

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



## PROGETTO DEFINITIVO PARCO EOLICO MONTI ALÀ DEI SARDI

Titolo elaborato:

### STUDIO SUGLI EFFETTI DELLO SHADOW FLICKERING

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#### PROPONENTE



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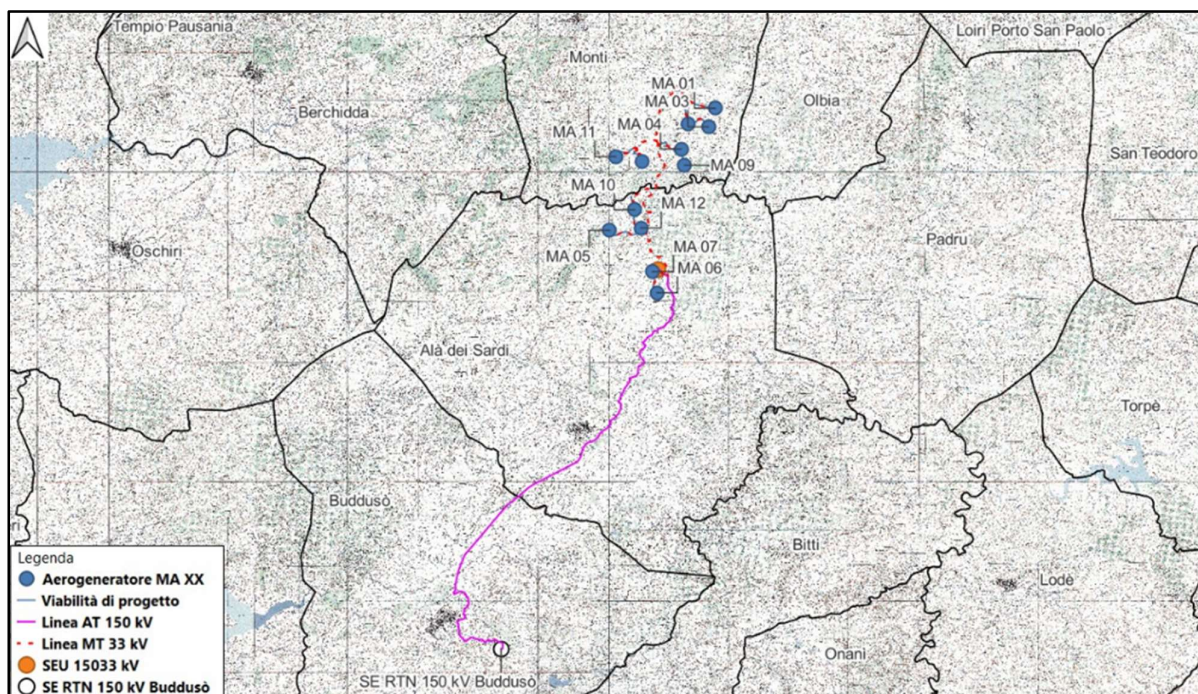
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## 1. PREMESSA

Nella presente trattazione si descrive l'evoluzione giornaliera delle ombre generate dalle pale eoliche facenti parte dell'impianto eolico denominato "Monti Alà dei Sardi" 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 totale pari a 86,4 MW ed è costituito da 12 aerogeneratori, di potenza nominale pari a 7,2 MW (modello Vestas V172 con altezza torre pari a 114 m e rotore pari a 172 m). L'impianto interessa prevalentemente il Comune di Monti (SS), ove ricadano 7 aerogeneratori, il Comune di Alà dei Sardi (SS), ove ricadono 5 aerogeneratori e la Stazione Elettrica Utente (SEU) di trasformazione 150/33 kV, e il Comune di Buddusò (SS), dove ricade la Stazione Elettrica (SE) RTN Terna 150 kV "Buddusò" (**Figura 2.1**).

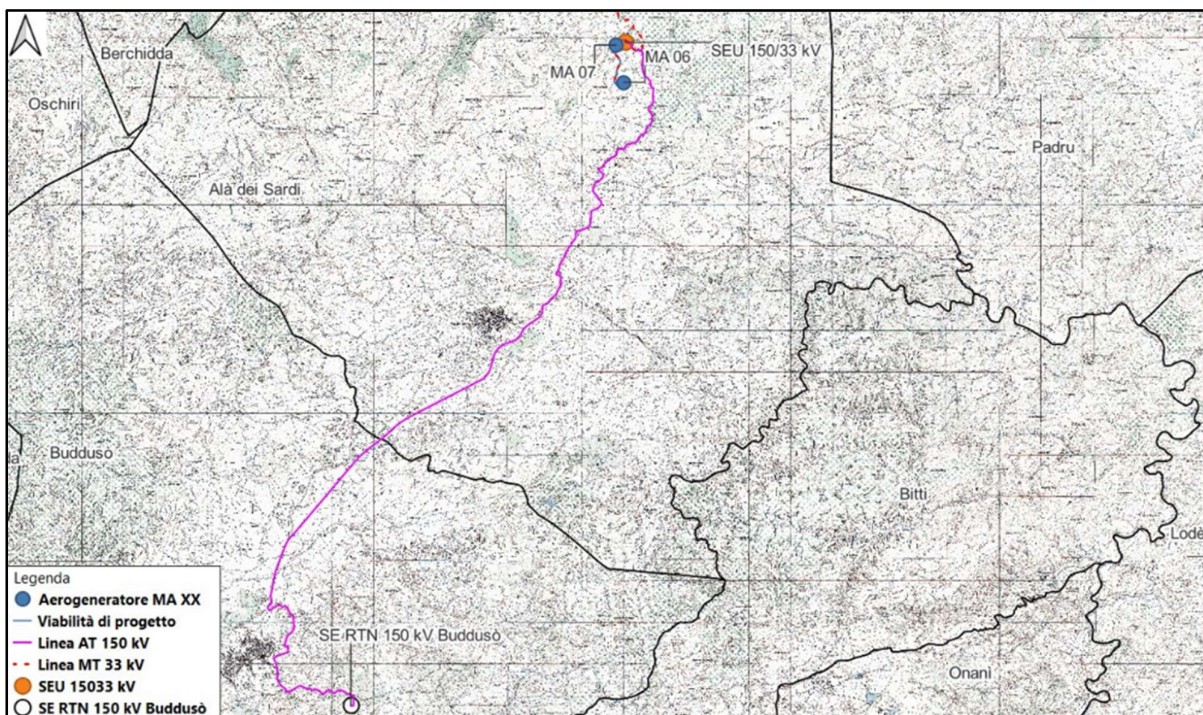


**Figura 2.1:** Inquadramento territoriale dell'impianto eolico Monti Alà dei Sardi su IGM con i limiti amministrativi dei comuni interessati

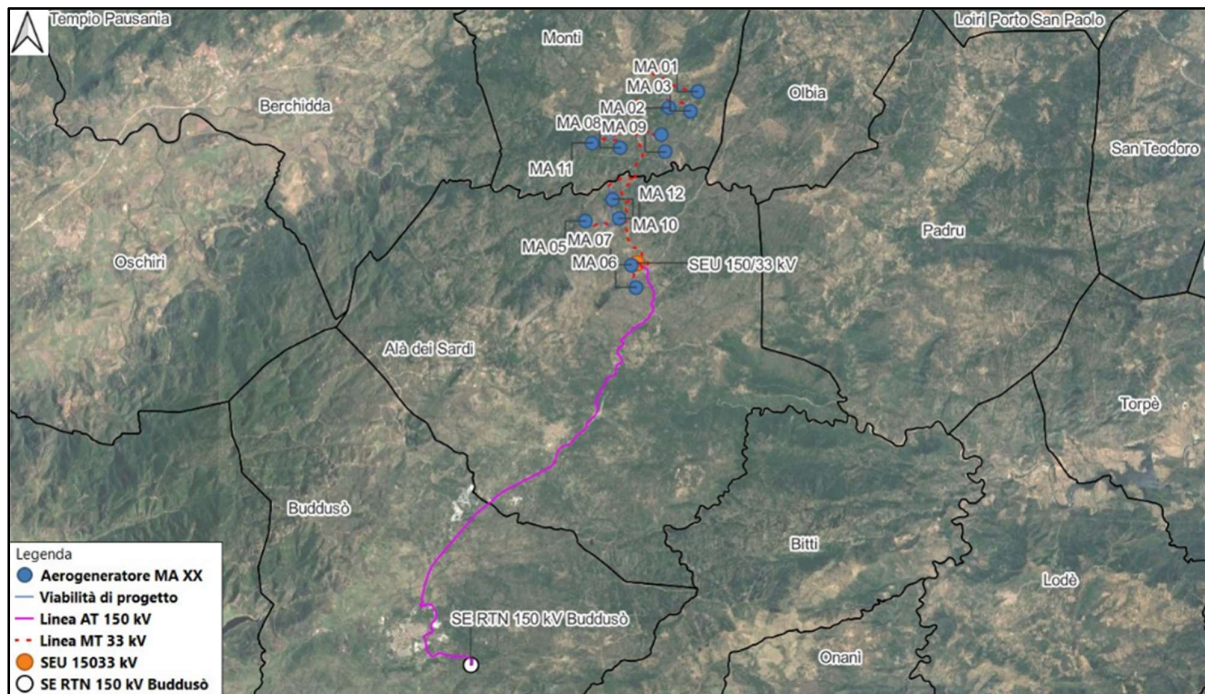
La soluzione di connessione (soluzione tecnica minima generale STMG - codice pratica del preventivo di connessione C.P. 202102876) prevede che l'impianto eolico venga collegato in antenna a 150 kV su una nuova Stazione Elettrica (SE) della RTN a 150 kV in GIS denominata "Buddusò" (**Figura 2.2**) da inserire in entra - esce alla linea 150 kV "Ozieri - Siniscola 2" (di cui al Piano di Sviluppo Terna), previa:

- realizzazione di un nuovo elettrodotto di collegamento della RTN a 150 kV tra la SE di Santa Teresa e la nuova SE Buddusò (di cui al Piano di Sviluppo Terna);
- potenziamento/ rifacimento della linea 150 kV “Chilivani – Buddusò – Siniscola 2” con caratteristiche almeno equivalenti a quelle di una linea con conduttori AA da 585 mm<sup>2</sup>.

Il progetto prevede che la SEU (Sottostazione Elettrica Utente) 150/33 kV venga collegata alla suddetta SE RTN mediante la posa in opera, su strade esistenti o da realizzarsi per lo scopo, di una linea Alta Tensione a 150 kV interrata di lunghezza complessiva di circa 26.5 km. Le turbine eoliche verranno collegate attraverso un sistema di linee elettriche interrate a 33 kV, allocate prevalentemente in corrispondenza del sistema di viabilità interna che servirà per la costruzione e la gestione futura dell'impianto. Tale sistema verrà realizzato prevalentemente adeguando il sistema viario esistente e realizzando nuovi tratti di raccordo per consentire il transito dei mezzi eccezionali.



**Figura 2.2:** Soluzione di connessione a 150 kV in corrispondenza della stazione elettrica RTN Terna 150 kV Buddusò (futura realizzazione)



**Figura 2.3:** Inquadramento territoriale dell'impianto eolico Monti Alà dei Sardi su ortofoto con i limiti amministrativi dei comuni interessati

L'area di progetto (**Figura 2.4**) si raggiunge partendo dal Porto di Oristano, attraversando poi la SS131, SS129, SP17, SP33, SP33, SS129, SP84, SP7, SS389 e un sistema di viabilità esistente, opportunamente adeguato e migliorato per il transito dei mezzi eccezionali, da utilizzare per consegnare in sito i componenti degli aerogeneratori e da cui si dirameranno nuovi tratti di viabilità necessari per la costruzione e la manutenzione dell'impianto eolico.



**Figura 2.4:** Viabilità di accesso al sito dal Porto Industriale di Oristano 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 potrebbe essere installata è il modello **Vestas V172**, di potenza nominale pari a 7,2 MW, altezza torre all'hub pari a 114 m e diametro del rotore pari a 172 m (**Figura 2.1.1**).

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

Il rotore, a passo variabile, è in resina epossidica rinforzata con fibra di vetro di diametro pari a 172 m, posto sopravvento al sostegno, con mozzo rigido in acciaio.

Le caratteristiche dell'aerogeneratore descritto sono quelle ritenute idonee in base a quanto disponibile oggi sul mercato, in futuro potrà essere possibile cambiare il modello dell'aerogeneratore senza modificare in maniera sostanziale l'impatto ambientale e i limiti di sicurezza previsti.

