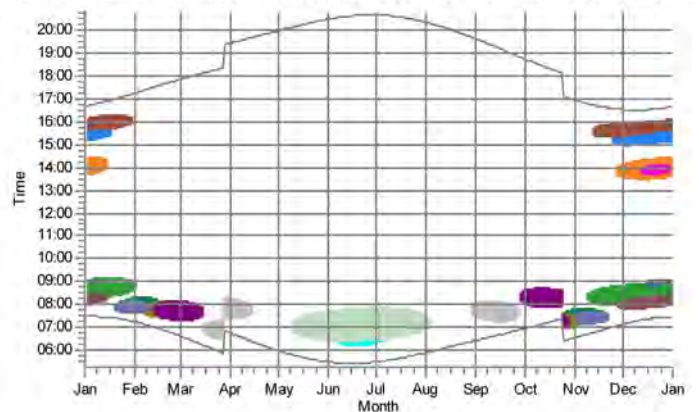
LAR02: Siemens Gamesa SG 6.0-170 6200 170.0 IO! hub: 165,0 m (TOT: :)



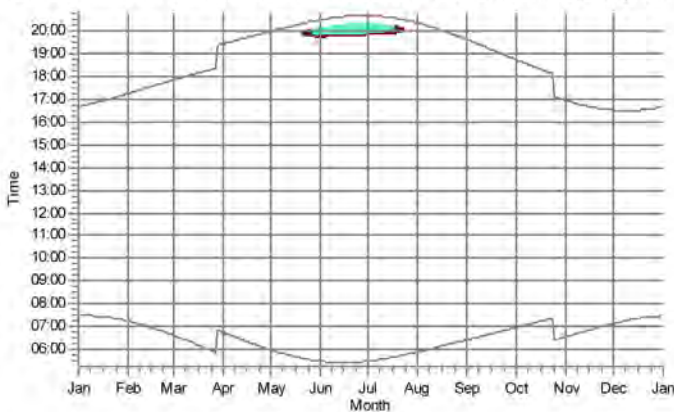
LAR03: Siemens Gamesa SG 6.0-170 6200 170.0 IO! hub: 165,0 m (TOT: :)



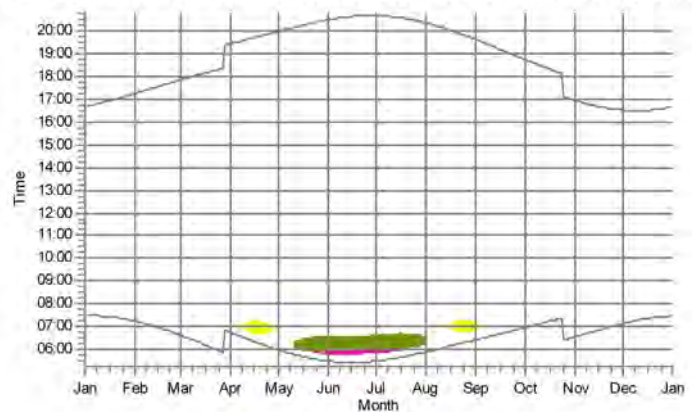
LAR04: Siemens Gamesa SG 6.0-170 6200 170.0 IO! hub: 165,0 m (TOT: :)



LAR05: Siemens Gamesa SG 6.0-170 6200 170.0 IO! hub: 165,0 m (TOT: :)



LAR06: Siemens Gamesa SG 6.0-170 6200 170.0 IO! hub: 165,0 m (TOT: :)

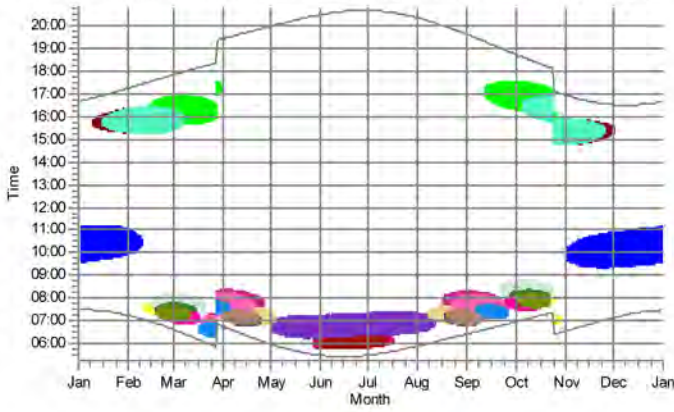


Shadow receptors

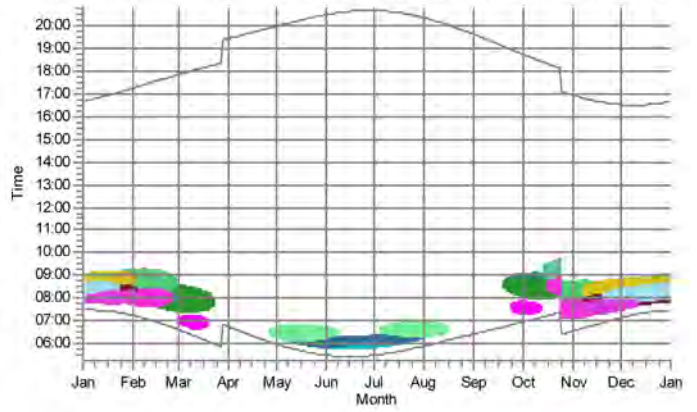
|  |  |   |   |   |   |
|--|--|---|---|---|---|
| R10: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (3)   | R23: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (17)  | R36: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (41) | R49: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (55) | R62: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (69) | R75: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (83) |
| R100: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (78) | R25: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (18)  | R38: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (42) | R51: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (45) | R64: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (58) | R77: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (71) |
| R101: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (79) | R26: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (19)  | R39: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (43) | R52: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (46) | R65: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (59) | R78: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (72) |
| R109: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (81) | R24b: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (20) | R37: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (44) | R50: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (47) | R63: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (56) | R76: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (70) |
| R11: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (4)   | R27: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (21)  | R40: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (48) | R53: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (50) | R66: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (60) | R79: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (73) |
| R110: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (62) | R31: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (23)  | R42: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (52) | R54: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (53) | R67: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (61) | R80: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (64) |
| R112: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (83) | R40: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (31)  | R43: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (54) | R55: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (54) | R68: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (62) | R89: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (77) |
| R12: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (7)   | R44: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (34)  | R45: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (35) | R56: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (58) | R69: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (63) | R90: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (73) |
| R13: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (8)   | R45: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (35)  | R46: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (36) | R57: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (59) | R70: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (64) | R91: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (74) |
| R14: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (9)   | R46: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (36)  | R47: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (37) | R58: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (60) | R71: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (65) | R92: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (75) |
| R15: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (10)  | R50: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (39)  | R48: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (38) | R59: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (61) | R72: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (66) | R93: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (76) |
| R16: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (11)  | R51: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (40)  | R49: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (39) | R60: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (62) | R73: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (67) | R94: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (77) |
|  |  | R52: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (41) | R61: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (63) | R74: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (68) |   |
|  |  | R53: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (42) | R62: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (64) | R75: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (69) |   |
|  |  | R54: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (43) | R63: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (65) | R76: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (70) |   |
|  |  | R55: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (44) | R64: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (66) | R77: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (71) |   |
|  |  | R56: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (45) | R65: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (67) | R78: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (72) |   |
|  |  | R57: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (46) | R66: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (68) | R79: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (73) |   |
|  |  | R58: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (47) | R67: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (69) |   |   |
|  |  | R59: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (48) | R68: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (70) |   |   |
|  |  | R60: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (49) | R69: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (71) |   |   |
|  |  | R61: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (50) | R70: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (72) |   |   |
|  |  | R62: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (51) | R71: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (73) |   |   |
|  |  |   | R72: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (74) |   |   |
|  |  |   | R73: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (75) |   |   |
|  |  |   | R74: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (76) |   |   |
|  |  |   | R75: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (77) |   |   |

## SHADOW - Calendar per WTG, graphical

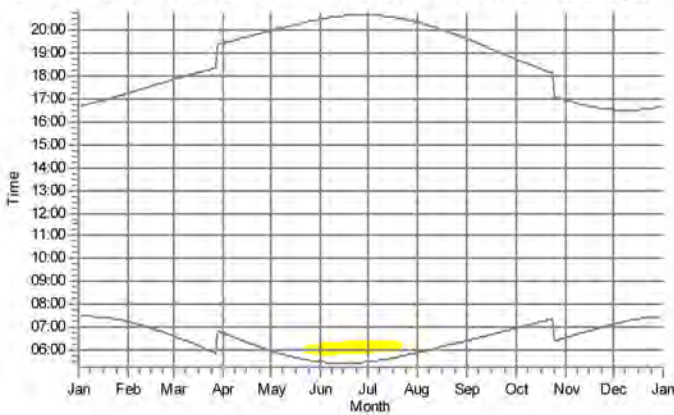
LAR07: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: :)



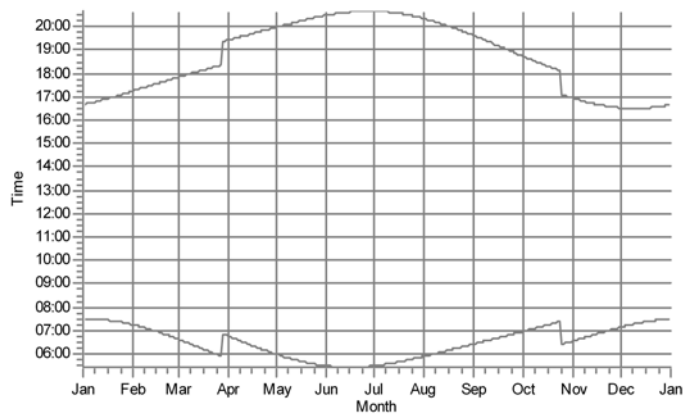
LAR08: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: :)



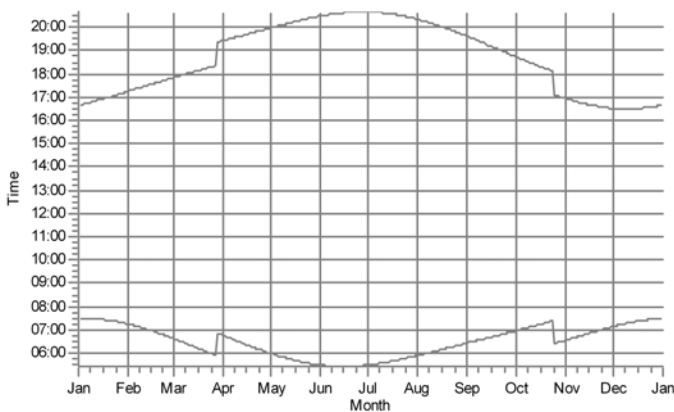
LAR09: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: :)