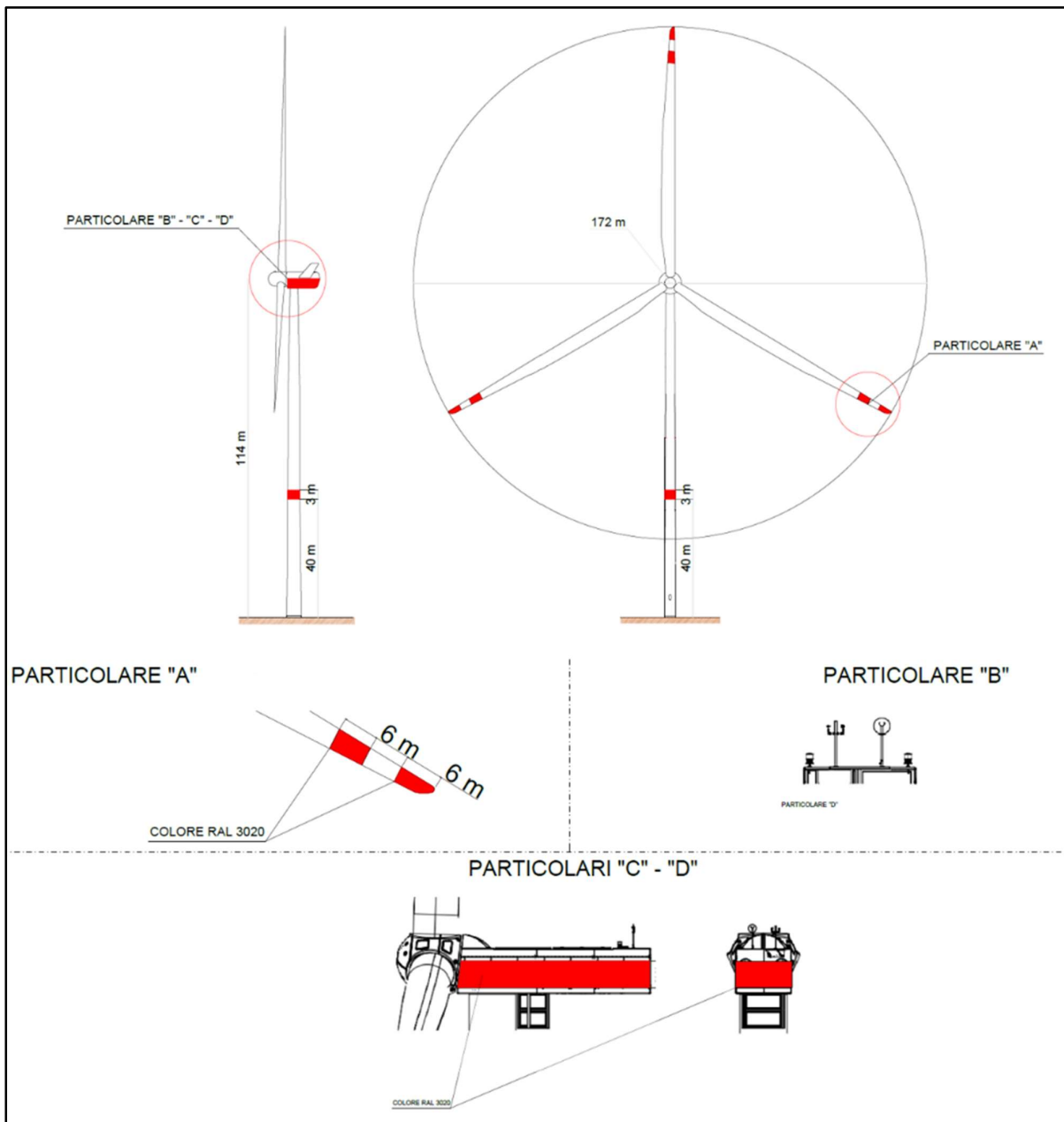


Figura 2.1.1: Profilo aerogeneratore V172 – 7,2 MW – HH= 114 m – D=172 m

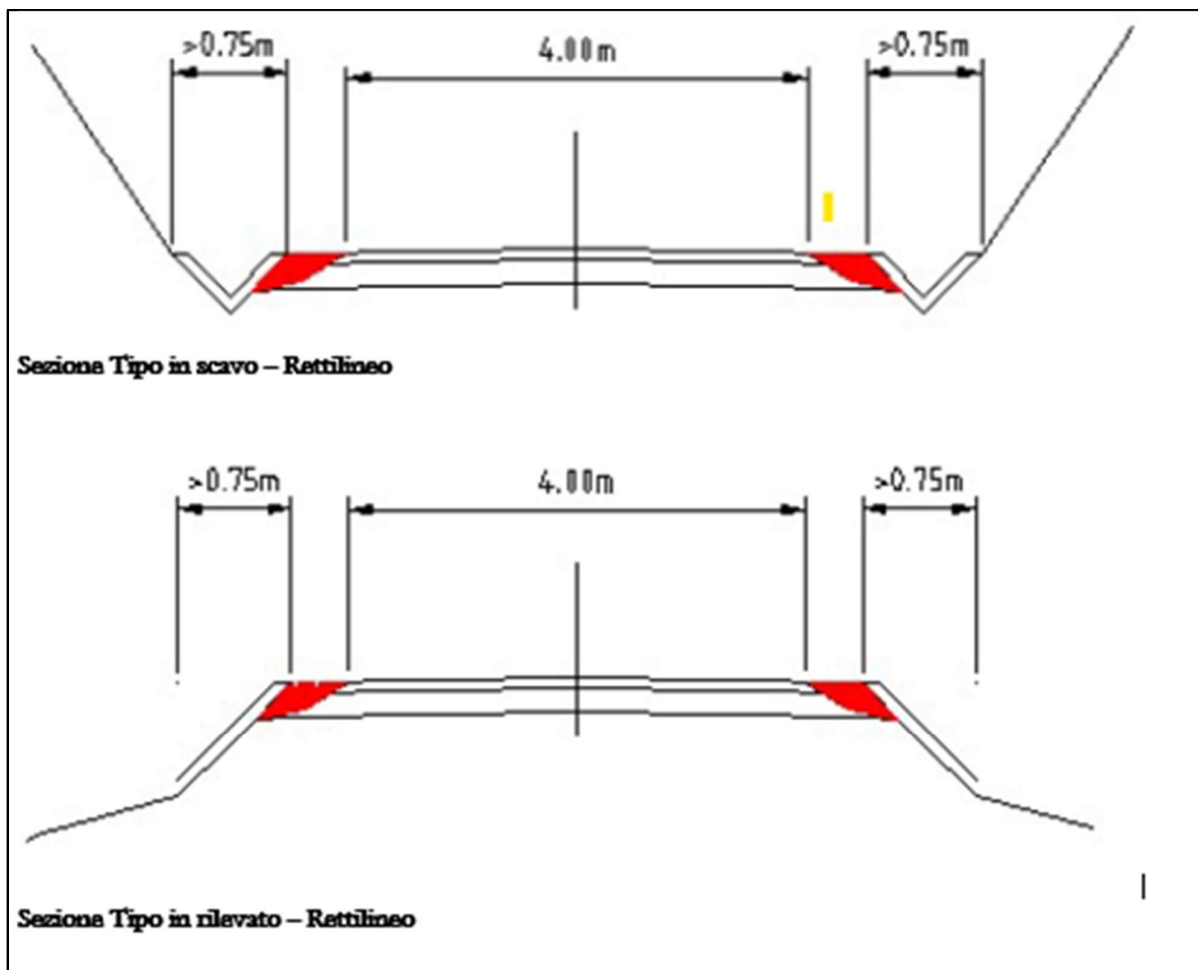
## 2.2. Viabilità e piazzole

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 detto 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 e interpoderali che si trovano in stato di dissesto migliorando l'accessibilità dei luoghi anche alla popolazione locale.

Nei casi in cui tale approccio non è stato applicabile, 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** riportiamo 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 ripristino parziale, per la fase di esercizio e manutenzione dell'impianto (**Figura 2.2.2**).



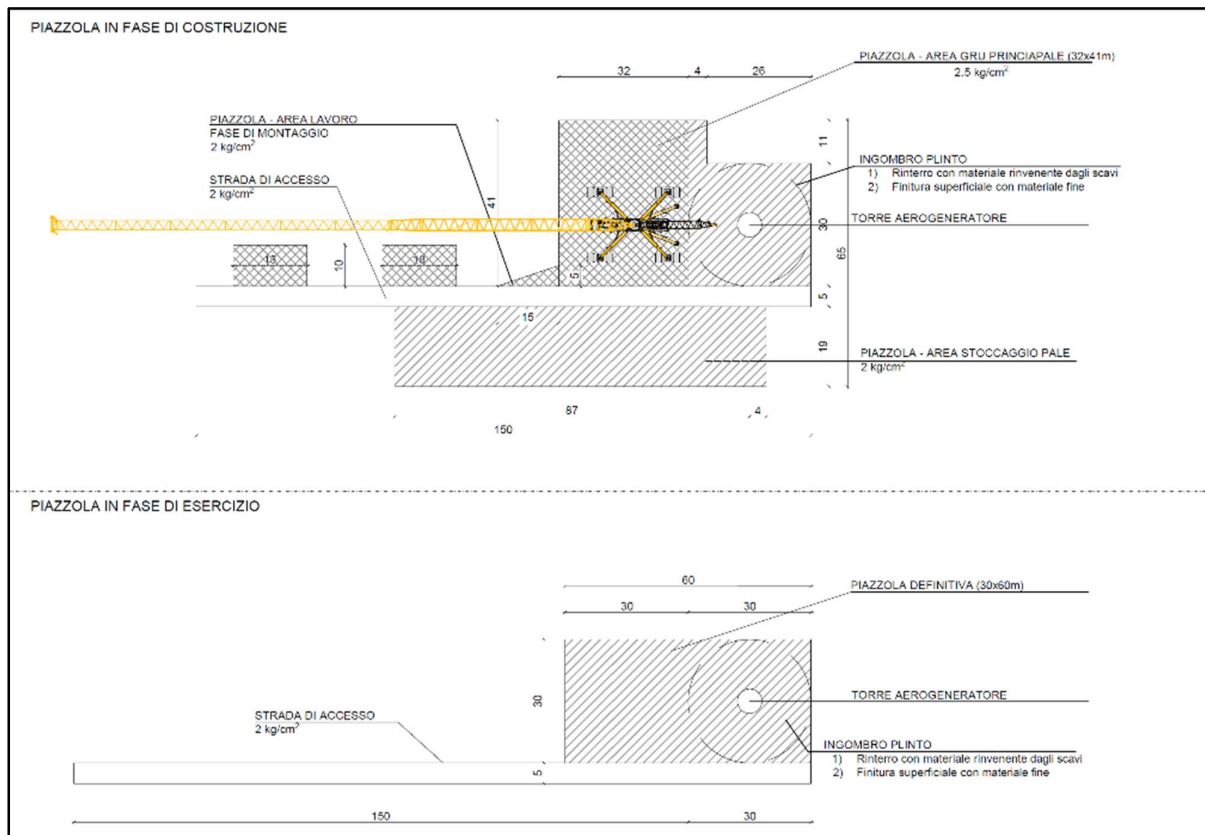


Figura 2.2.2: Planimetria piazzola tipo per la fase di costruzione e la fase di esercizio e manutenzione

### 3. CARATTERISTICHE PRINCIPALI DEL PARCO EOLICO

L'impianto eolico sarà costituito essenzialmente da 12 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 450 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.

ID	Comune (Provincia)	Informazioni catastali		Coordinate geografiche		D <sub>ROTORE</sub> [m]	H <sub>hub</sub> [m]	H <sub>TOT</sub> [m]
		Foglio	Particella	Latitudine [°]	Longitudine [°]			
MA01	Monti	32	381	40,771558	9,395286	172	200	114
MA02	Monti	32	72	40,765752	9,381813	172	200	114
MA03	Monti	32	211	40,764585	9,391917	172	200	114
MA04	Monti	39	68	40,756211	9,37833	172	200	114
MA05	Alà dei Sardi	5	48-118	40,725601	9,342591	172	200	114
MA06	Alà dei Sardi	17	91	40,701933	9,366032	172	200	114
MA07	Alà dei Sardi	17	75	40,709972	9,363786	172	200	114
MA08	Monti	38	64	40,75166	9,358958	172	200	114
MA09	Monti	39	250	40,750116	9,380075	172	200	114
MA10	Alà dei Sardi	5	59	40,733383	9,35513	172	200	114
MA11	Monti	36	216	40,753400	9,345837	172	200	114
MA12	Alà dei Sardi	5	140	40,726477	9,35807	172	200	114

**Tabella 3.1:** Localizzazione geografica 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 "MAEG011 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.

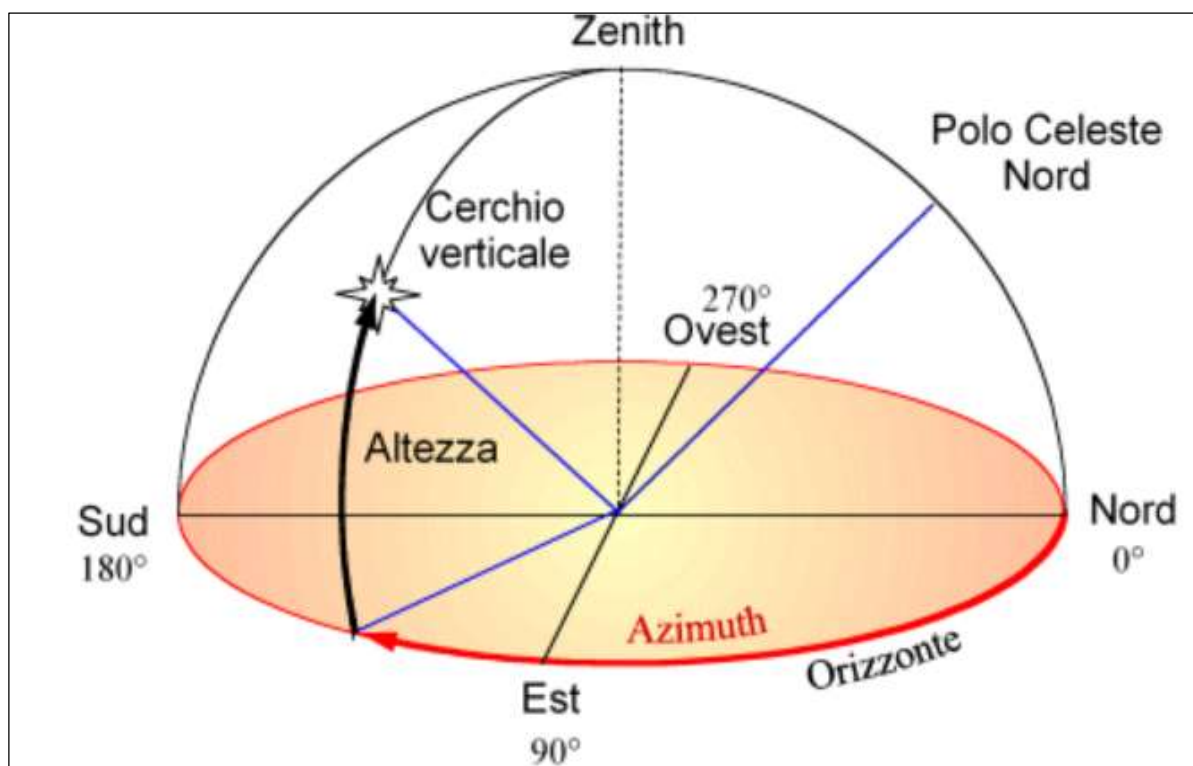
In linea di massima, si può ritenere che l'area soggetta al fenomeno in questione non si estenda oltre i 500 ÷ 1000 m dall'aerogeneratore e le zone a maggiore impatto ricadono entro i 300 m di distanza dalle turbine.

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 ricevitore 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 12 aerogeneratori di nuova realizzazione e relativi al progetto del Parco Eolico Monti Alà dei Sardi.

Gli aerogeneratori di progetto hanno un'altezza al mozzo di 114 m, diametro del rotore di 172 m, potenza nominale di 7,2 MWp e 8,2 giri al minuto (RPM).

La verifica è stata effettuata in corrispondenza di 22 ricettori ritenuti, per la presenza continuativa di attività umana, sensibili al fenomeno dello shadow flickering e riportati nella **Tabella 6.1**:

Ricettore	Coordinate UTM WGS 84, 33°		Comune	WTG più vicina	Distanza WTG più vicina	Foglio	Particella	Stato accatastamento
	Latitudine	Longitudine						
R06	40.765617°	9.370988°	Monti	MA02	912	34	241	A03
R10	40.759529°	9.370465°	Monti	MA04	756	34	250	A04
R12	40.758707°	9.369005°	Monti	MA04	833	34	248	A04
R13	40.758093°	9.367872°	Monti	MA04	903	39	245	A03
R16	40.757228°	9.367245°	Monti	MA08	928	39	58	A04
R18	40.757464°	9.366624°	Monti	MA08	907	38	29	A03
R19	40.757205°	9.366542°	Monti	MA08	884	38	240	A03
R24	40.755460°	9.367378°	Monti	MA08	821	39	59	A03
R28	40.759681°	9.365011°	Monti	MA08	1025	38	330	A04
R30	40.763631°	9.362368°	Monti	MA08	1356	31	160	A04
R36	40.760609°	9.359950°	Monti	MA08	994	38	301	A04
R37	40.760543°	9.359316°	Monti	MA08	985	31	362	A04
R39	40.760482°	9.358800°	Monti	MA08	977	31	397; 396; 395	A04
R43	40.758830°	9.358290°	Monti	MA08	795	38	294	A03
R47	40.756309°	9.353853°	Monti	MA08	671	36	195	E07
R48	40.753572°	9.352701°	Monti	MA08	568	38	318	A04
R62	40.710295°	9.353606°	Ala dei Sardi	MA07	858	17	138	D01
R67	40.708849°	9.371122°	Ala dei Sardi	MA07	629	17	10 (Catasto Terreni)	n.a.
R68	40.708693°	9.370843°	Ala dei Sardi	MA07	609	17	140 (Catasto Terreni)	n.a.
R69	40.708802°	9.371634°	Ala dei Sardi	MA07	671	7	34	D10
R74	40.707737°	9.371141°	Ala dei Sardi	MA07	658	17	166	A04
R77	40.744515°	9.363047°	Monti	MA08	862	38	320	D10
R78	40.744563°	9.363421°	Monti	MA08	870	38	321	D10
R84	40.755193°	9.349890°	Monti	MA11	356	36	193	A04

Tabella 6.1: Ricettori oggetto di verifica

La distribuzione dei suddetti ricettori rispetto agli aerogeneratori è riportata nelle figure seguenti:

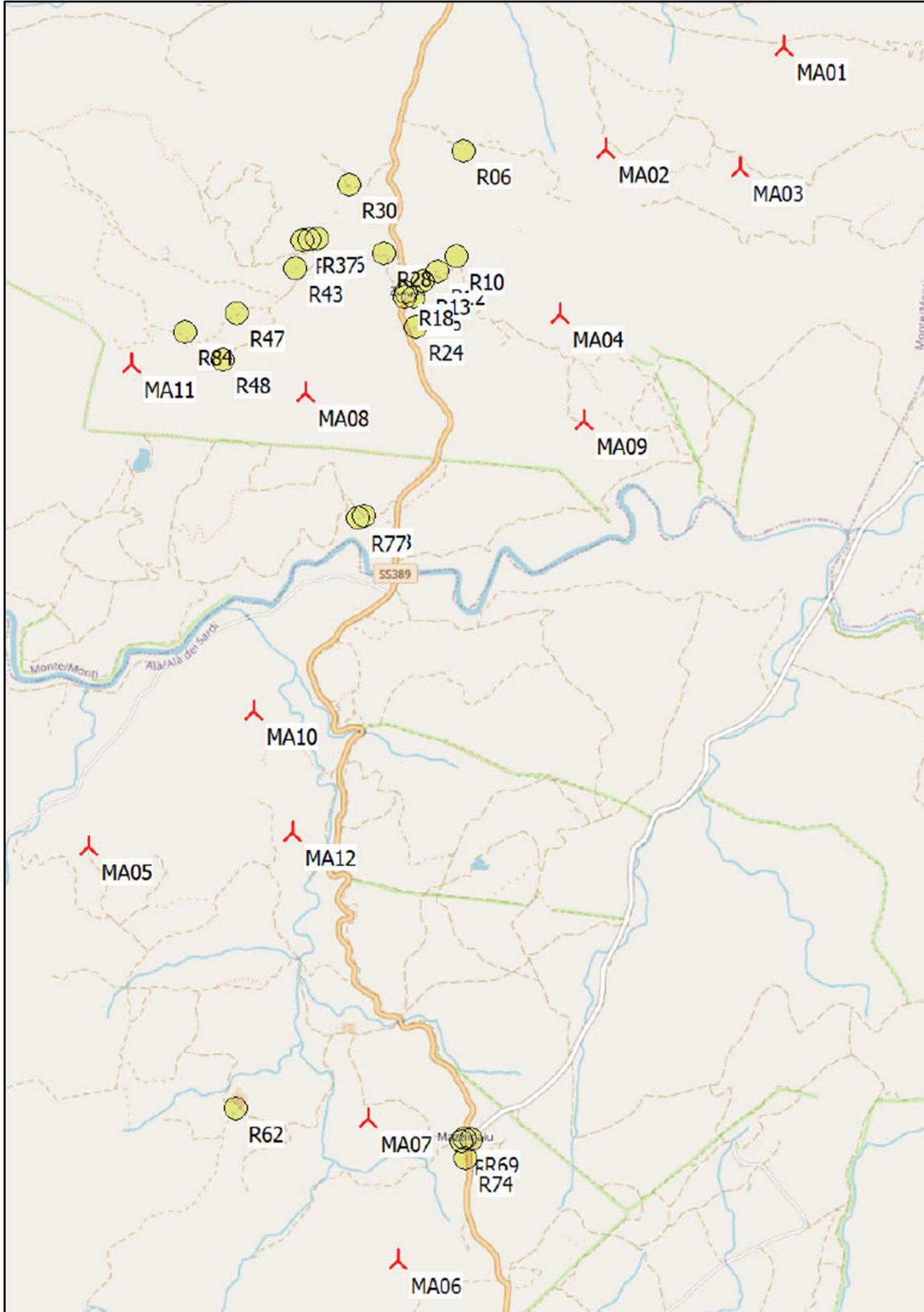
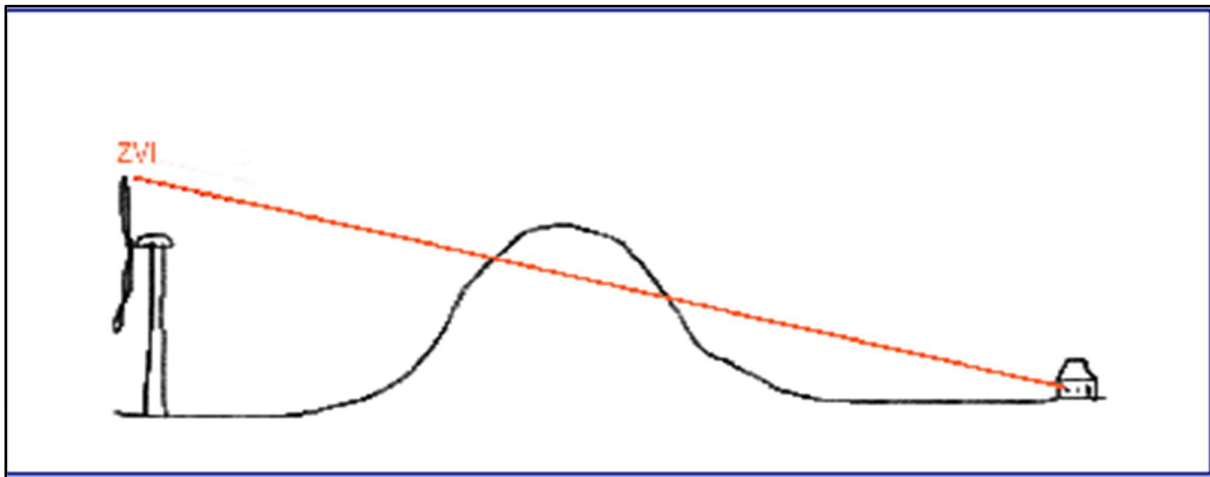


Figura 6.1: Localizzazione dei ricettori rispetto agli aerogeneratori di progetto

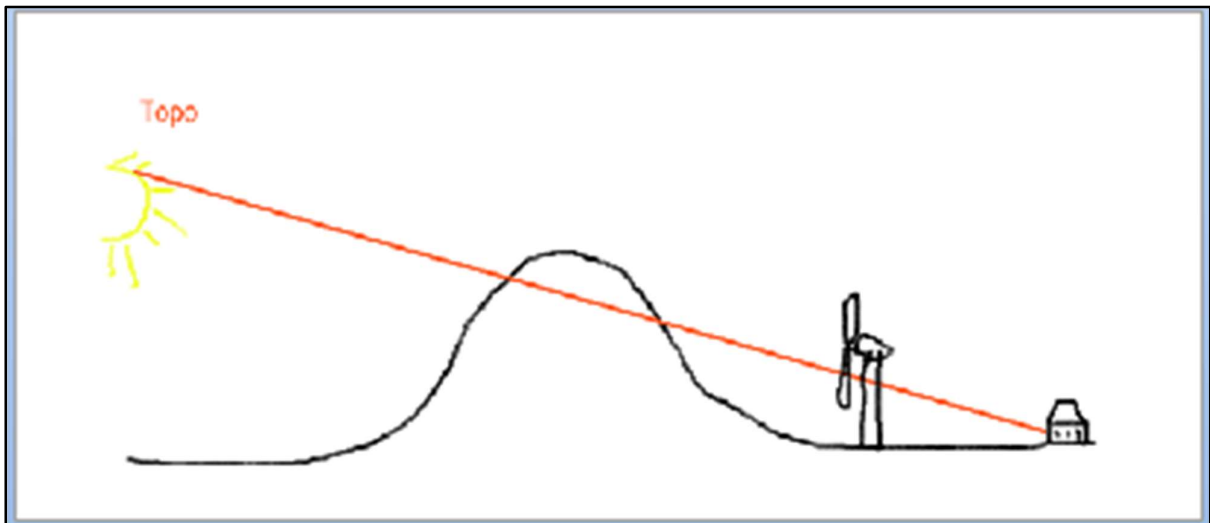


Il software impiegato per effettuare la verifica di sicurezza all'effetto shadow flickering è il WindPRO versione 3.5.

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

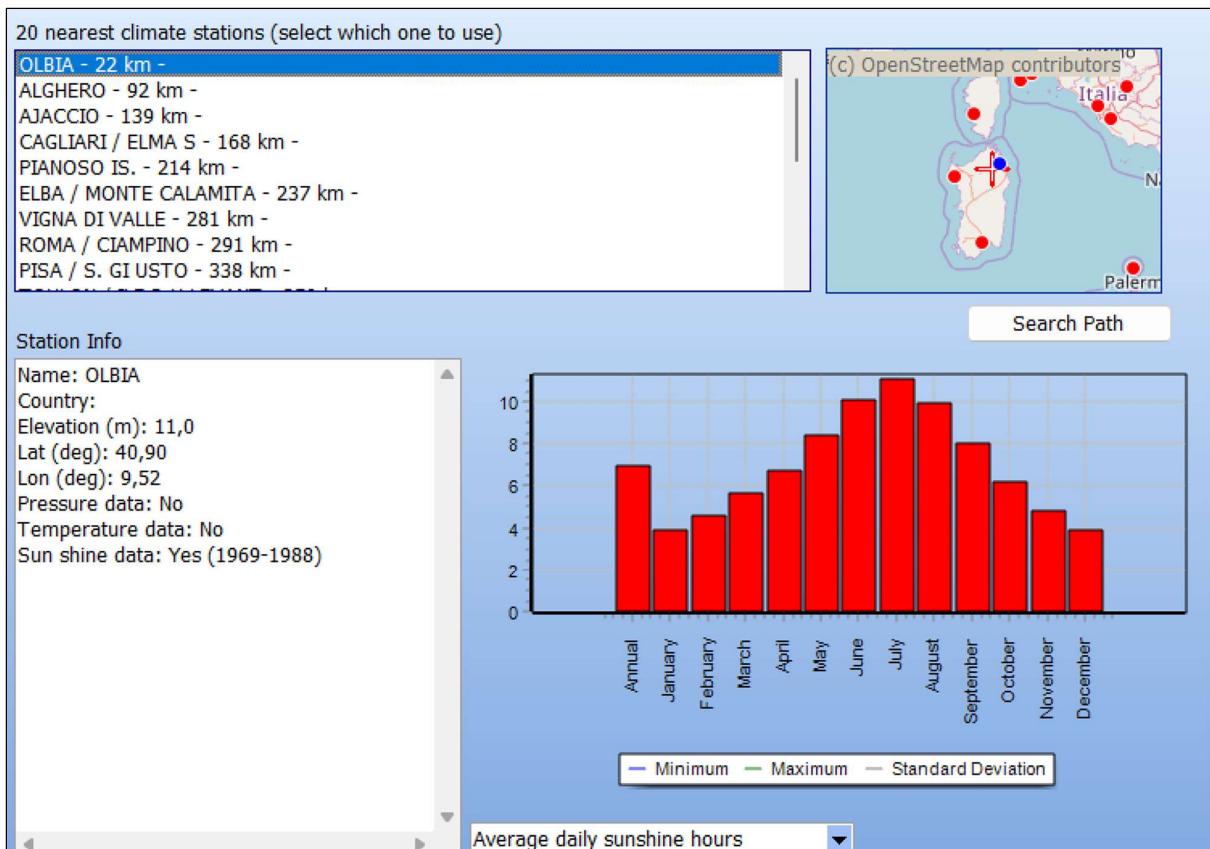
Nella prima stima effettuata (**worst case**) si assumono le seguenti ipotesi restrittive:

- l'impianto eolico sempre in funzione durante le ore di sole;
- 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, in una seconda stima, allo scopo di pervenire a valori più realistici di impatto (**real case**), 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, è stata considerata la stazione meteo di Olbia da cui sono state estrapolate le ore medie di sole su base mensile (**Figura 6.2** e **Tabella 6.2**) e le ore di funzionamento (sulle 24 ore) degli aerogeneratori in funzione della direzione del vento (**Tabella 6.3**).