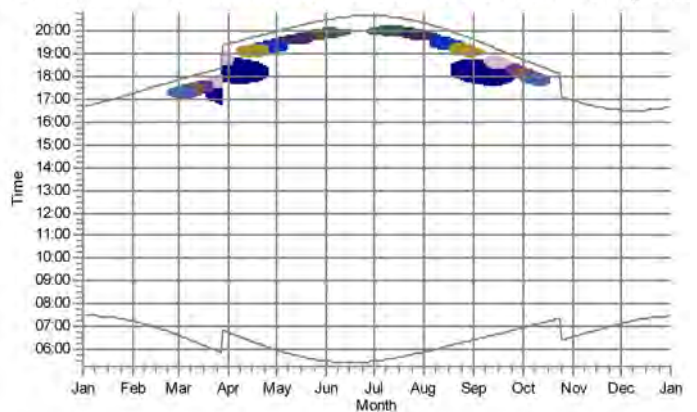
LAR10: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 135,0 m (TOT: :)



LAR11: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: :)



LAR12: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: :)



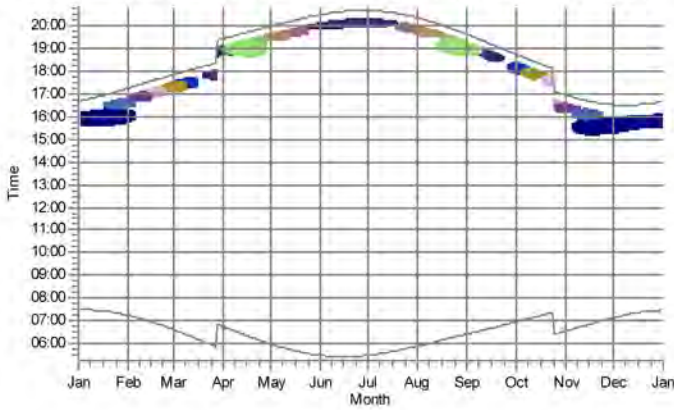
Shadow receptors

|  |  |   |   |   |
|--|--|---|---|---|
| R100: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (18) | R26: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (19)  | R40: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (23) | R70: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (55) | R82: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (67) |
| R101: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (19) | R31: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (23)  | R49: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (45) | R71: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (54) | R85: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (68) |
| R109: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (81) | R33: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (24)  | R61: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (46) | R72: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (57) | R88: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (71) |
| R110: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (82) | R34: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (25)  | R65: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (50) | R73: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (58) | R89: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (72) |
| R112: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (83) | R36: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (27)  | R66: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (51) | R74: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (59) | R90: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (73) |
| R113: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (84) | R37: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (28)  | R67: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (52) | R76: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (60) | R91: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (74) |
| R22: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (17)  | R37b: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (29) | R68: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (53) | R77: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (61) | R92: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (75) |
| R25: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (18)  | R38: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (30)  | R69: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (54) | R78: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (62) | R93: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (76) |

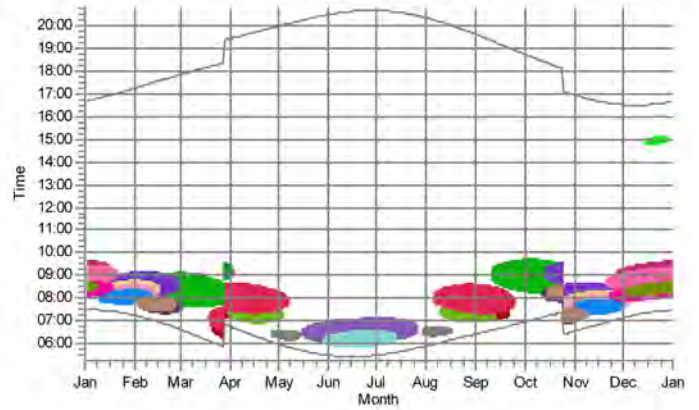


## SHADOW - Calendar per WTG, graphical

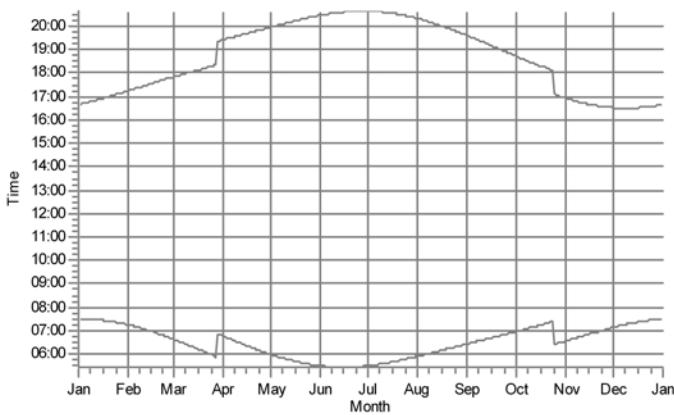
LAR13: Siemens Gamesa SG 6.0-170 6200 170.0 IO! hub: 165,0 m (TOT: :)



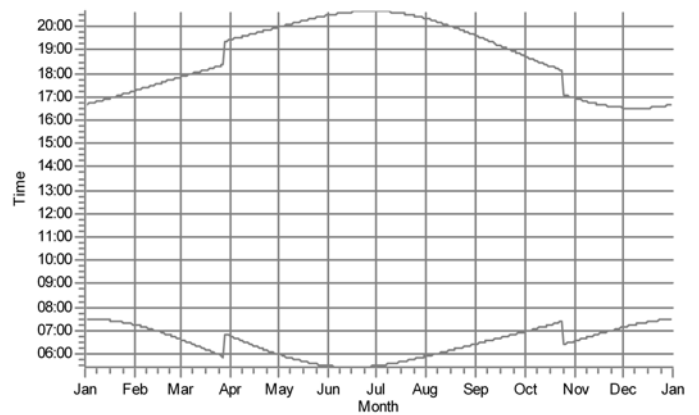
LAR14: Siemens Gamesa SG 6.0-170 6200 170.0 IO! hub: 165,0 m (TOT: :)



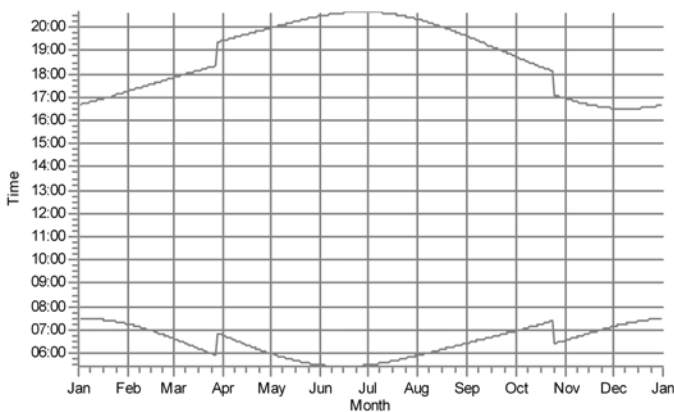
15: VESTAS V90-2.0 GridStreamer 2000 90.0 IO! hub: 80,0 m (TOT: 125,0)



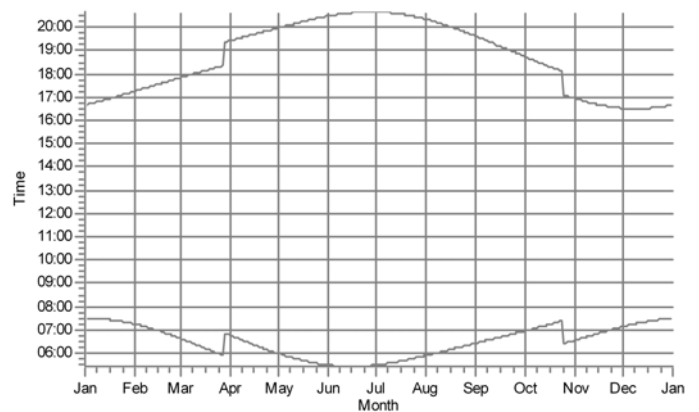
16: VESTAS V90-2.0 GridStreamer 2000 90.0 IO! hub: 80,0 m (TOT: 125,0)



17: REpower MM 92 2050 92.5 IO! hub: 80,0 m (TOT: 126,3 m) (22)



18: REpower MM 92 2050 92.5 IO! hub: 80,0 m (TOT: 126,3 m) (23)

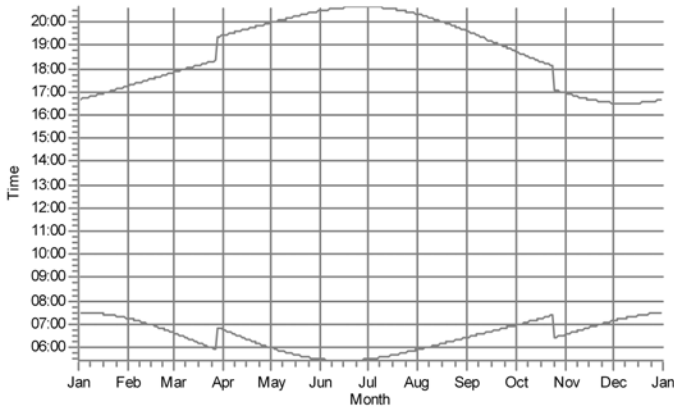


Shadow receptors

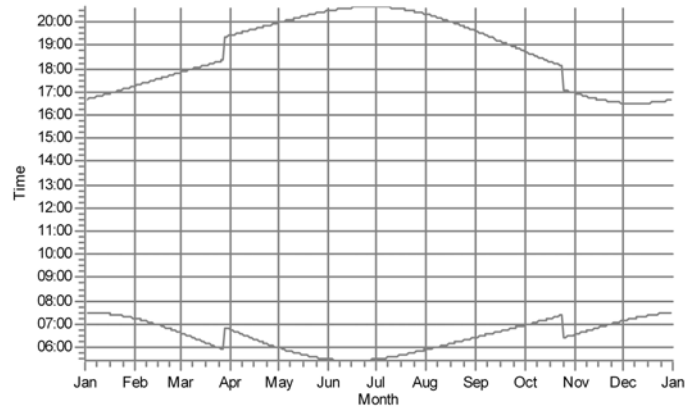
|  |   |   |   |   |
|--|---|---|---|---|
| R100: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (18) | R60: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (45) | R69: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (54) | R80: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (64) | R89: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (73) |
| R101: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (80) | R61: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (46) | R70: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (55) | R81: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (65) | R90: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (74) |
| R110: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (82) | R62: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (47) | R71: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (56) | R82: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (66) | R91: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (75) |
| R113: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (84) | R63: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (48) | R72: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (57) | R83: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (67) | R92: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (76) |
| R64: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (49)  | R64: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (49) | R73: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (58) | R84: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (68) | R93: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (77) |
| R54: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (43)  | R65: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (50) | R74: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (59) | R85: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (69) |   |
| R55: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (43)  | R66: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (51) | R75: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (60) | R86: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (70) |   |
| R59: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (44)  | R67: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (52) | R76: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (61) | R87: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (71) |   |
|  | R68: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (53) | R77: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (62) | R88: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (72) |   |
|  |   | R78: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (63) |   |   |