**Figura 6.2:** Ore medie mensili di sole con riferimento alla Stazione meteo di Olbia distante 22 km dal sito

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	3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

**Tabella 6.2:** Ore medie mensili di sole con riferimento alla Stazione meteo di Olbia distante 22 km dal sito

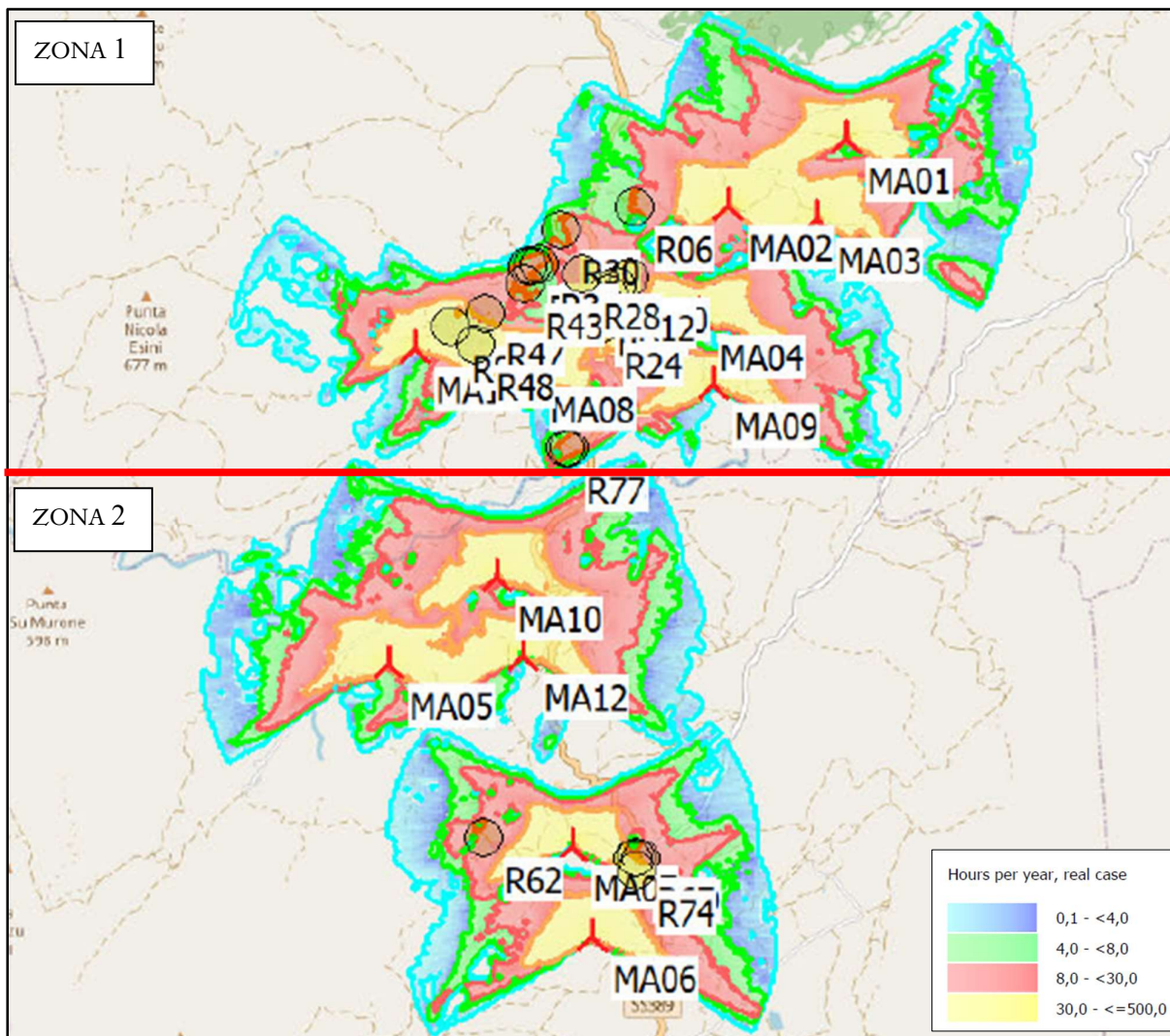
N	NE	E	SE	S	SW	W	NW	Somma
956	594	724	502	522	1378	1886	1253	7.815

**Tabella 6.3:** Ore di funzionamento degli aerogeneratori in funzione della direzione del vento

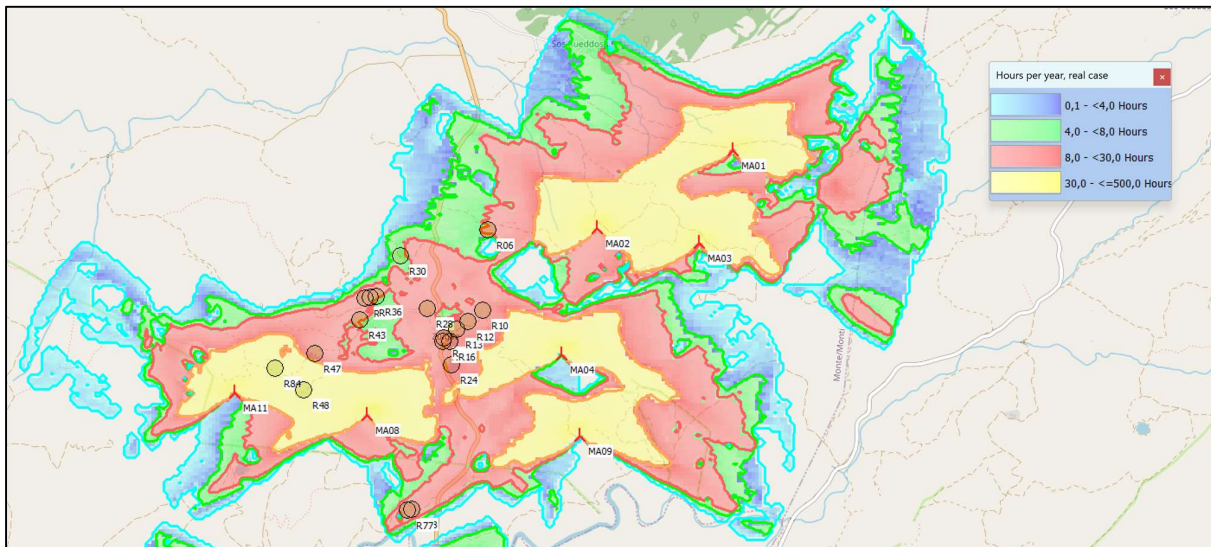
Il modello numerico utilizzato, al pari degli altri presenti sul mercato, produce statisticamente un output relativo al valore atteso delle ore d'ombra per anno relativo ai ricettori.

7. **CONCLUSIONI**

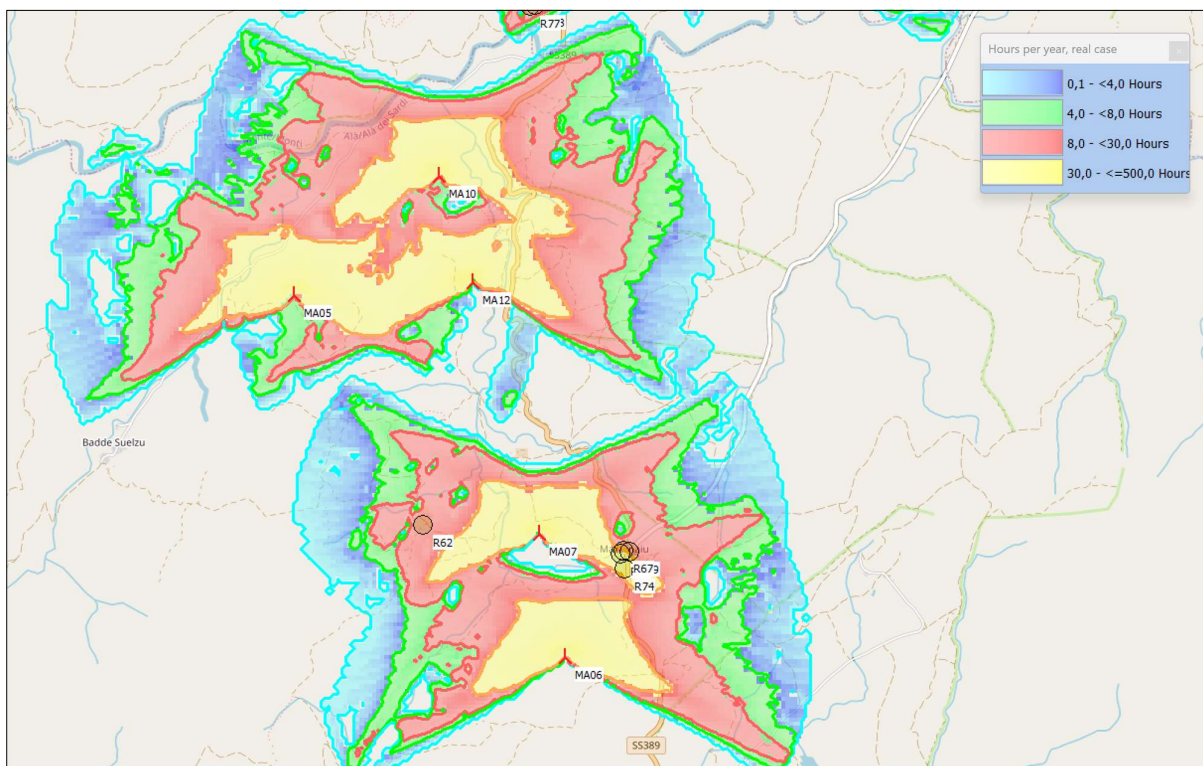
Nella **Figura 7.1** e relativi dettagli **Figure 7.2** e **7.3** sono rappresentati i ricettori attenzionati rispetto alle posizioni degli aerogeneratori di progetto e gli intervalli delle ore d'ombra per anno ottenute dalla simulazione effettuata nell'area d'impianto.



**Figura 7.1:** Localizzazione dei ricettori attenzionati rispetto agli aerogeneratori di progetto e ore d'ombra per anno



**Figura 7.2:** Localizzazione dei ricettori attenzionati rispetto agli aerogeneratori di progetto e ore d'ombra per anno \_ Zona 1



**Figura 7.3:** Localizzazione dei ricettori attenzionati rispetto agli aerogeneratori di progetto e ore d'ombra per anno \_ Zona 2

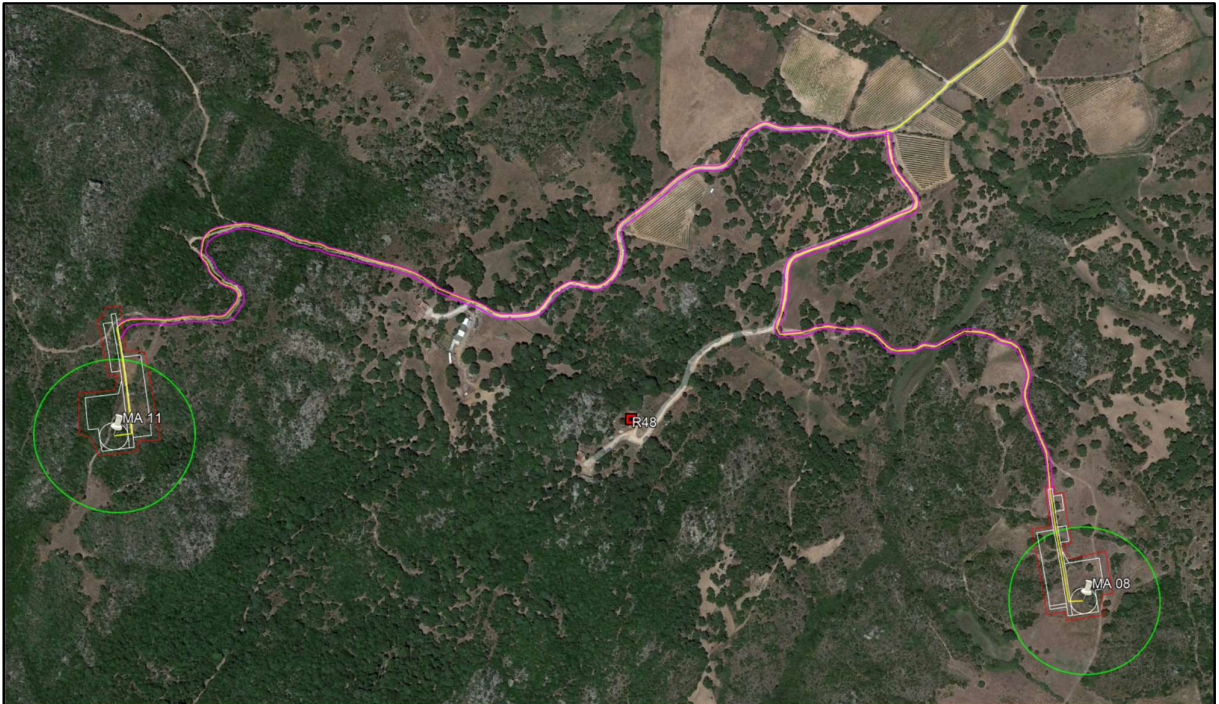
Nella **Tabella 7.1** si riportano i valori attesi delle ore d'ombra intermittente per anno relativamente ai ricettori considerati nelle ipotesi precedentemente indicate:

Ricettore	ORE/ANNO – WORST CASE	ORE/ANNO – REAL CASE (EXPECTED VALUES)
R06	26:01	9:18
R10	54:25	13:50
R12	44:46	12:16
R13	59:07	16:28
R16	96:03	26:24
R18	76:43	20:50
R19	87:42	23:58
R24	79:34	24:22
R28	42:28	13:58
R30	23:33	6:31
R36	32:33	8:53
R37	37:34	10:11
R39	39:39	10:44
R43	29:10	8:28
R47	70:45	19:20
<b>R48</b>	<b>147:17</b>	<b>45:51</b>
R62	50:22	15:05
<b>R67</b>	<b>92:20</b>	<b>34:32</b>
<b>R68</b>	<b>120:01</b>	<b>45:14</b>
R69	75:31	28:00
<b>R74</b>	<b>114:00</b>	<b>38:54</b>
R77	30:04	12:17
R78	30:25	12:28
<b>R84</b>	<b>161:24</b>	<b>48:50</b>

**Tabella 7.1:** Ore d'ombra intermittente per anno sui ricettori nel worst case e real case

Dai risultati riportati nella **Tabella 7.1** si evince che, nelle ipotesi precedentemente elencate e con riferimento al real case, 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 il ricettore R48, R67, R68, R74 e R84 per i quali il valore soglia ma senza mettere a rischio la sicurezza dell'uomo per le considerazioni di seguito esposte.

Il **ricettore R48** si colloca tra gli aerogeneratori MA11 e MA08 (**Figura 7.4**).