### SHADOW - Calendar per WTG, graphical

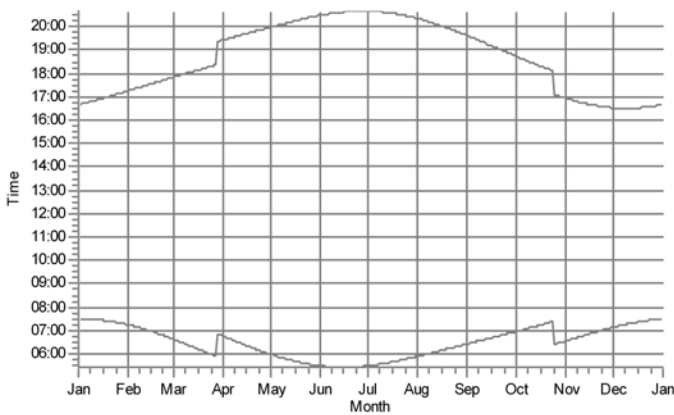
19: REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (24)



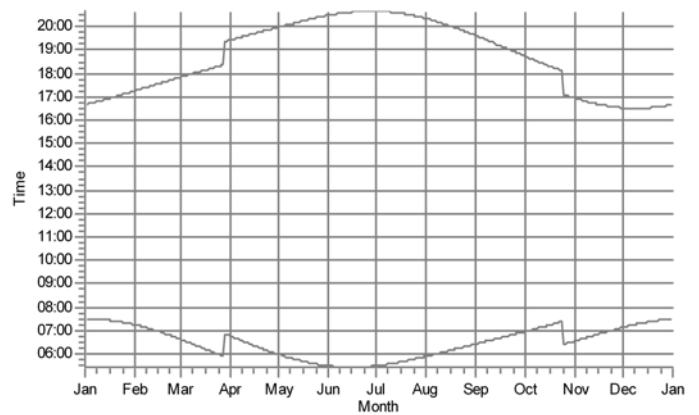
20: REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (25)



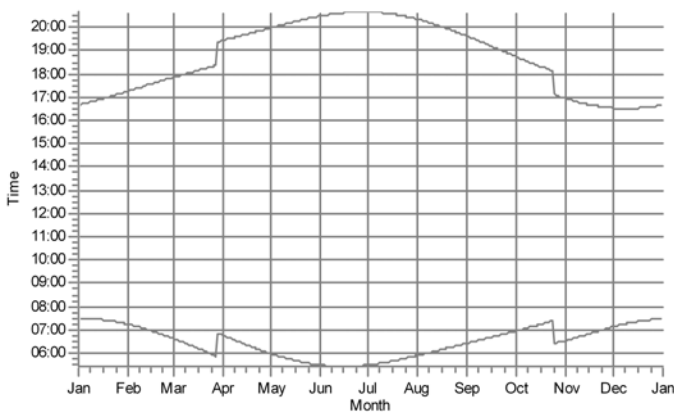
21: REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (26)



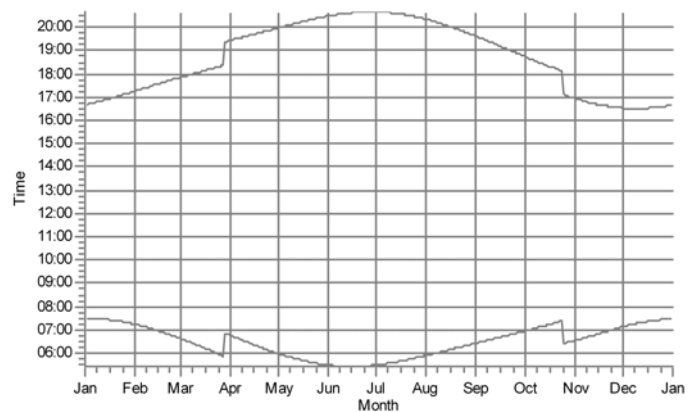
22: REpower MM 92 2050 92.5 !O! hub: 80,0 m (TOT: 126,3 m) (27)



23: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (28)



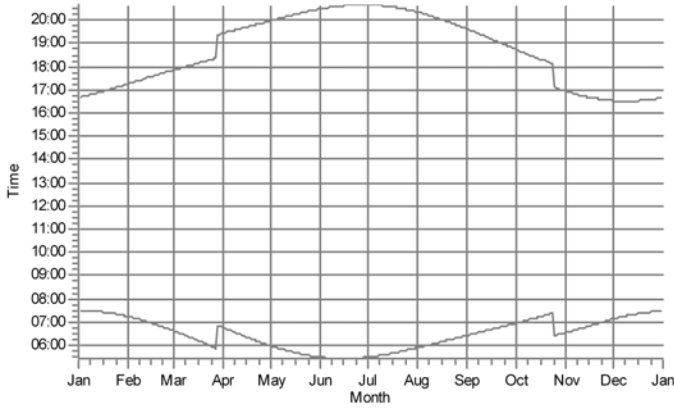
24: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,0 m) (29)



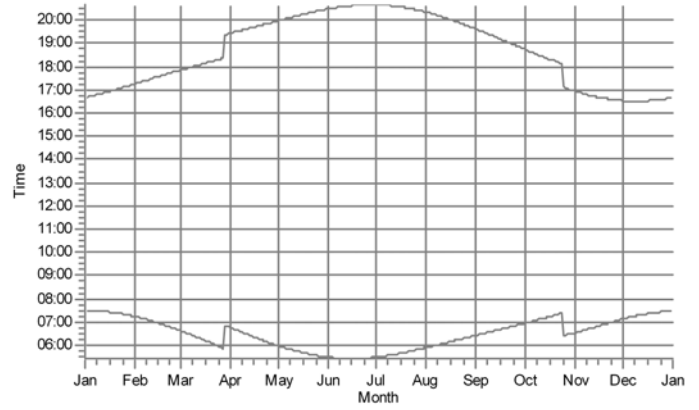
Shadow receptors

### SHADOW - Calendar per WTG, graphical

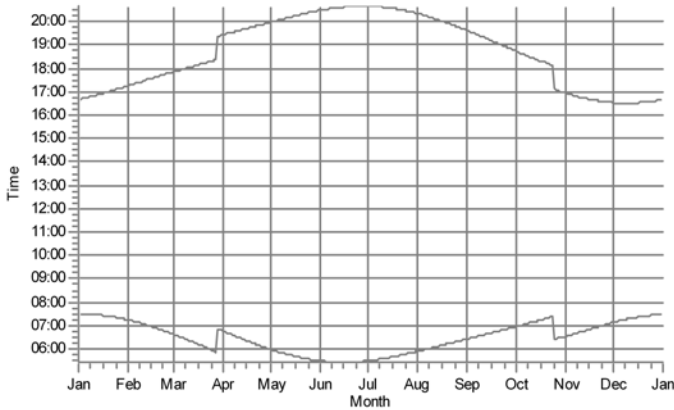
25: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



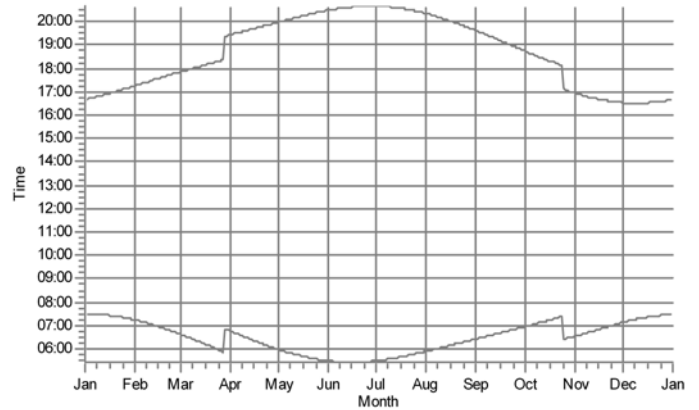
26: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



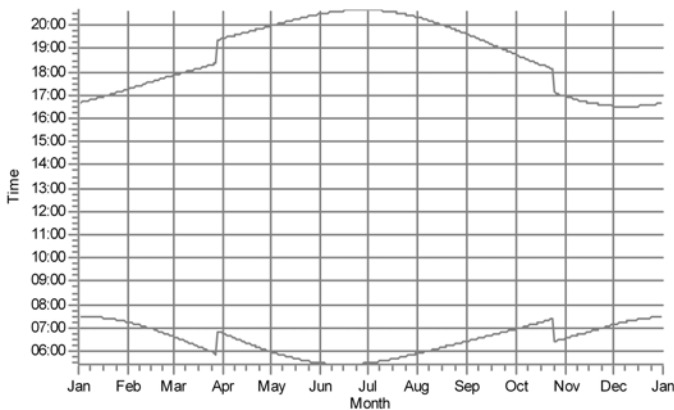
27: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



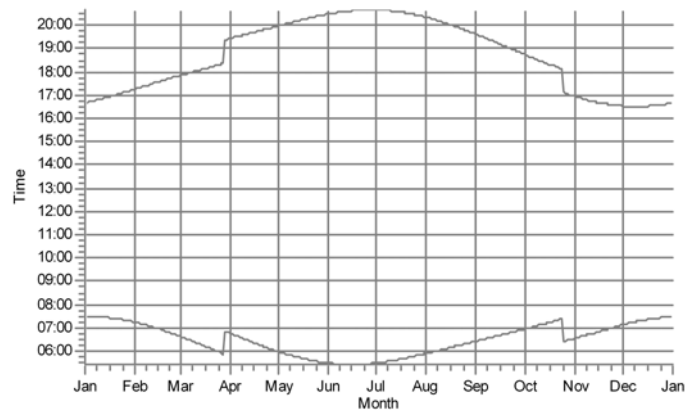
28: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