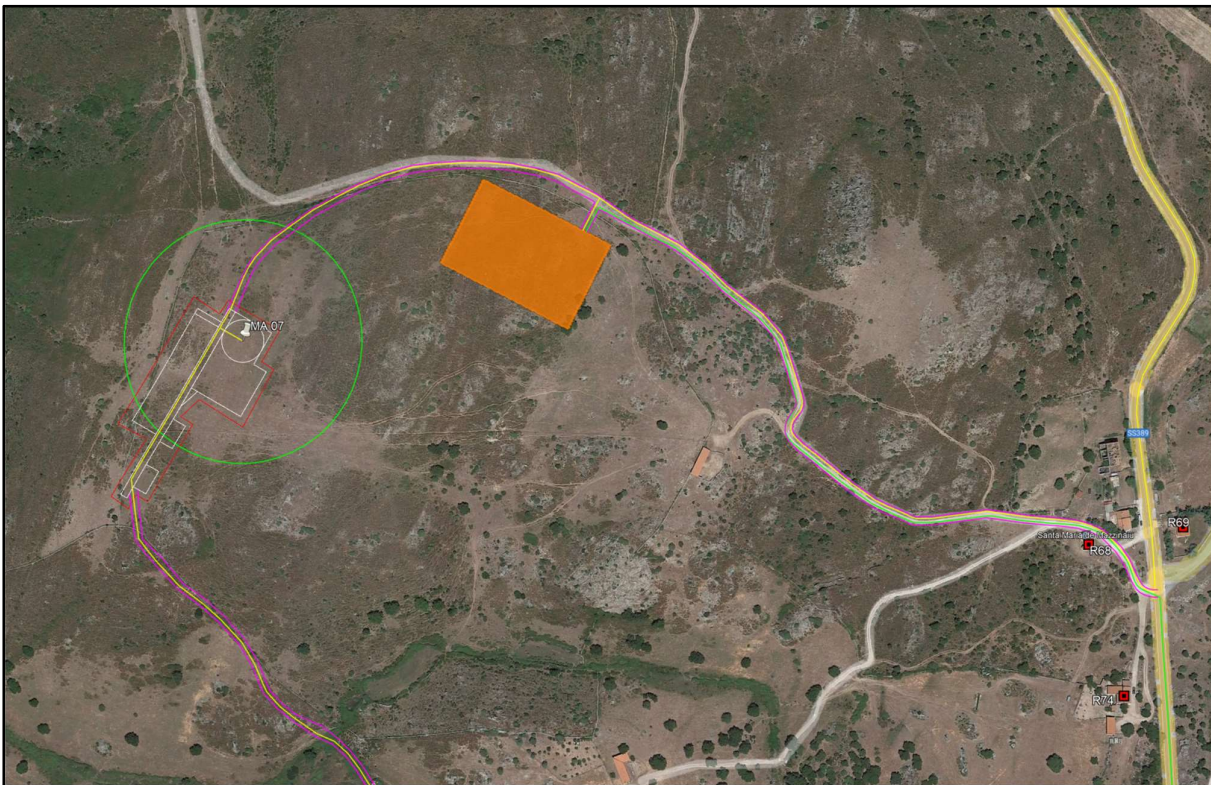
**Figura 7.4:** Localizzazione del ricettore R48 rispetto agli aerogeneratori MA11 e MA08

La facciata con finestre del fabbricato R48 (**Figura 7.5**) è rivolta soltanto verso l'aerogeneratore MA8 e, pertanto, gli effetti dovuti all'aerogeneratore MA11 vanno sottratte al valore calcolato consentendo. Pertanto, l'effetto di disturbo dovuto al fenomeno delle ombreggiature intermitteni su tale lato del fabbricato può essere assunto pari al 50% di quello calcolato e, quindi, pari a 22.5 h/anno.



**Figura 7.5:** Vista del ricettore R48

I ricettori R67 e R68 si collocano in prossimità dell'aerogeneratore MA07 (**Figura 7.6**).



**Figura 7.6:** Localizzazione dei ricettori R67, R68 e R74 rispetto all'aerogeneratore MA07

Come si evince dalle **Figure 7.7 e 7.8**, per il ricettore R67 la presenza della vegetazione mitiga, attenuando, il fenomeno delle ombreggiature intermittenti. Il ricettore R68 presenta la posizione delle aperture verso ovest tali per cui l'effetto reale atteso sarà certamente minore a quello calcolato nell'ipotesi di edificio "green house".



**Figura 7.7:** Vista dei ricettori R67 e R68



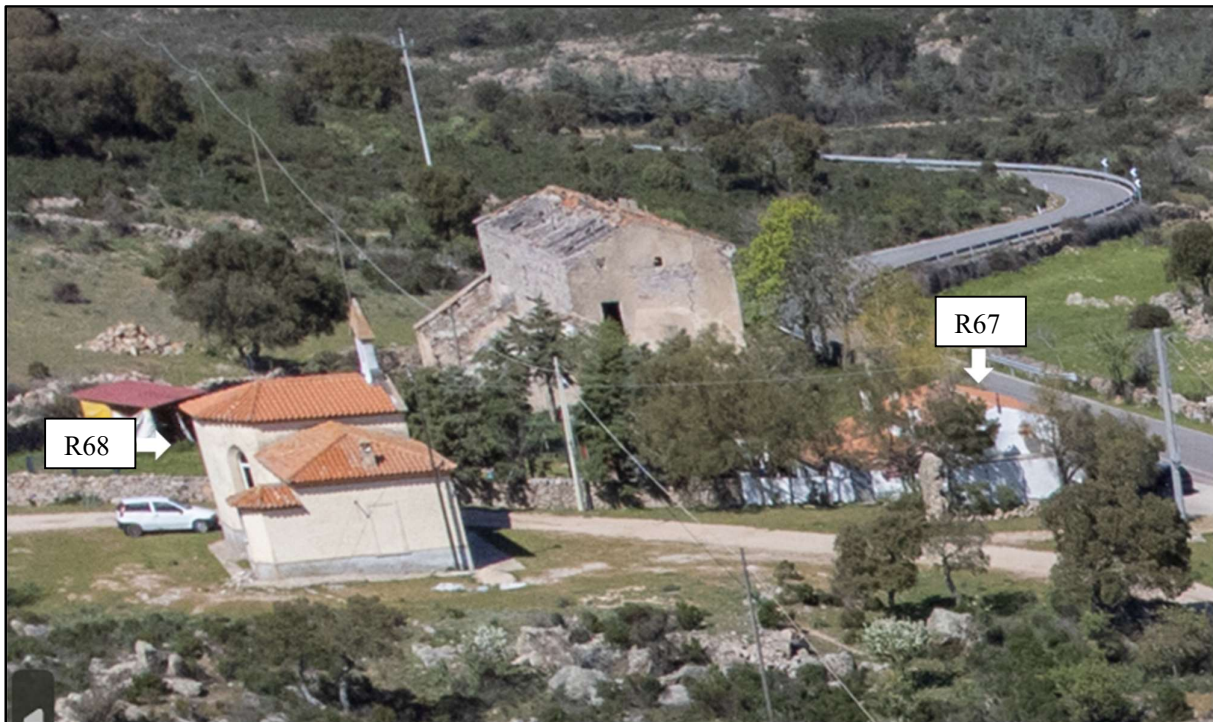


Figura 7.8: Vista dei ricettori R67 e R68

Il ricettore R74, come si evince dalla Figura 7.9, risente dell'effetto di shadow flickering in fase di esercizio dell'aerogeneratore MA07.

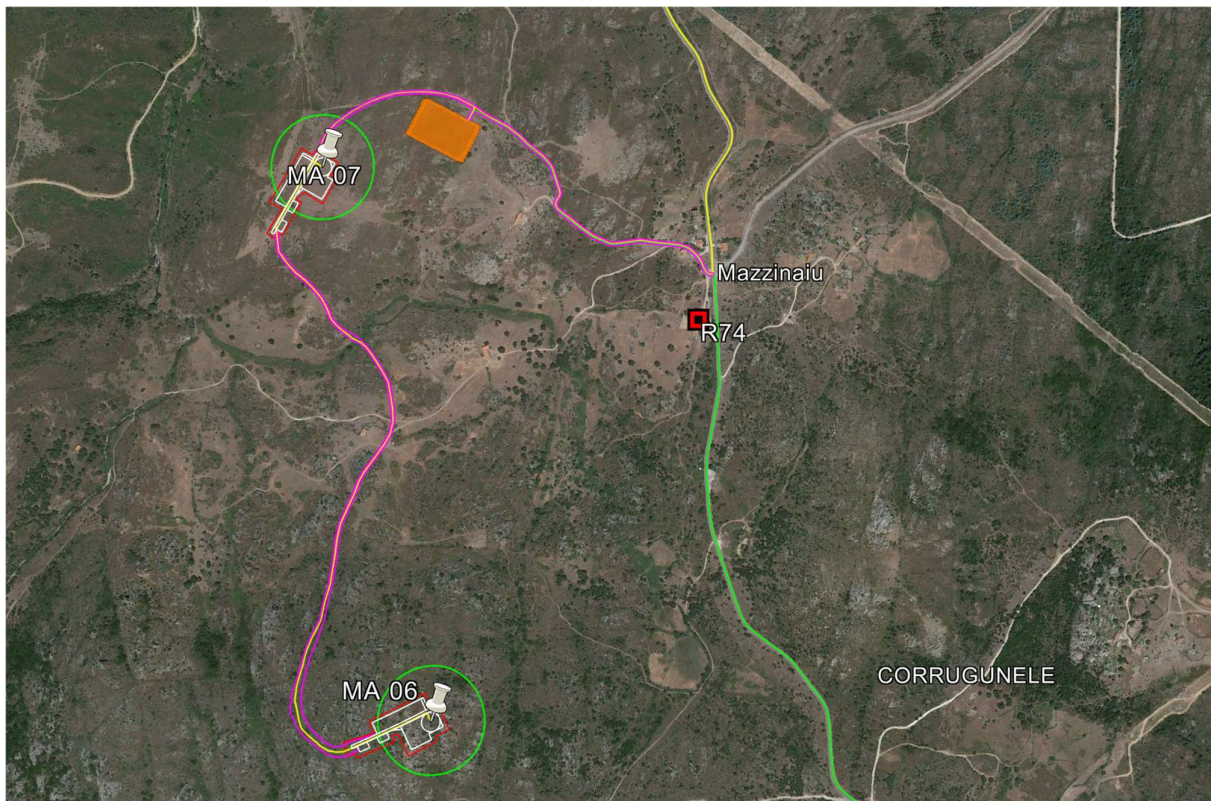


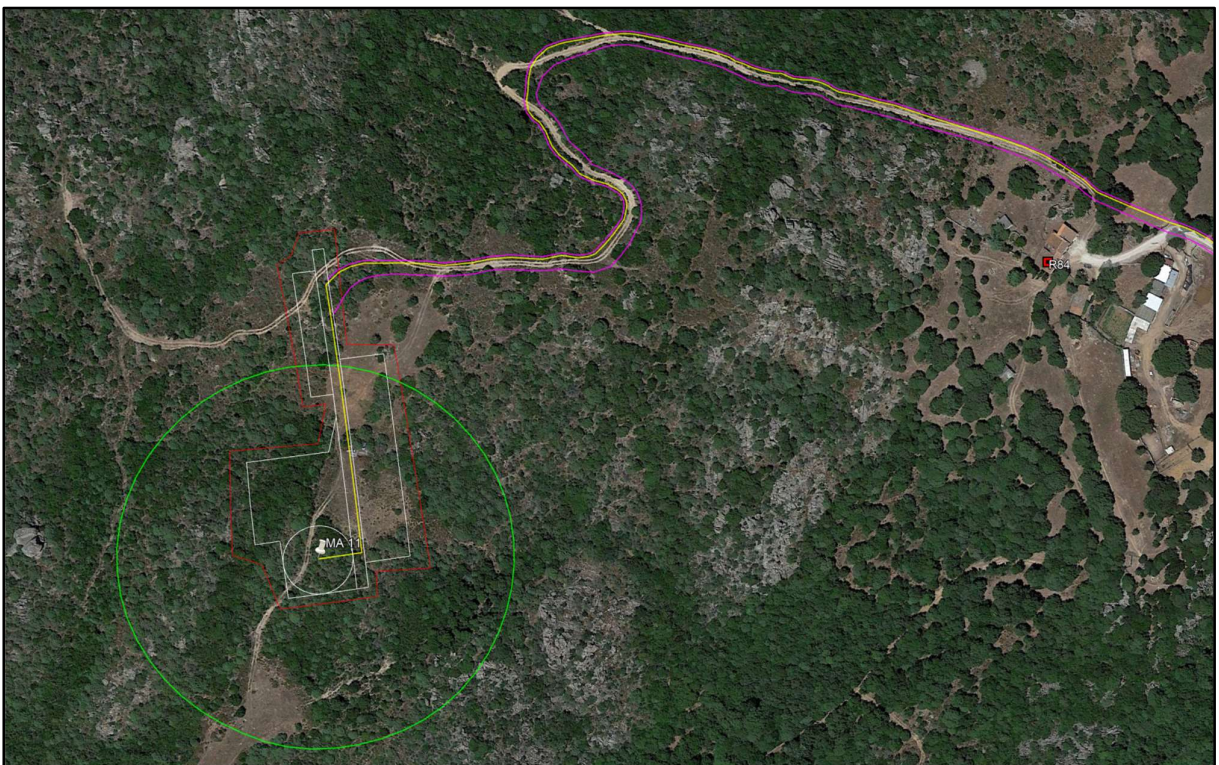
Figura 7.9: Localizzazione dei ricettori R74 rispetto all'aerogeneratore MA07

Nel lato esposto al fenomeno di ombreggiatura intermittente indotto dall'aerogeneratore MA07 si può osservare che non vi sono finestre e pertanto il suddetto fenomeno non interessa il fabbricato analizzato.



**Figura 7.10:** Vista del ricettore R74 lato verso l'aerogeneratore MA07

Il ricettore R84 risente dell'effetto di shadow flickering per l'aerogeneratore MA11, come rappresentato nella **Figura 7.11** riportata nel seguito.



**Figura 7.11:** Localizzazione del ricettore R84 rispetto all'aerogeneratore MA11

Analizzando la fotografia di dettaglio (**Figura 7.12**) si evince che i lati esposti al fenomeno dell'ombreggiatura intermittente sono circondati da fitta vegetazione che ne attenua fortemente gli effetti.



**Figura 7.12:** Vista del ricettore R84

In conclusione, come detto, nell'analisi condotta sono state adottate ipotesi molto restrittive, tra le quali quella secondo cui l'impianto sia sempre in funzione durante le ore di sole, il piano del rotore 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 come mostrato nelle figure seguenti, da cui si evince che le aperture delle finestre non sono rivolte verso l'aerogeneratore e quindi non soggette al fenomeno analizzato.

Per quanto sopra esposto, nello scenario reale ci si aspetta, quindi, che il fenomeno 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 ed in particolare sui fabbricati attenzionati.