29: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



30: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C

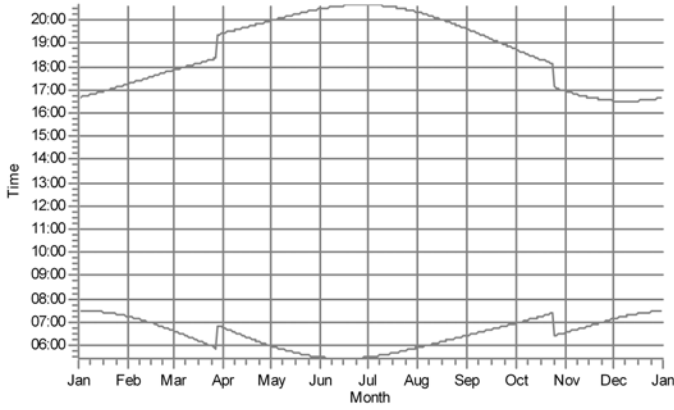


Shadow receptors

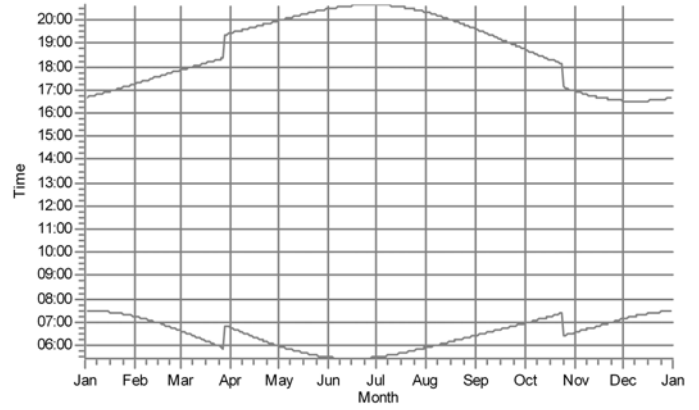


## SHADOW - Calendar per WTG, graphical

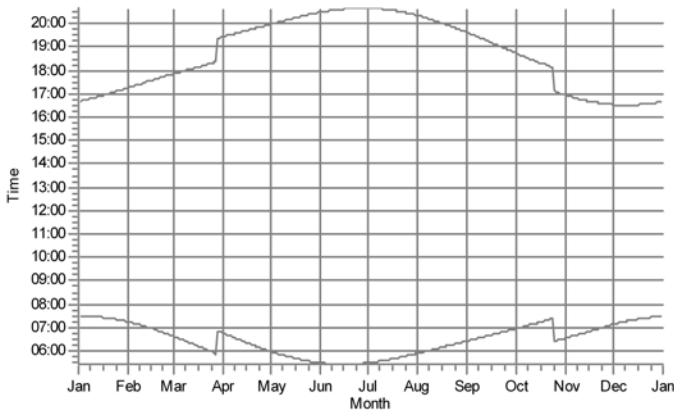
31: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



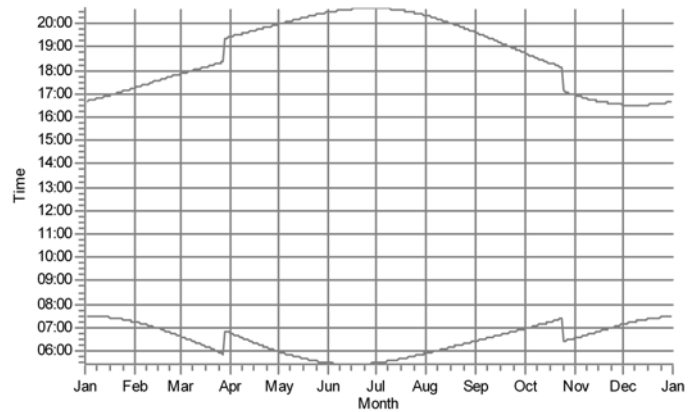
32: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



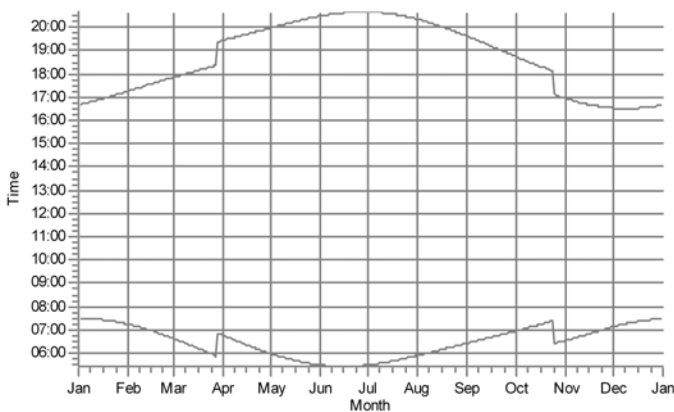
33: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



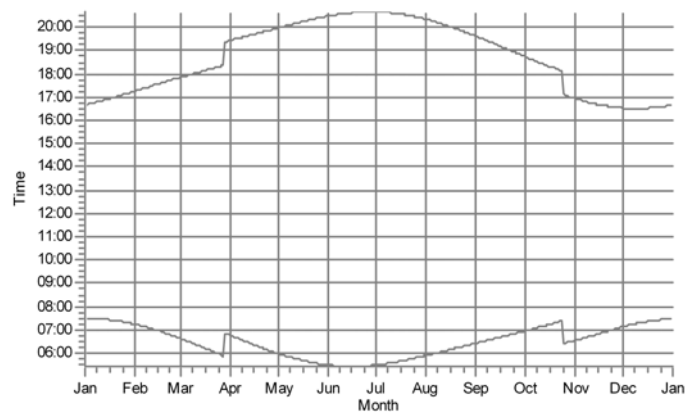
34: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



35: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



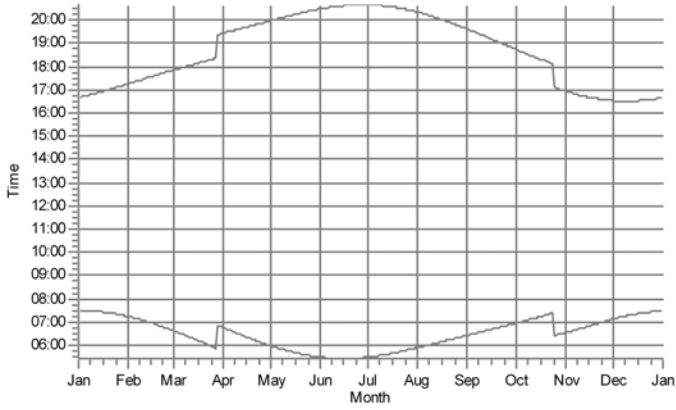
36: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



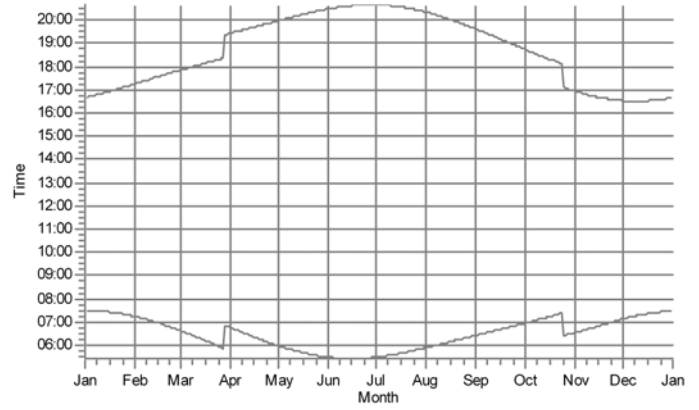
Shadow receptors

### SHADOW - Calendar per WTG, graphical

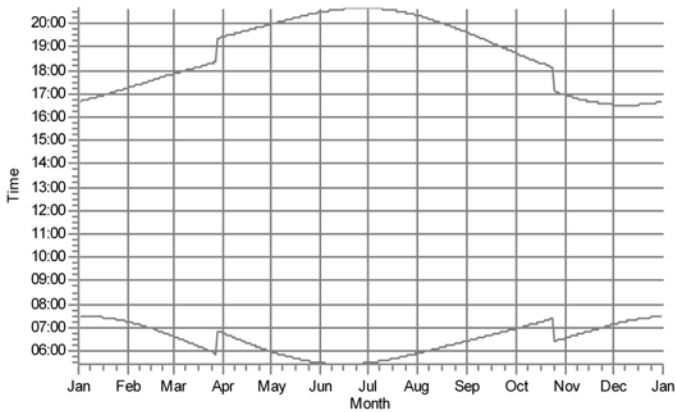
37: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



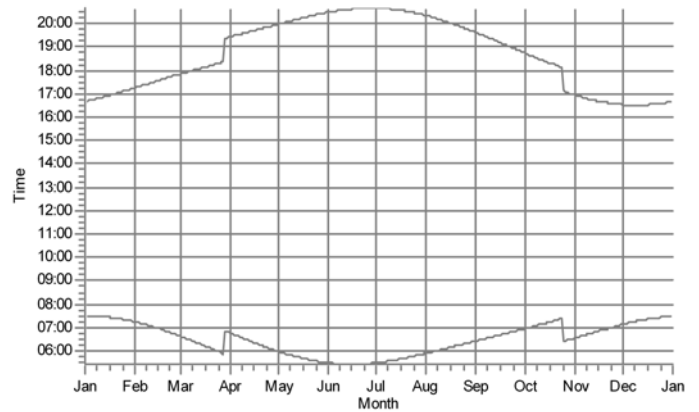
38: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



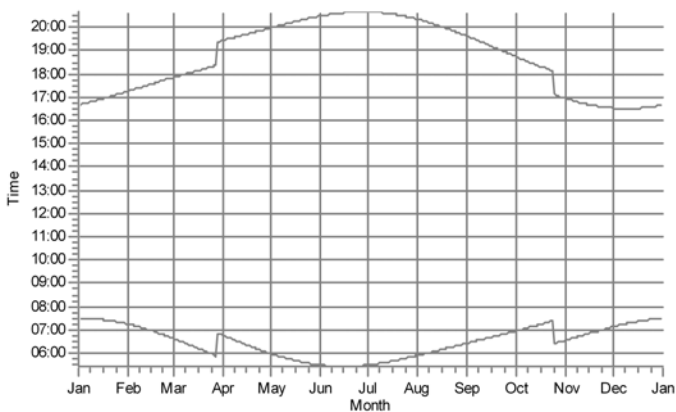
39: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



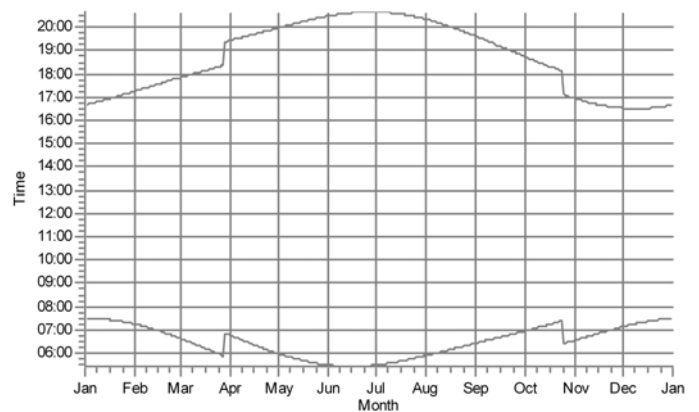
40: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



41: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



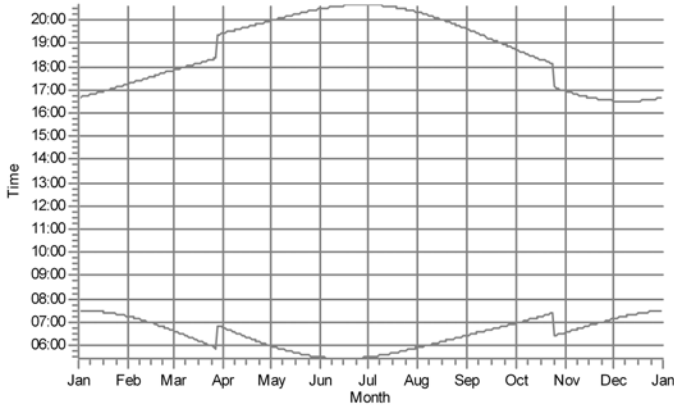
42: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



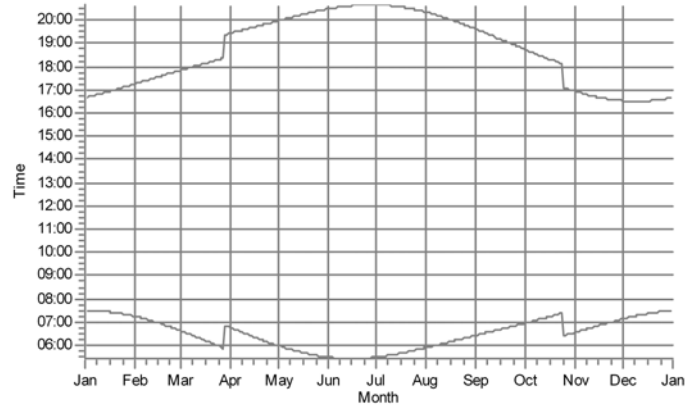
Shadow receptors

### SHADOW - Calendar per WTG, graphical

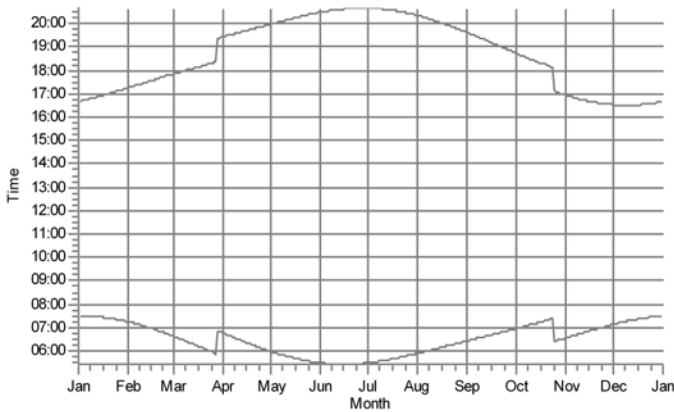
43: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



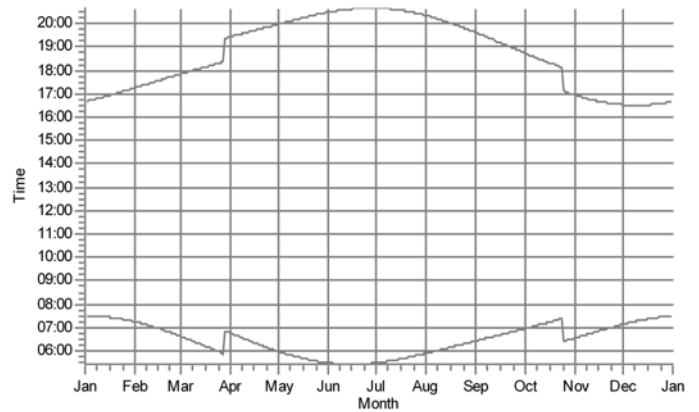
44: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



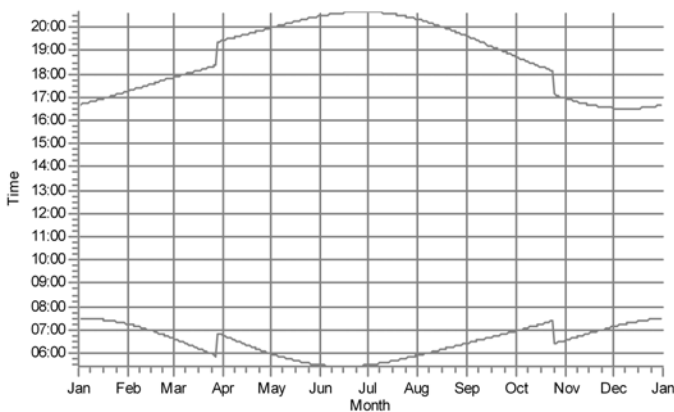
45: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



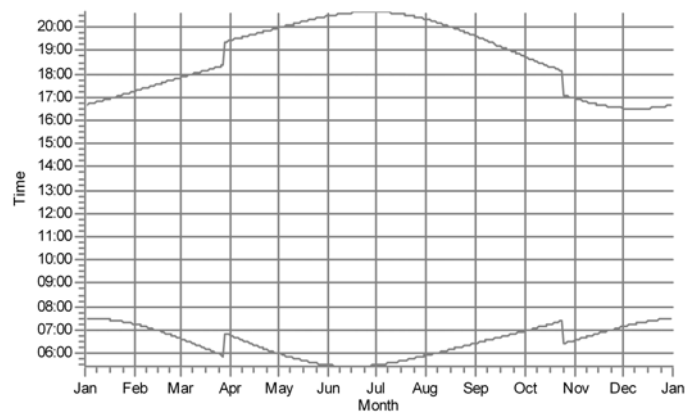
46: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



47: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



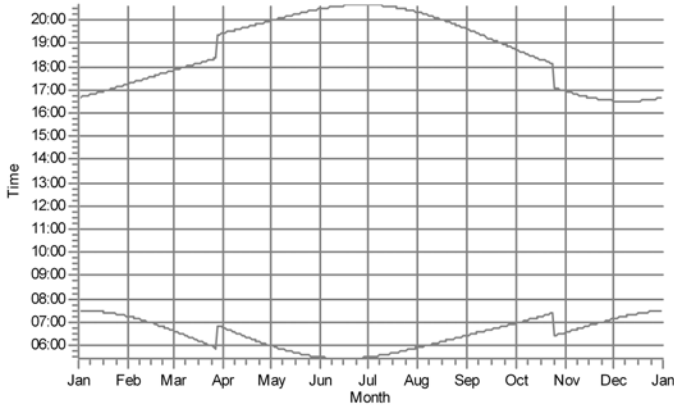
48: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



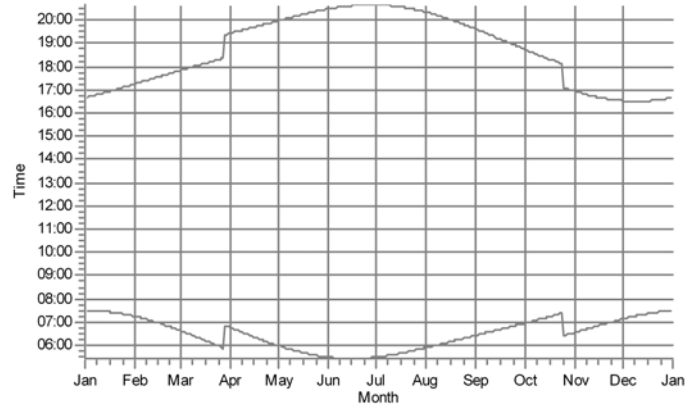
Shadow receptors

### SHADOW - Calendar per WTG, graphical

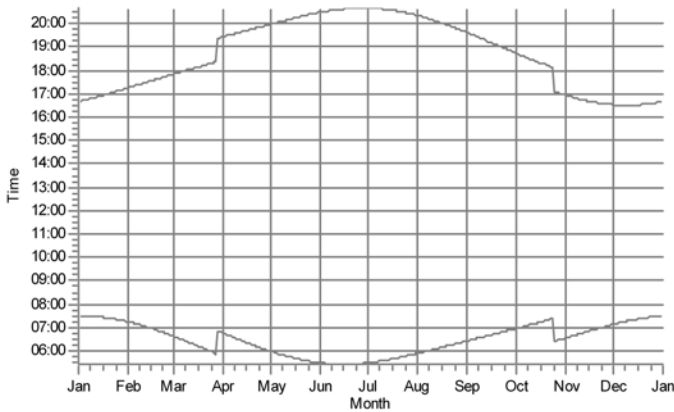
49: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



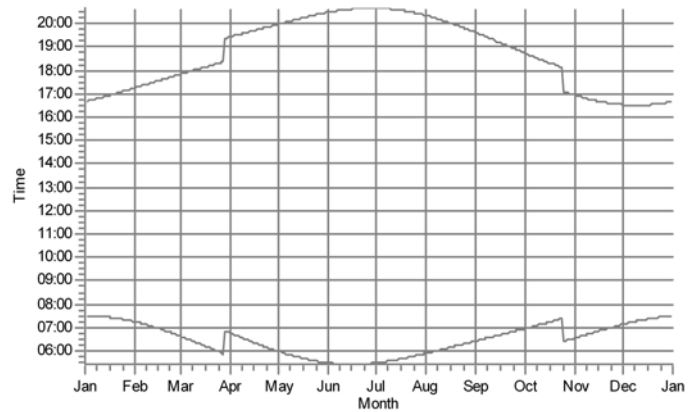
50: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



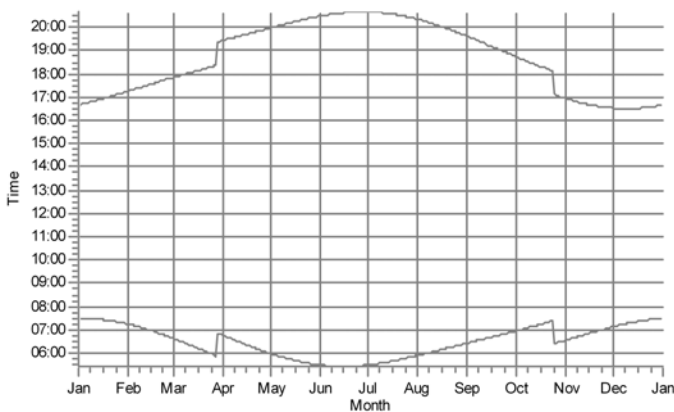
51: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