**8. ALLEGATO 1: SHADOW – ELABORAZIONE MEDIANTE IL SOFTWARE WINDPRO 3.5 –  
WORST CASE**

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## SHADOW - Main Result

Calculation: SHADOW\_Worse case

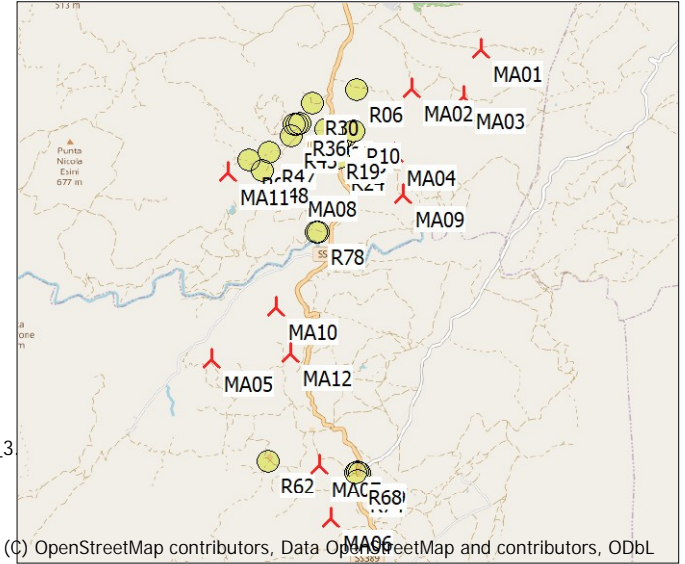
### Assumptions for shadow calculations

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  
The calculated times are "worst case" given by the following assumptions:  
The sun is shining all the day, from sunrise to sunset  
The rotor plane is always perpendicular to the line from the WTG to the sun  
The WTG is always operating

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\_Monti\_Alà\_EMDGrid\_3  
Obstacles used in calculation  
Receptor grid resolution: 1,0 m  
Topographic shadow included in calculation

All coordinates are in  
Geo [deg]-WGS84



(C) OpenStreetMap contributors, Data OpenStreetMap and contributors, ODbL

Scale 1:125.000  
New WTG Shadow receptor

### WTGs

	Longitude	Latitude	Z	Row data/Description	WTG type			Shadow data				
					Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM
MA01	9,395286° E	40,771558° N	563,8	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA02	9,381813° E	40,765752° N	551,9	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA03	9,391917° E	40,764585° N	628,0	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA04	9,378330° E	40,756211° N	564,3	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA05	9,342591° E	40,725601° N	569,6	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA06	9,366032° E	40,701933° N	688,0	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA07	9,363786° E	40,709972° N	615,5	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA08	9,358958° E	40,751660° N	539,0	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA09	9,380075° E	40,750116° N	526,3	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA10	9,355130° E	40,733383° N	552,1	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA11	9,345837° E	40,753400° N	618,9	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA12	9,358070° E	40,726477° N	601,3	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0

### 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]
R06	9,370988° E	40,765617° N	524,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R10	9,370465° E	40,759529° N	551,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R12	9,369005° E	40,758707° N	535,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R13	9,367872° E	40,758093° N	531,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R16	9,367245° E	40,757228° N	527,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R18	9,366624° E	40,757464° N	532,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R19	9,366542° E	40,757205° N	530,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R24	9,367378° E	40,755460° N	517,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R28	9,365011° E	40,759681° N	542,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R30	9,362368° E	40,763631° N	551,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R36	9,359950° E	40,760609° N	556,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R37	9,359316° E	40,760543° N	558,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R39	9,358800° E	40,760482° N	558,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R43	9,358290° E	40,758830° N	550,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R47	9,353853° E	40,756309° N	554,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R48	9,352701° E	40,753572° N	562,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R62	9,353731° E	40,710574° N	611,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R67	9,371122° E	40,708849° N	615,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

## SHADOW - Main Result

Calculation: SHADOW\_Worse case

...continued from previous page

No.	Longitude	Latitude	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
R68	9,370843° E	40,708693° N	614,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R69	9,371634° E	40,708802° N	617,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R74	9,371141° E	40,707737° N	617,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R77	9,363047° E	40,744515° N	470,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R78	9,363421° E	40,744563° N	470,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R84	9,349890° E	40,755193° N	579,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0

## Calculation Results

Shadow receptor

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
R06	26:01	62	0:41
R10	54:25	101	0:53
R12	44:46	99	0:45
R13	59:07	100	0:54
R16	96:03	121	1:10
R18	76:43	115	1:01
R19	87:42	122	1:04
R24	79:34	141	1:01
R28	42:28	123	0:46
R30	23:33	94	0:26
R36	32:33	111	0:28
R37	37:34	115	0:30
R39	39:39	112	0:31
R43	29:10	84	0:34
R47	70:45	113	0:52
R48	147:17	194	1:10
R62	50:22	103	0:46
R67	92:20	121	1:04
R68	120:01	140	1:06
R69	75:31	104	1:00
R74	114:00	146	1:03
R77	30:04	78	0:27
R78	30:25	76	0:28
R84	161:24	159	1:32

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

No.	Name	Worst case [h/year]
MA01	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (1)	0:00
MA02	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (2)	48:07
MA03	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (3)	3:56
MA04	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (4)	169:01
MA05	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (5)	0:00
MA06	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (6)	39:01
MA07	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (7)	205:48
MA08	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (8)	186:05
MA09	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (9)	86:01
MA10	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (10)	0:00
MA11	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (11)	274:41
MA12	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (12)	0:00

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.

Project:

WF\_Monti\_Alà

Licensed user:

Ge.co.Dor srl  
Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
09/05/2023 16:01/3.6.361

### SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R06 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (1)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:47 17:06	07:34 17:40	06:59 18:13	07:08 19:47	07:45 (MA02) 08:11 (MA02)	06:23 20:18	05:54 20:47	05:55 20:58	06:19 20:40	06:49 19:57	07:27 (MA02) 08:07 (MA02)	07:19 19:07	06:52 17:20	07:27 16:56
2	07:47 17:06	07:33 17:41	06:57 18:14	07:07 19:48	07:43 (MA02) 08:11 (MA02)	06:22 20:19	05:54 20:48	05:55 20:58	06:20 20:39	06:50 19:55	07:26 (MA02) 08:07 (MA02)	07:20 19:05	06:54 17:19	07:28 16:56
3	07:47 17:07	07:32 17:42	06:56 18:16	07:05 19:49	07:40 (MA02) 08:10 (MA02)	06:20 20:20	05:53 20:49	05:56 20:58	06:20 20:37	06:51 19:54	07:27 (MA02) 08:07 (MA02)	07:21 19:03	06:55 17:18	07:29 16:56
4	07:48 17:08	07:31 17:43	06:54 18:17	07:03 19:50	07:39 (MA02) 08:11 (MA02)	06:19 20:21	05:53 20:50	05:56 20:58	06:21 20:36	06:52 19:52	07:28 (MA02) 08:06 (MA02)	07:22 19:02	06:56 17:17	07:30 16:56
5	07:48 17:09	07:30 17:44	06:52 18:18	07:02 19:51	07:37 (MA02) 08:10 (MA02)	06:18 20:22	05:53 20:50	05:57 20:58	06:22 20:35	06:53 19:50	07:29 (MA02) 08:06 (MA02)	07:23 19:00	06:57 17:16	07:31 16:56
6	07:48 17:10	07:29 17:46	06:51 18:19	07:00 19:52	07:34 (MA02) 08:10 (MA02)	06:17 20:23	05:52 20:51	05:58 20:57	06:23 20:34	06:54 19:49	07:30 (MA02) 08:06 (MA02)	07:24 18:59	06:58 17:15	07:32 16:55
7	07:47 17:11	07:28 17:47	06:49 18:20	06:58 19:53	07:33 (MA02) 08:10 (MA02)	06:15 20:25	05:52 20:52	05:58 20:57	06:24 20:33	06:55 19:47	07:32 (MA02) 08:06 (MA02)	07:25 18:57	06:59 17:14	07:33 16:55
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	07:31 (MA02) 08:09 (MA02)	06:14 20:26	05:52 20:52	05:59 20:57	06:25 20:32	06:56 19:45	07:33 (MA02) 08:05 (MA02)	07:26 18:55	07:01 17:12	07:34 16:55
9	07:47 17:13	07:26 17:49	06:46 18:22	06:55 19:55	07:29 (MA02) 08:09 (MA02)	06:13 20:27	05:52 20:53	05:59 20:56	06:26 20:30	06:57 19:44	07:34 (MA02) 08:05 (MA02)	07:27 18:54	07:02 17:11	07:35 16:55
10	07:47 17:14	07:25 17:51	06:44 18:23	06:54 19:56	07:27 (MA02) 08:08 (MA02)	06:12 20:28	05:51 20:53	06:00 20:56	06:27 20:29	06:58 19:42	07:36 (MA02) 08:04 (MA02)	07:28 18:52	07:03 17:10	07:35 16:55
11	07:47 17:15	07:23 17:52	06:43 18:24	06:52 19:57	07:28 (MA02) 08:08 (MA02)	06:11 20:29	05:51 20:54	06:01 20:56	06:28 20:28	06:59 19:40	07:37 (MA02) 08:03 (MA02)	07:29 18:50	07:04 17:09	07:36 16:55
12	07:47 17:16	07:22 17:53	06:41 18:26	06:50 19:58	07:28 (MA02) 08:06 (MA02)	06:10 20:30	05:51 20:54	06:01 20:55	06:29 20:26	07:00 19:39	07:39 (MA02) 08:02 (MA02)	07:30 18:49	07:05 17:08	07:37 16:56
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	07:28 (MA02) 08:05 (MA02)	06:09 20:31	05:51 20:55	06:02 20:55	06:30 20:25	07:01 19:37	07:40 (MA02) 08:01 (MA02)	07:31 18:47	07:07 17:08	07:38 16:56
14	07:46 17:18	07:20 17:56	06:38 18:28	06:47 20:00	07:29 (MA02) 08:04 (MA02)	06:08 20:32	05:51 20:55	06:03 20:54	06:31 20:24	07:02 19:35	07:41 (MA03) 08:00 (MA02)	07:32 18:46	07:08 17:07	07:39 16:56
15	07:46 17:19	07:18 17:57	06:36 18:29	06:46 20:02	07:29 (MA02) 08:02 (MA02)	06:07 20:33	05:51 20:56	06:04 20:54	06:32 20:22	07:03 19:34	07:42 (MA03) 07:59 (MA02)	07:33 18:44	07:09 17:06	07:39 16:56
16	07:45 17:20	07:17 17:58	06:35 18:30	06:44 20:03	07:31 (MA02) 08:01 (MA02)	06:06 20:34	05:51 20:56	06:04 20:53	06:33 20:21	07:04 19:32	07:44 (MA03) 07:58 (MA03)	07:34 18:43	07:10 17:05	07:40 16:56
17	07:45 17:22	07:16 17:59	06:33 18:31	06:43 20:04	07:31 (MA02) 07:59 (MA02)	06:05 20:34	05:51 20:57	06:05 20:52	06:34 20:20	07:05 19:30	07:45 (MA03) 07:59 (MA03)	07:35 18:41	07:11 17:04	07:41 16:57
18	07:44 17:23	07:14 18:00	06:31 18:32	06:41 20:05	07:33 (MA02) 07:57 (MA02)	06:04 20:35	05:51 20:57	06:06 20:52	06:35 20:18	07:06 19:29	07:47 (MA03) 07:58 (MA03)	07:36 18:40	07:12 17:03	07:41 16:57
19	07:44 17:24	07:13 18:02	06:30 18:33	06:40 20:06	07:35 (MA02) 07:54 (MA02)	06:03 20:36	05:51 20:57	06:07 20:51	06:36 20:17	07:07 19:27	07:49 (MA03) 07:58 (MA03)	07:38 18:38	07:14 17:03	07:42 16:57
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	07:39 (MA02) 07:51 (MA02)	06:02 20:37	05:51 20:57	06:08 20:50	06:37 20:15	07:08 19:25	07:50 (MA03) 07:57 (MA03)	07:39 18:37	07:15 17:02	07:43 16:58
21	07:43 17:26	07:10 18:04	06:26 18:35	06:37 20:08	07:09 (MA03) 07:10 (MA03)	06:37 20:08	06:01 20:52	06:09 20:50	06:38 20:14	07:09 19:24	07:52 (MA03) 07:57 (MA03)	07:40 18:35	07:16 17:01	07:43 16:58
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	07:06 (MA03) 07:10 (MA03)	06:35 20:09	06:01 20:39	06:09 20:58	06:39 20:12	07:10 19:22	07:53 (MA03) 07:56 (MA03)	07:41 18:34	07:17 17:01	07:44 16:59
23	07:41 17:29	07:07 18:06	06:23 18:37	06:34 20:10	07:04 (MA03) 07:11 (MA03)	06:34 20:10	06:00 20:40	06:09 20:58	06:40 20:11	07:11 19:23	07:42 (MA02) 07:55 (MA02)	07:42 18:32	07:18 17:00	07:44 16:59
24	07:41 17:30	07:06 18:07	06:21 18:38	06:32 20:11	07:02 (MA03) 07:11 (MA03)	06:32 20:11	05:59 20:41	06:11 20:58	06:41 20:09	07:12 19:18	07:38 (MA02) 07:58 (MA02)	07:12 18:31	07:19 16:59	07:45 17:00
25	07:40 17:31	07:05 18:09	06:20 18:39	06:31 20:12	06:59 (MA03) 07:10 (MA03)	06:31 20:12	05:58 20:42	06:12 20:58	06:42 20:08	07:12 19:17	07:36 (MA02) 08:00 (MA02)	07:12 19:17	07:20 16:59	07:45 17:00
26	07:39 17:32	07:03 18:10	06:18 18:41	06:30 20:13	06:58 (MA03) 07:10 (MA03)	06:30 20:13	05:58 20:43	06:13 20:58	06:43 20:06	07:13 19:15	07:34 (MA02) 08:02 (MA02)	07:13 19:15	07:22 17:28	07:46 17:01
27	07:38 17:33	07:02 18:11	06:17 18:42	06:28 20:14	06:55 (MA03) 07:09 (MA03)	06:28 20:14	05:57 20:44	06:14 20:58	06:44 20:05	07:14 19:16	07:32 (MA02) 08:03 (MA02)	07:14 19:16	07:23 17:27	07:46 17:02
28	07:38 17:35	07:00 18:12	06:15 18:43	06:27 20:15	06:53 (MA03) 07:08 (MA03)	06:27 20:15	05:56 20:44	06:15 20:58	06:45 20:03	07:16 19:12	07:31 (MA02) 08:04 (MA02)	07:16 19:12	07:24 17:26	07:46 17:02
29	07:37 17:36	07:00 18:13	06:14 18:44	06:25 20:16	07:51 (MA03) 08:10 (MA02)	06:25 20:16	05:56 20:45	06:16 20:58	06:46 20:02	07:17 19:10	07:30 (MA02) 08:05 (MA02)	07:17 19:10	07:25 17:24	07:47 17:03
30	07:36 17:37	07:00 18:14	06:13 18:45	06:24 20:17	07:49 (MA02) 08:10 (MA02)	06:24 20:17	05:55 20:46	06:17 20:58	06:47 20:02	07:18 19:08	07:28 (MA02) 08:06 (MA02)	07:18 19:08	07:26 17:23	07:47 17:04
31	07:35 17:38	07:00 18:15	06:12 18:46	06:23 20:18	07:47 (MA02) 08:10 (MA02)	06:23 20:18	05:55 20:47	06:18 20:41	06:48 19:59	07:19 19:06	07:27 (MA02) 08:06 (MA02)	07:19 19:06	07:25 17:22	07:47 17:04
Potential sun hours	298	298	370	398	448	451	458	427	375	527	346	299	289	
Total, worst case			136	637				261						