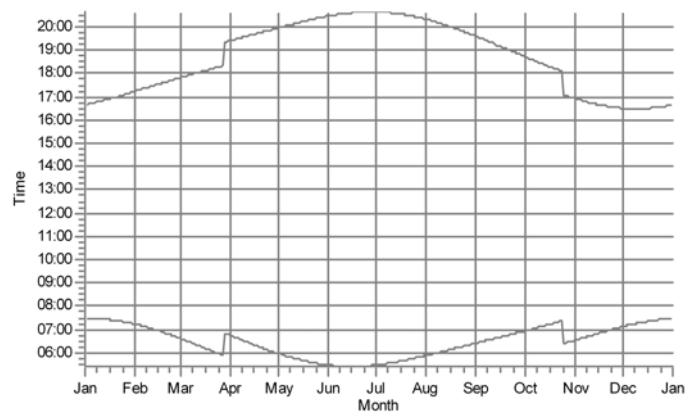
52: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



53: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



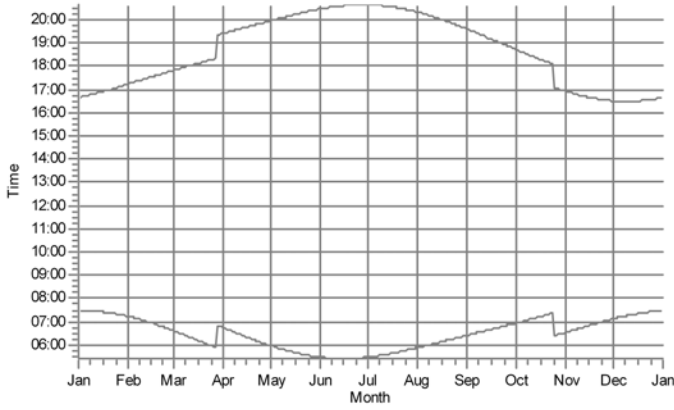
54: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



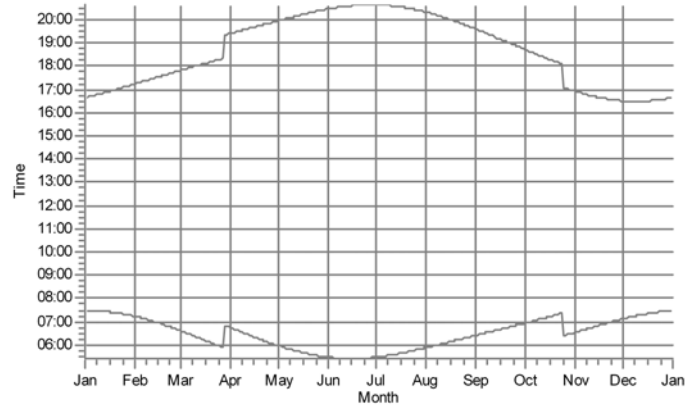
Shadow receptors

## SHADOW - Calendar per WTG, graphical

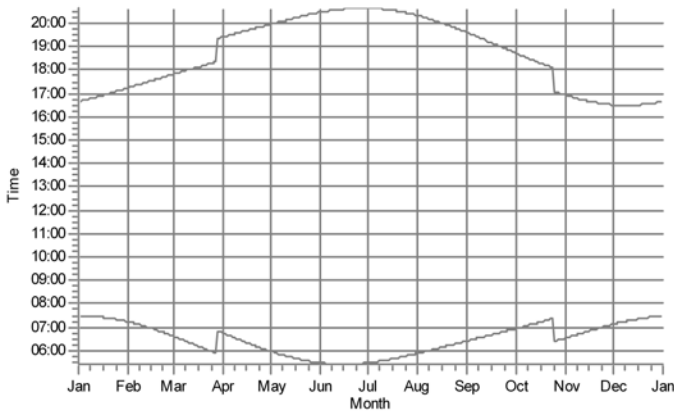
55: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



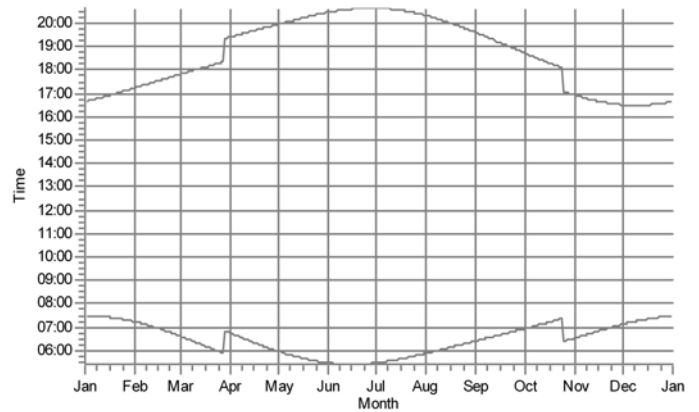
56: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



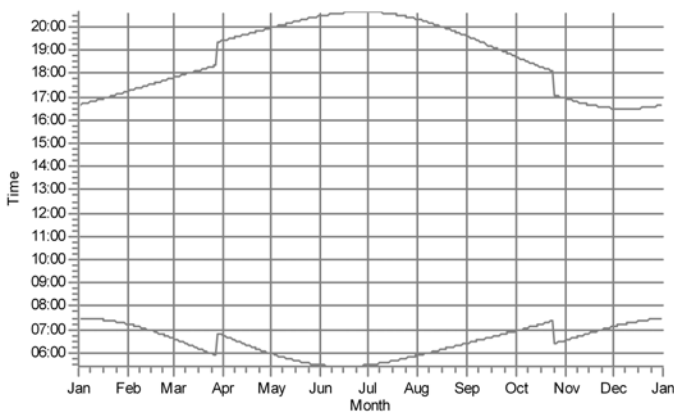
57: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



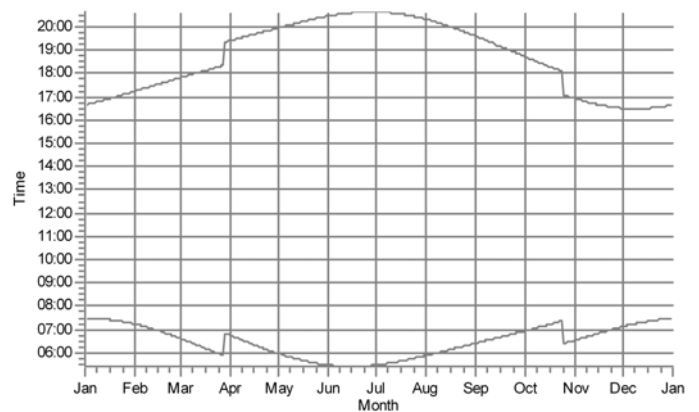
58: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



59: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



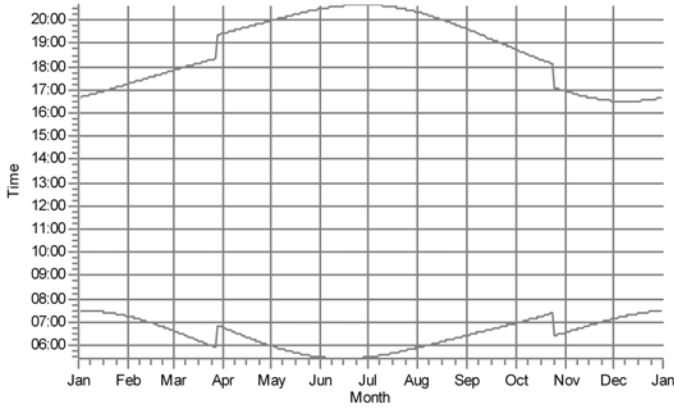
60: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



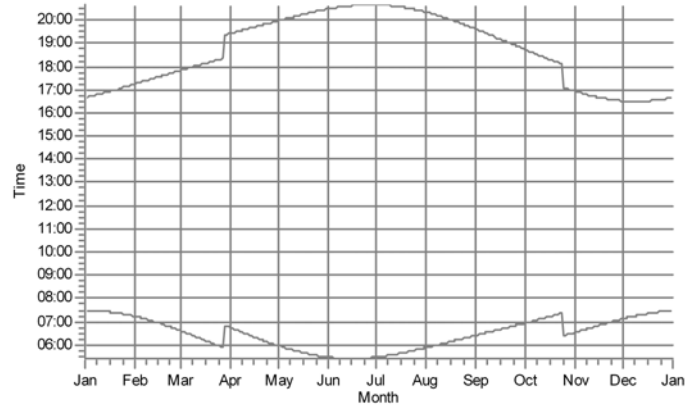
Shadow receptors

## SHADOW - Calendar per WTG, graphical

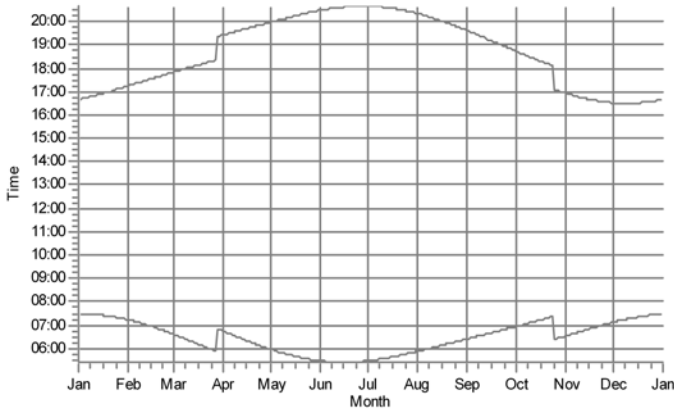
61: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



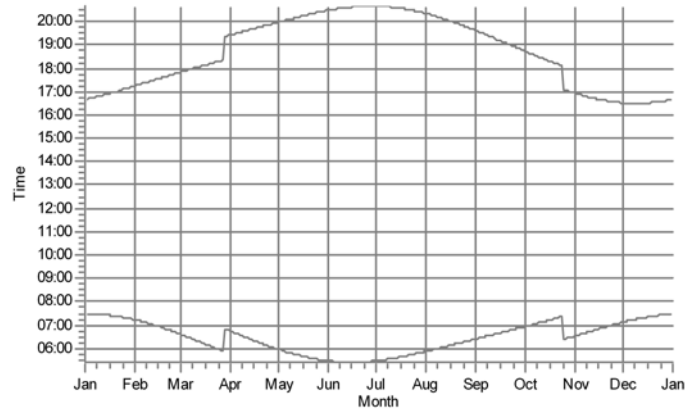
62: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



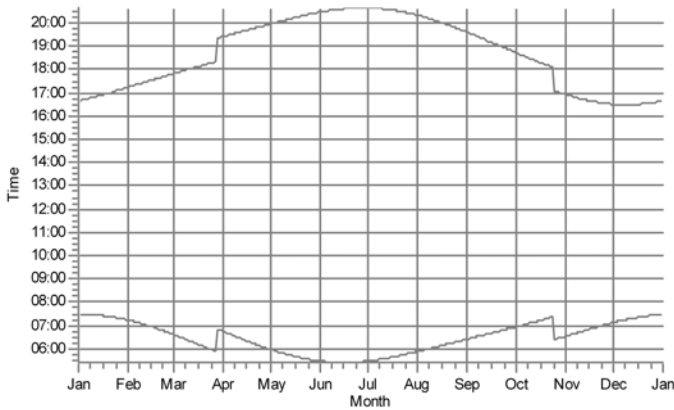
63: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



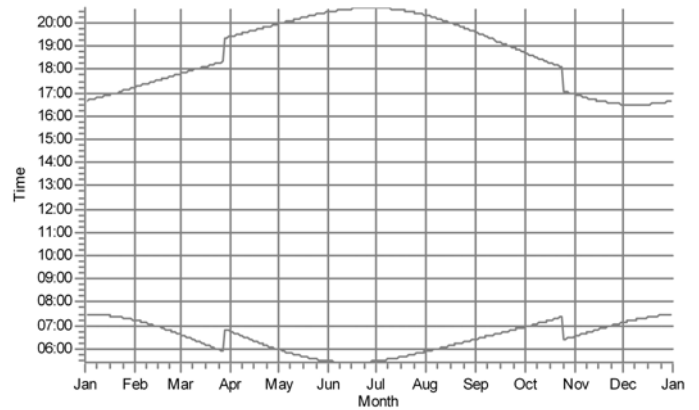
64: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



65: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



66: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C

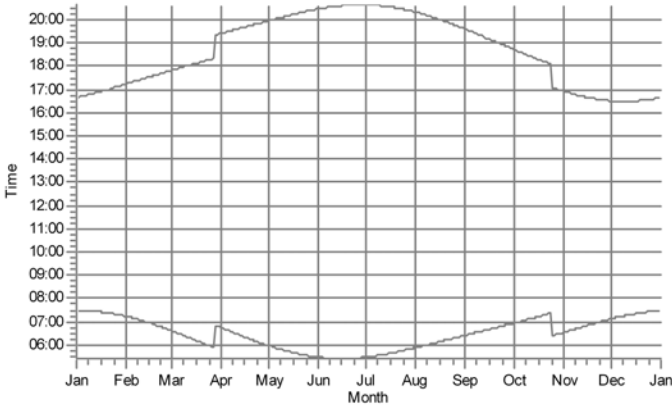


Shadow receptors

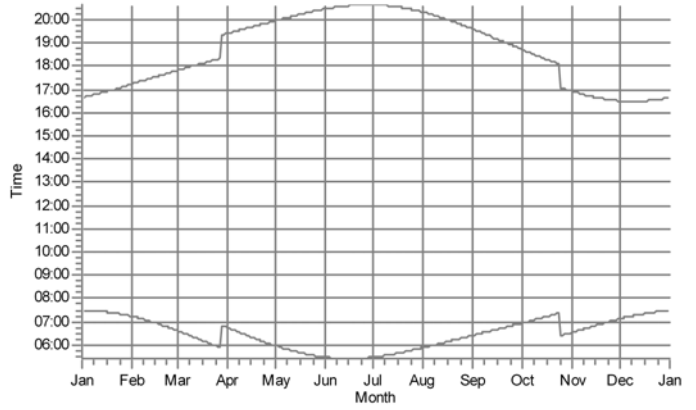


### SHADOW - Calendar per WTG, graphical

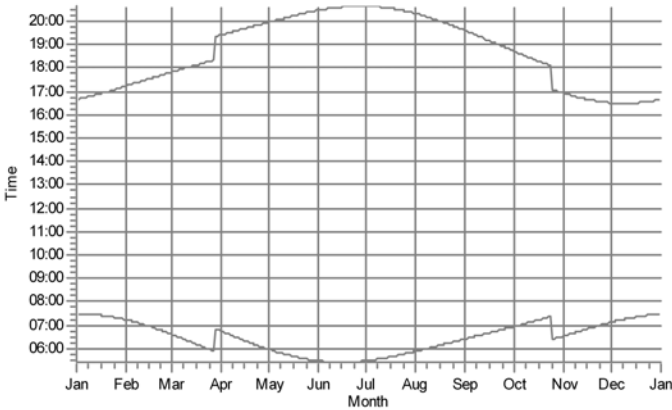
67: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



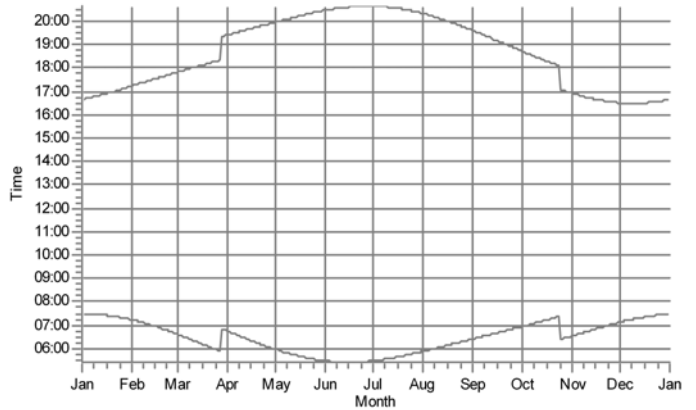
68: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



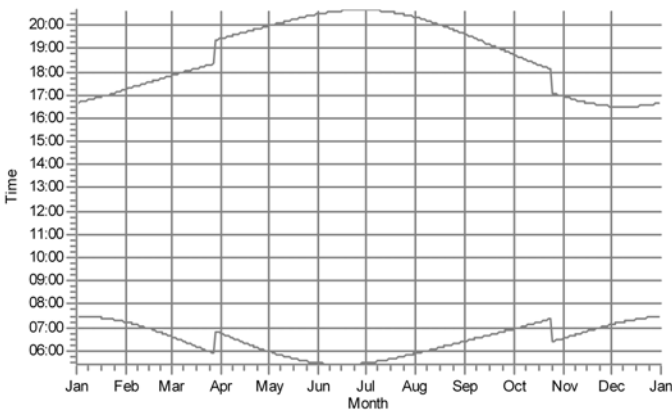
69: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



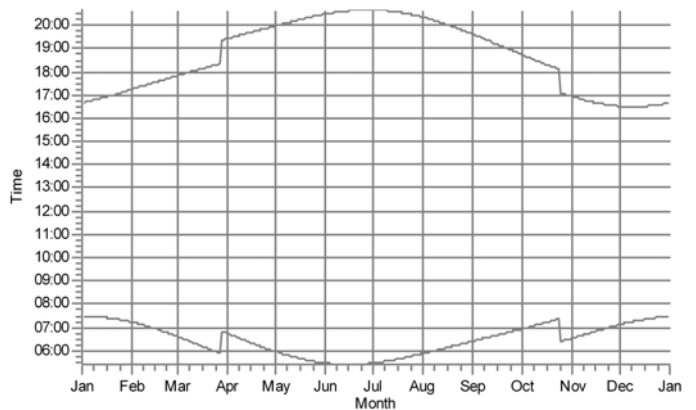
70: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



71: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



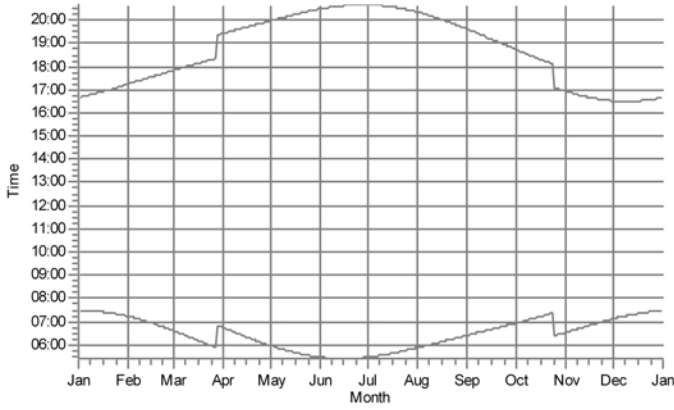
72: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



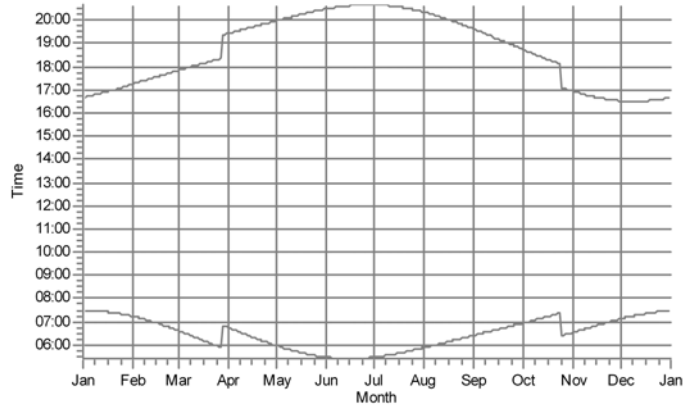
Shadow receptors

### SHADOW - Calendar per WTG, graphical

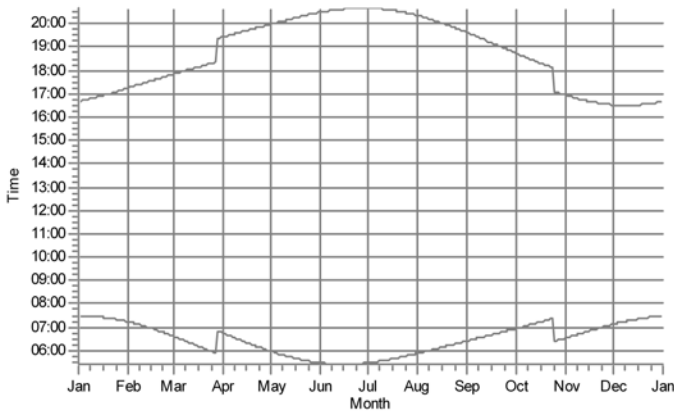
73: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



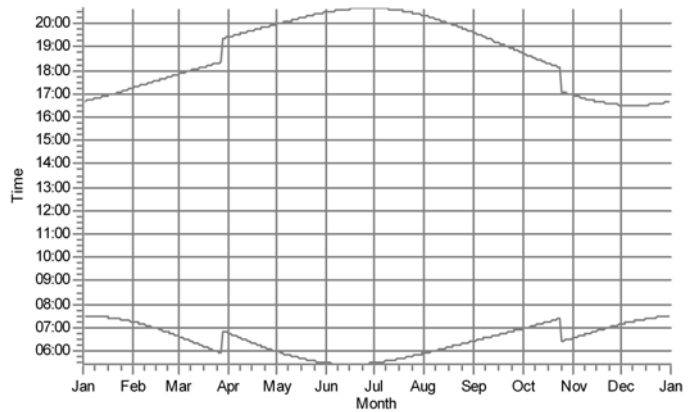
74: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