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

Calculation: SHADOW\_Worse case Shadow receptor: R10 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June		
1	07:47	07:34	08:05 (MA04)	06:59	07:08	06:23	05:54	
	17:06	17:40	42 08:47 (MA04)	18:13	19:47	20:18	20:47	
2	07:47	07:33	08:04 (MA04)	06:57	07:07	06:22	05:54	
	17:06	17:41	44 08:48 (MA04)	18:14	19:48	20:19	20:48	
3	07:47	07:32	08:02 (MA04)	06:56	07:05	06:20	05:53	
	17:07	17:42	46 08:48 (MA04)	18:16	19:49	20:20	20:49	
4	07:48	07:31	08:01 (MA04)	06:54	07:03	06:19	05:53	
	17:08	17:43	48 08:49 (MA04)	18:17	19:50	20:21	20:50	
5	07:48	07:30	08:00 (MA04)	06:52	07:02	06:18	05:53	
	17:09	17:44	49 08:49 (MA04)	18:18	19:51	20:22	20:50	
6	07:48	07:29	07:59 (MA04)	06:51	07:00	06:17	05:52	
	17:10	17:46	51 08:50 (MA04)	18:19	19:52	20:23	20:51	
7	07:47	07:28	07:58 (MA04)	06:49	06:58	06:15	05:52	
	17:11	17:47	52 08:50 (MA04)	18:20	19:53	20:25	20:52	
8	07:47	07:27	07:56 (MA04)	06:48	06:57	06:14	05:52	
	17:12	17:48	53 08:49 (MA04)	18:21	19:54	20:26	20:52	
9	07:47	07:26	07:56 (MA04)	06:46	06:55	06:13	05:52	
	17:13	17:49	53 08:49 (MA04)	18:22	19:55	20:27	20:53	
10	07:47	07:25	07:57 (MA04)	06:44	06:54	06:12	05:51	
	17:14	17:51	52 08:49 (MA04)	18:23	19:56	20:28	20:53	
11	07:47	07:23	07:57 (MA04)	06:43	06:52	06:11	05:51	
	17:15	17:52	52 08:49 (MA04)	18:24	19:57	20:29	20:54	
12	07:47	07:22	07:58 (MA04)	06:41	06:50	06:10	05:51	
	17:16	17:53	51 08:49 (MA04)	18:26	19:58	20:30	20:54	
13	07:46	07:21	07:57 (MA04)	06:40	06:49	06:09	05:51	
	17:17	17:54	51 08:48 (MA04)	18:27	19:59	20:31	20:55	
14	07:46	08:16 (MA04)	07:20	07:58 (MA04)	06:38	06:47	06:08	05:51
	17:18	3 08:19 (MA04)	17:56	50 08:48 (MA04)	18:28	20:00	20:32	20:55
15	07:46	08:16 (MA04)	07:18	07:59 (MA04)	06:36	06:46	06:07	05:51
	17:19	9 08:25 (MA04)	17:57	49 08:48 (MA04)	18:29	20:02	20:33	20:56
16	07:45	08:15 (MA04)	07:17	07:59 (MA04)	06:35	06:44	06:06	05:51
	17:20	12 08:27 (MA04)	17:58	48 08:47 (MA04)	18:30	20:03	20:34	20:56
17	07:45	08:15 (MA04)	07:16	08:00 (MA04)	06:33	06:43	06:05	05:51
	17:22	15 08:30 (MA04)	17:59	46 08:46 (MA04)	18:31	20:04	20:34	20:56
18	07:44	08:14 (MA04)	07:14	08:01 (MA04)	06:31	06:41	06:04	05:51
	17:23	17 08:31 (MA04)	18:00	45 08:46 (MA04)	18:32	20:05	20:35	20:57
19	07:44	08:14 (MA04)	07:13	08:01 (MA04)	06:30	06:40	06:03	05:51
	17:24	20 08:34 (MA04)	18:02	43 08:44 (MA04)	18:33	20:06	20:36	20:57
20	07:43	08:14 (MA04)	07:12	08:02 (MA04)	06:28	06:38	06:02	05:51
	17:25	21 08:35 (MA04)	18:03	41 08:43 (MA04)	18:34	20:07	20:37	20:57
21	07:43	08:13 (MA04)	07:10	08:03 (MA04)	06:26	06:37	06:01	05:52
	17:26	23 08:36 (MA04)	18:04	38 08:41 (MA04)	18:35	20:08	20:38	20:58
22	07:42	08:13 (MA04)	07:09	08:05 (MA04)	06:25	06:35	06:01	05:52
	17:27	25 08:38 (MA04)	18:05	35 08:40 (MA04)	18:36	20:09	20:39	20:58
23	07:41	08:12 (MA04)	07:07	08:07 (MA04)	06:23	06:34	06:00	05:52
	17:29	27 08:39 (MA04)	18:06	31 08:38 (MA04)	18:37	20:10	20:40	20:58
24	07:41	08:11 (MA04)	07:06	08:08 (MA04)	06:21	06:32	05:59	05:52
	17:30	29 08:40 (MA04)	18:07	28 08:36 (MA04)	18:38	20:11	20:41	20:58
25	07:40	08:11 (MA04)	07:05	08:11 (MA04)	06:20	06:31	05:58	05:53
	17:31	30 08:41 (MA04)	18:09	22 08:33 (MA04)	18:39	20:12	20:42	20:58
26	07:39	08:11 (MA04)	07:03	08:15 (MA04)	06:18	06:30	05:58	05:53
	17:32	32 08:43 (MA04)	18:10	13 08:28 (MA04)	18:41	20:13	20:43	20:58
27	07:38	08:10 (MA04)	07:02	06:17	06:28	05:57	05:53	
	17:33	34 08:44 (MA04)	18:11	18:42	20:14	20:43	20:58	
28	07:38	08:09 (MA04)	07:00	06:15	06:27	05:56	05:54	
	17:35	36 08:45 (MA04)	18:12	18:43	20:15	20:44	20:58	
29	07:37	08:08 (MA04)		07:13	06:26	05:56	05:54	
	17:36	37 08:45 (MA04)		19:44	20:16	20:45	20:58	
30	07:36	08:07 (MA04)		07:12	06:24	05:55	05:54	
	17:37	39 08:46 (MA04)		19:45	20:17	20:46	20:58	
31	07:35	08:06 (MA04)		07:10		05:55		
	17:38	41 08:47 (MA04)		19:46		20:47		
Potential sun hours	298	298	370	398	448	451		
Total, worst case	450	1133						

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R10 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October		November		December
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07		06:52 17:20	53	07:26 (MA04) 08:19 (MA04) 16:56
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05		06:54 17:19	53	07:26 (MA04) 08:19 (MA04) 16:56
3	05:56 20:58	06:20 20:37	06:51 19:54	07:21 19:03		06:55 17:18	53	07:26 (MA04) 08:19 (MA04) 16:56
4	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02		06:56 17:17	52	07:28 (MA04) 08:20 (MA04) 16:56
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00		06:57 17:16	50	07:29 (MA04) 08:19 (MA04) 16:56
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59		06:58 17:15	49	07:30 (MA04) 08:19 (MA04) 16:55
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57		06:59 17:14	48	07:31 (MA04) 08:19 (MA04) 16:55
8	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55		07:01 17:12	46	07:33 (MA04) 08:19 (MA04) 16:55
9	05:59 20:56	06:26 20:30	06:57 19:44	07:27 18:54		07:02 17:11	44	07:35 (MA04) 08:19 (MA04) 16:55
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52		07:03 17:10	42	07:36 (MA04) 08:18 (MA04) 16:55
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:50		07:04 17:09	41	07:37 (MA04) 08:18 (MA04) 16:55
12	06:02 20:55	06:29 20:26	07:00 19:39	07:30 18:49		07:05 17:08	39	07:39 (MA04) 08:18 (MA04) 16:56
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47		07:06 17:08	37	07:40 (MA04) 08:17 (MA04) 16:56
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46		07:08 17:07	36	07:41 (MA04) 08:17 (MA04) 16:56
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	3	07:09 17:06	34	07:42 (MA04) 08:16 (MA04) 16:56
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	18	07:10 17:05	32	07:44 (MA04) 08:16 (MA04) 16:56
17	06:05 20:52	06:34 20:20	07:05 19:30	07:35 18:41	24	07:11 17:04	30	07:45 (MA04) 08:15 (MA04) 16:57
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	29	07:12 17:03	29	07:45 (MA04) 08:14 (MA04) 16:57
19	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	33	07:14 17:03	27	07:46 (MA04) 08:13 (MA04) 16:57
20	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	36	07:15 17:02	25	07:48 (MA04) 08:13 (MA04) 16:58
21	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	39	07:16 17:01	23	07:49 (MA04) 08:12 (MA04) 16:58
22	06:09 20:49	06:39 20:12	07:10 19:22	07:41 18:34	41	07:17 17:01	21	07:50 (MA04) 08:11 (MA04) 16:59
23	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:32	44	07:18 17:00	20	07:50 (MA04) 08:10 (MA04) 16:59
24	06:11 20:47	06:41 20:09	07:12 19:18	07:43 18:31	46	07:19 16:59	18	07:51 (MA04) 08:09 (MA04) 17:00
25	06:12 20:46	06:42 20:08	07:13 19:17	07:44 17:30	47	07:20 16:59	15	07:53 (MA04) 08:08 (MA04) 17:00
26	06:13 20:46	06:43 20:06	07:13 19:15	07:45 17:28	48	07:21 16:58	12	07:54 (MA04) 08:06 (MA04) 17:01
27	06:14 20:45	06:44 20:05	07:15 19:13	07:47 17:27	50	07:23 16:58	9	07:55 (MA04) 08:04 (MA04) 17:02
28	06:15 20:44	06:45 20:03	07:16 19:12	07:48 17:26	51	07:24 16:58	4	07:56 (MA04) 08:00 (MA04) 17:02
29	06:16 20:43	06:46 20:02	07:17 19:10	07:49 17:24	51	07:25 16:57		07:47 17:03
30	06:17 20:42	06:47 20:00	07:18 19:08	07:50 17:23	52	07:26 16:57		07:47 17:04
31	06:18 20:41	06:48 19:58	07:19 19:06	07:51 17:22	52	07:27 16:57		07:47 17:05
Potential sun hours	458	427	375	346		299		289
Total, worst case					664		942	76

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R12 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June			
1	07:47	15:54 (MA08)	07:34	06:59	07:37 (MA04)	07:08	06:23	05:54	
	17:06	22 16:16 (MA08)	17:40	18:13	42 08:19 (MA04)	19:47	20:18	20:47	
2	07:47	15:55 (MA08)	07:33	06:57	07:35 (MA04)	07:07	06:22	05:54	
	17:06	20 16:15 (MA08)	17:41	18:14	43 08:18 (MA04)	19:48	20:19	20:48	
3	07:47	15:56 (MA08)	07:32	06:56	07:33 (MA04)	07:05	06:20	05:53	
	17:07	19 16:15 (MA08)	17:42	18:16	44 08:17 (MA04)	19:49	20:20	20:49	
4	07:48	15:57 (MA08)	07:31	06:54	07:32 (MA04)	07:03	06:19	05:53	
	17:08	18 16:15 (MA08)	17:43	18:17	45 08:17 (MA04)	19:50	20:21	20:50	
5	07:48	15:59 (MA08)	07:30	06:52	07:32 (MA04)	07:02	06:18	05:53	
	17:09	15 16:14 (MA08)	17:44	18:18	44 08:16 (MA04)	19:51	20:22	20:50	
6	07:48	15:59 (MA08)	07:29	06:51	07:33 (MA04)	07:00	06:17	05:52	
	17:10	14 16:13 (MA08)	17:46	18:19	43 08:16 (MA04)	19:52	20:23	20:51	
7	07:47	16:02 (MA08)	07:28	06:49	07:33 (MA04)	06:58	06:15	05:52	
	17:11	10 16:12 (MA08)	17:47	18:20	41 08:14 (MA04)	19:53	20:25	20:52	
8	07:47	16:05 (MA08)	07:27	06:48	07:33 (MA04)	06:57	06:14	05:52	
	17:12	5 16:10 (MA08)	17:48	18:21	40 08:13 (MA04)	19:54	20:26	20:52	
9	07:47		07:26	06:46	07:35 (MA04)	06:55	06:13	05:52	
	17:13		17:49	18:22	37 08:12 (MA04)	19:55	20:27	20:53	
10	07:47		07:25	06:44	07:35 (MA04)	06:54	06:12	05:51	
	17:14		17:51	18:23	35 08:10 (MA04)	19:56	20:28	20:53	
11	07:47		07:23	06:43	07:37 (MA04)	06:52	06:11	05:51	
	17:15		17:52	18:24	32 08:09 (MA04)	19:57	20:29	20:54	
12	07:47		07:22	06:41	07:39 (MA04)	06:50	06:10	05:51	
	17:16		17:53	4 08:02 (MA04)	18:26	27 08:06 (MA04)	19:58	20:30	20:54
13	07:46		07:21	07:57 (MA04)	06:40	07:40 (MA04)	06:49	06:09	05:51
	17:17		17:54	9 08:06 (MA04)	18:27	23 08:03 (MA04)	19:59	20:31	20:55
14	07:46		07:20	07:56 (MA04)	06:38	07:44 (MA04)	06:47	06:08	05:51
	17:18		17:56	13 08:09 (MA04)	18:28	16 08:00 (MA04)	20:00	20:32	20:55
15	07:46		07:18	07:55 (MA04)	06:36		06:46	06:07	05:51
	17:19		17:57	16 08:11 (MA04)	18:29		20:02	20:33	20:56
16	07:45		07:17	07:53 (MA04)	06:35		06:44	06:06	05:51
	17:20		17:58	19 08:12 (MA04)	18:30		20:03	20:34	20:56
17	07:45		07:16	07:52 (MA04)	06:33		06:43	06:05	05:51
	17:22		17:59	22 08:14 (MA04)	18:31		20:04	20:34	20:57
18	07:44		07:14	07:51 (MA04)	06:31		06:41	06:04	05:51
	17:23		18:00	25 08:16 (MA04)	18:32		20:05	20:35	20:57
19	07:44		07:13	07:50 (MA04)	06:30		06:40	06:03	05:51
	17:24		18:02	26 08:16 (MA04)	18:33		20:06	20:36	20:57
20	07:43		07:12	07:49 (MA04)	06:28		06:38	06:02	05:51
	17:25		18:03	28 08:17 (MA04)	18:34		20:07	20:37	20:57
21	07:43		07:10	07:47 (MA04)	06:26		06:37	06:01	05:52
	17:26		18:04	30 08:17 (MA04)	18:35		20:08	20:38	20:58
22	07:42		07:09	07:46 (MA04)	06:25		06:35	06:01	05:52
	17:27		18:05	32 08:18 (MA04)	18:36		20:09	20:39	20:58
23	07:41		07:07	07:45 (MA04)	06:23		06:34	06:00	05:52
	17:29		18:06	34 08:19 (MA04)	18:37		20:10	20:40	20:58
24	07:41		07:06	07:43 (MA04)	06:22		06:32	05:59	05:52
	17:30		18:07	36 08:19 (MA04)	18:38		20:11	20:41	20:58
25	07:40		07:05	07:42 (MA04)	06:20		06:31	05:58	05:53
	17:31		18:09	37 08:19 (MA04)	18:39		20:12	20:42	20:58
26	07:39		07:03	07:40 (MA04)	06:18		06:30	05:58	05:53
	17:32		18:10	39 08:19 (MA04)	18:41		20:13	20:43	20:58
27	07:38		07:02	07:39 (MA04)	06:17		06:28	05:57	05:53
	17:33		18:11	40 08:19 (MA04)	18:42		20:14	20:43	20:58
28	07:38		07:00	07:38 (MA04)	06:15		06:27	05:56	05:54
	17:35		18:12	41 08:19 (MA04)	18:43		20:15	20:44	20:58
29	07:37				07:13		06:26	05:56	05:54
	17:36				19:44		20:16	20:45	20:58
30	07:36				07:12		06:24	05:55	05:54
	17:37				19:45		20:17	20:46	20:58
31	07:35				07:10			05:55	
	17:38				19:46			20:47	
Potential sun hours	298	298	370	398	448	451			
Total, worst case	123	451	512						