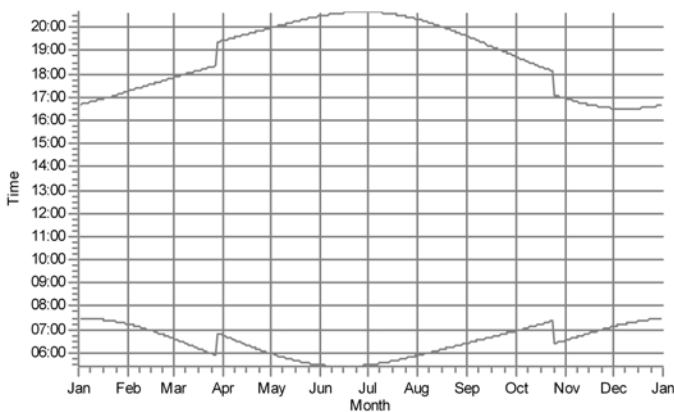
75: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



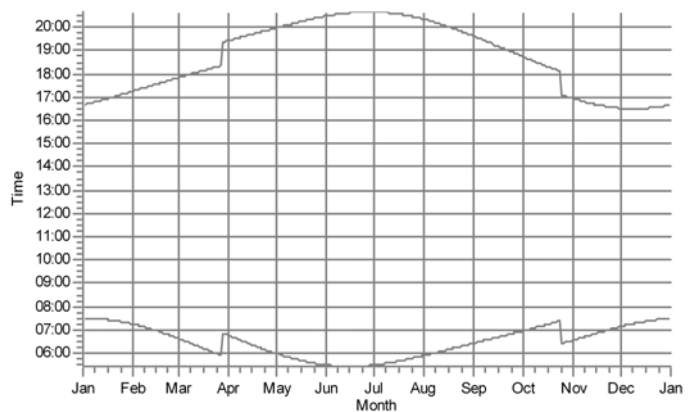
76: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



77: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



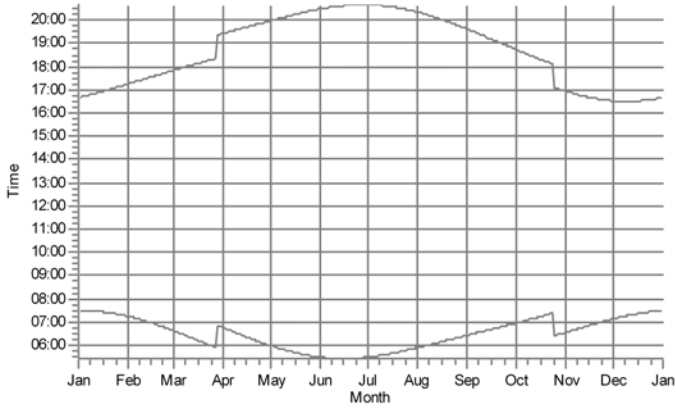
78: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



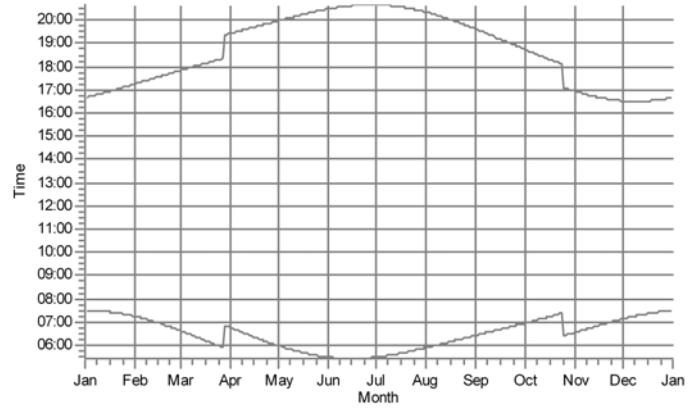
Shadow receptors

## SHADOW - Calendar per WTG, graphical

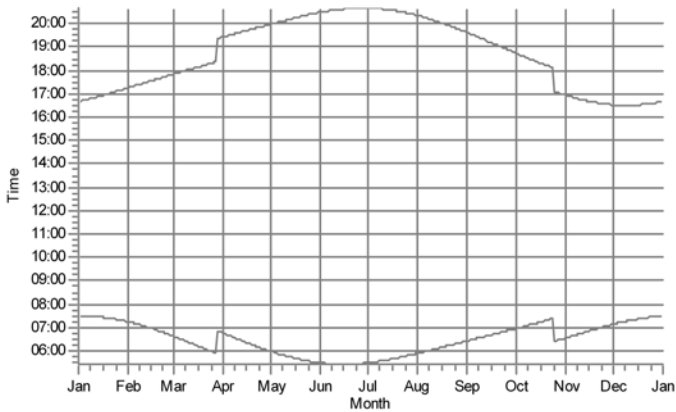
79: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



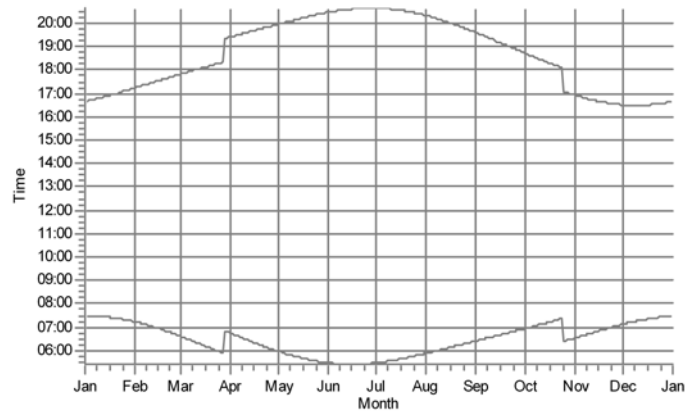
80: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



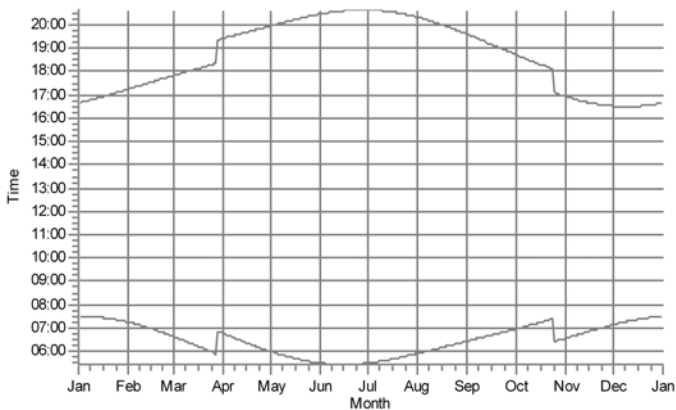
81: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



82: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



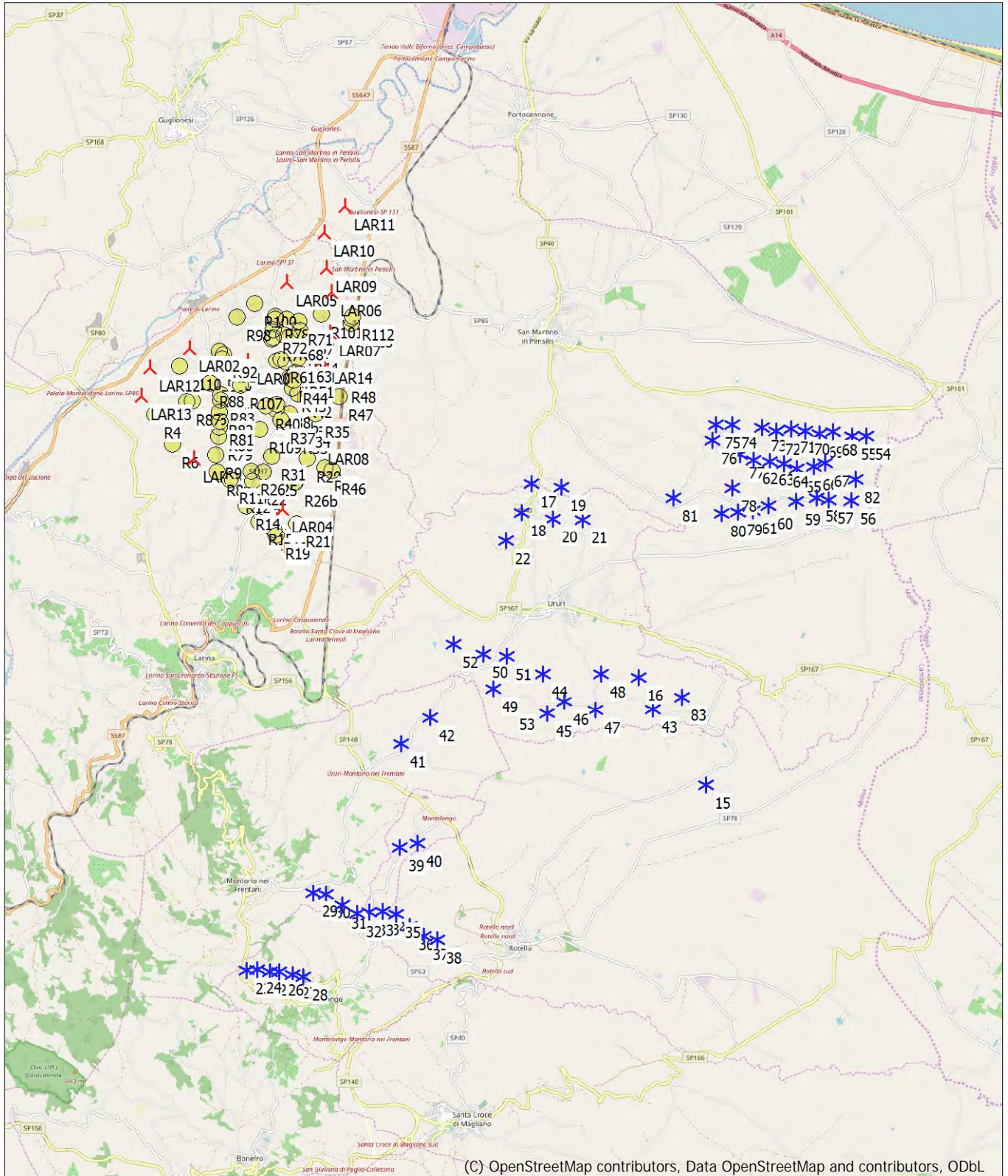
83: VESTAS V90-2.0 GridStreamer 2000 90.0 !O! hub: 80,0 m (TOT: 125,C



Shadow receptors



## SHADOW - Map



(C) OpenStreetMap contributors, Data OpenStreetMap and contributors, ODbL



Map: EMD OpenStreetMap , Print scale 1:125.000, Map center Geo WGS84 East: 15,001923° E North: 41,818816° N

New WTG Existing WTG Shadow receptor

Flicker map level: Elevation Grid Data Object: WF Larino\_finale\_EMDGrid\_0.wpg (1)