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R12 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December	
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	08:18 (MA04) 08:44 (MA04)	06:52 17:21	07:27 16:56
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05	08:17 (MA04) 08:46 (MA04)	06:54 17:19	07:28 16:56
3	05:56 20:58	06:20 20:37	06:51 19:54	07:21 19:03	08:15 (MA04) 08:48 (MA04)	06:55 17:18	07:29 16:56
4	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02	08:13 (MA04) 08:49 (MA04)	06:56 17:17	07:30 16:56
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00	08:11 (MA04) 08:50 (MA04)	06:57 17:16	07:31 16:56
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59	08:10 (MA04) 08:50 (MA04)	06:58 17:15	07:32 16:55
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	08:09 (MA04) 08:51 (MA04)	06:59 17:14	07:33 16:55
8	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55	08:08 (MA04) 08:51 (MA04)	07:01 17:12	07:34 16:55
9	05:59 20:56	06:26 20:30	06:57 19:44	07:27 18:54	08:07 (MA04) 08:52 (MA04)	07:02 17:11	07:35 16:55
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	08:07 (MA04) 08:52 (MA04)	07:03 17:10	07:35 16:55
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:50	08:08 (MA04) 08:52 (MA04)	07:04 17:09	07:36 16:55
12	06:02 20:55	06:29 20:26	07:00 19:39	07:30 18:49	08:09 (MA04) 08:52 (MA04)	07:05 17:08	07:37 16:56
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	08:10 (MA04) 08:52 (MA04)	07:06 17:08	07:38 16:56
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	08:11 (MA04) 08:51 (MA04)	07:08 17:07	07:39 16:56
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	08:11 (MA04) 08:51 (MA04)	07:09 17:06	07:39 16:56
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	08:13 (MA04) 08:51 (MA04)	07:10 17:05	07:40 16:56
17	06:05 20:52	06:34 20:20	07:05 19:30	07:35 18:41	08:14 (MA04) 08:51 (MA04)	07:11 17:04	07:41 16:57
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	08:15 (MA04) 08:50 (MA04)	07:12 17:03	07:41 16:57
19	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	08:16 (MA04) 08:49 (MA04)	07:14 17:03	07:42 16:57
20	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	08:17 (MA04) 08:49 (MA04)	07:15 17:02	07:43 16:58
21	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	08:18 (MA04) 08:48 (MA04)	07:16 17:01	07:43 16:58
22	06:09 20:49	06:39 20:12	07:10 19:22	07:41 18:34	08:20 (MA04) 08:47 (MA04)	07:17 17:01	07:44 16:59
23	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:32	08:21 (MA04) 08:46 (MA04)	07:18 17:00	07:44 16:59
24	06:11 20:47	06:41 20:09	07:12 19:18	07:43 18:31	08:21 (MA04) 08:45 (MA04)	07:19 16:59	07:45 17:00
25	06:12 20:46	06:42 20:08	07:13 19:17	07:44 17:30	08:21 (MA04) 07:22 (MA04)	07:19 07:20	07:45 17:00
26	06:13 20:46	06:43 20:06	07:14 19:15	07:45 17:28	08:21 (MA04) 07:23 (MA04)	07:20 16:59	07:46 17:01
27	06:14 20:45	06:44 20:05	07:15 19:13	07:46 17:27	08:21 (MA04) 07:25 (MA04)	07:21 16:58	07:46 17:02
28	06:15 20:44	06:45 20:03	07:16 19:12	07:48 17:26	08:22 (MA04) 07:38 (MA04)	07:22 16:58	07:47 17:02
29	06:16 20:43	06:46 20:02	07:17 19:10	07:49 17:24	08:22 (MA04) 07:35 (MA04)	07:23 16:57	07:47 17:03
30	06:17 20:42	06:47 20:00	07:18 19:08	07:50 17:23	08:21 (MA04) 07:30 (MA04)	07:24 16:57	07:47 17:04
31	06:18 20:41	06:48 19:59		06:51 17:22			07:47 17:05
Potential sun hours	458	427	375	346	299	289	623
Total, worst case			32	945			

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R13 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	07:52 (MA04) 08:35 (MA04)	06:52 17:21	07:27 16:56	15:39 (MA08) 15:52 (MA08)
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05	07:53 (MA04) 08:36 (MA04)	06:54 17:19	07:28 16:56	15:37 (MA08) 15:54 (MA08)
3	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:03	07:52 (MA04) 08:35 (MA04)	06:55 17:18	07:29 16:56	15:36 (MA08) 15:55 (MA08)
4	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02	07:52 (MA04) 08:35 (MA04)	06:56 17:17	07:30 16:56	15:36 (MA08) 15:57 (MA08)
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00	07:52 (MA04) 08:34 (MA04)	06:57 17:16	07:31 16:56	15:35 (MA08) 15:58 (MA08)
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59	07:52 (MA04) 08:34 (MA04)	06:58 17:15	07:32 16:55	15:35 (MA08) 15:59 (MA08)
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	07:52 (MA04) 08:33 (MA04)	06:59 17:14	07:33 16:55	08:20 (MA09) 16:00 (MA08)
8	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55	07:53 (MA04) 08:32 (MA04)	07:01 17:12	07:34 16:55	08:19 (MA09) 16:01 (MA08)
9	05:59 20:56	06:26 20:30	06:57 19:44	07:27 18:54	07:53 (MA04) 08:31 (MA04)	07:02 17:11	07:35 16:55	08:18 (MA09) 16:02 (MA08)
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:54 (MA04) 08:30 (MA04)	07:03 17:10	07:35 16:55	08:18 (MA09) 16:03 (MA08)
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:50	07:55 (MA04) 08:29 (MA04)	07:04 17:09	07:36 16:55	08:18 (MA09) 16:04 (MA08)
12	06:02 20:55	06:29 20:26	07:00 19:39	07:30 18:49	07:55 (MA04) 08:27 (MA04)	07:05 17:08	07:37 16:56	08:18 (MA09) 16:05 (MA08)
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	07:56 (MA04) 08:26 (MA04)	07:06 17:08	07:38 16:56	08:17 (MA09) 16:05 (MA08)
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	07:57 (MA04) 08:24 (MA04)	07:07 17:07	07:39 16:56	08:17 (MA09) 16:06 (MA08)
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	07:58 (MA04) 08:21 (MA04)	07:09 17:06	07:39 16:56	08:18 (MA09) 16:07 (MA08)
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	08:01 (MA04) 08:19 (MA04)	07:10 17:05	07:40 16:56	08:18 (MA09) 16:08 (MA08)
17	06:05 20:52	06:34 20:20	07:05 19:30	07:35 18:41	08:06 (MA04) 08:14 (MA04)	07:11 17:04	07:41 16:57	08:18 (MA09) 16:08 (MA08)
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	08:14 (MA04)	07:12 17:03	07:41 16:57	08:19 (MA09) 16:09 (MA08)
19	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38		07:14 17:03	07:42 16:57	08:18 (MA09) 16:09 (MA08)
20	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	08:11 (MA04) 08:25 (MA04)	07:15 17:02	07:43 16:58	08:19 (MA09) 16:10 (MA08)
21	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	08:07 (MA04) 08:28 (MA04)	07:16 17:01	07:43 16:58	08:19 (MA09) 16:10 (MA08)
22	06:09 20:49	06:39 20:12	07:10 19:22	07:41 18:34	08:04 (MA04) 08:30 (MA04)	07:17 17:01	07:44 16:59	08:20 (MA09) 16:11 (MA08)
23	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:32	08:01 (MA04) 08:31 (MA04)	07:18 17:00	07:44 16:59	08:20 (MA09) 16:11 (MA08)
24	06:11 20:47	06:41 20:09	07:12 19:18	07:43 18:31	08:00 (MA04) 08:32 (MA04)	07:19 16:59	07:45 17:00	08:21 (MA09) 16:12 (MA08)
25	06:12 20:46	06:42 20:08	07:13 19:17	07:44 18:30	07:58 (MA04) 08:33 (MA04)	07:20 16:59	07:45 17:00	08:21 (MA09) 16:12 (MA08)
26	06:13 20:46	06:43 20:06	07:14 19:15	07:45 18:28	07:57 (MA04) 08:33 (MA04)	07:22 16:58	07:46 17:01	08:22 (MA09) 16:12 (MA08)
27	06:14 20:45	06:44 20:05	07:15 19:13	07:46 18:27	07:55 (MA04) 08:34 (MA04)	07:23 16:58	07:46 17:02	08:23 (MA09) 16:13 (MA08)
28	06:15 20:44	06:45 20:03	07:16 19:12	07:47 18:26	07:54 (MA04) 08:34 (MA04)	07:24 16:58	07:46 17:02	08:24 (MA09) 16:13 (MA08)
29	06:16 20:43	06:46 20:02	07:17 19:10	07:48 18:25	07:54 (MA04) 08:35 (MA04)	07:25 16:57	07:47 17:03	08:24 (MA09) 16:13 (MA08)
30	06:17 20:42	06:47 20:00	07:18 19:08	07:49 18:23	07:53 (MA04) 08:35 (MA04)	07:26 16:57	07:47 17:04	08:25 (MA09) 16:13 (MA08)
31	06:18 20:41	06:48 19:59		06:51 17:22			07:47 17:05	08:26 (MA09) 16:13 (MA08)
Potential sun hours	458	427	375	346	299	289		
Total, worst case			356	582	8	1351		

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R16 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June				
1	07:47	08:12 (MA09)	07:34	06:59	07:08	07:58 (MA04)	06:23	05:54		
	17:06	64	16:21 (MA08)	17:40	18:13	19:47	27	08:25 (MA04)	20:18	20:47
2	07:47	08:12 (MA09)	07:33	06:57	07:07	07:59 (MA04)	06:22	05:54		
	17:06	66	16:22 (MA08)	17:41	18:14	19:48	23	08:22 (MA04)	20:19	20:48
3	07:47	08:12 (MA09)	07:32	06:56	07:05	08:01 (MA04)	06:20	05:54		
	17:07	66	16:23 (MA08)	17:42	18:16	19:49	18	08:19 (MA04)	20:20	20:49
4	07:48	08:12 (MA09)	07:31	06:54	07:03	08:05 (MA04)	06:19	05:53		
	17:08	67	16:24 (MA08)	17:43	18:17	19:50	11	08:16 (MA04)	20:21	20:50
5	07:48	08:12 (MA09)	07:30	06:52	07:02			06:18	05:53	
	17:09	68	16:25 (MA08)	17:44	18:18	19:51		20:22	20:50	
6	07:48	08:11 (MA09)	07:29	06:51	07:00			06:17	05:52	
	17:10	69	16:26 (MA08)	17:46	18:19	19:52		20:23	20:51	
7	07:47	08:11 (MA09)	07:28	06:49	06:58			06:15	05:52	
	17:11	70	16:27 (MA08)	17:47	18:20	19:53		20:25	20:52	
8	07:47	08:11 (MA09)	07:27	06:48	06:57			06:14	05:52	
	17:12	70	16:27 (MA08)	17:48	18:21	19:54		20:26	20:52	
9	07:47	08:12 (MA09)	07:26	06:46	06:55			06:13	05:52	
	17:13	70	16:28 (MA08)	17:49	18:22	19:55		20:27	20:53	
10	07:47	08:12 (MA09)	07:25	06:45	07:10 (MA04)	06:54		06:12	05:52	
	17:14	69	16:28 (MA08)	17:51	18:23	16	07:26 (MA04)	19:56	20:28	20:53
11	07:47	08:11 (MA09)	07:23	06:43	07:07 (MA04)	06:52		06:11	05:51	
	17:15	68	16:27 (MA08)	17:52	18:24	22	07:29 (MA04)	19:57	20:29	20:54
12	07:47	08:11 (MA09)	07:22	06:41	07:05 (MA04)	06:51		06:10	05:51	
	17:16	68	16:28 (MA08)	17:53	18:26	26	07:31 (MA04)	19:58	20:30	20:54
13	07:46	08:12 (MA09)	07:21	06:40	07:02 (MA04)	06:49		06:09	05:51	
	17:17	67	16:28 (MA08)	17:54	18:27	30	07:32 (MA04)	19:59	20:31	20:55
14	07:46	08:12 (MA09)	07:20	06:38	07:01 (MA04)	06:47		06:08	05:51	
	17:18	65	16:27 (MA08)	17:56	18:28	33	07:34 (MA04)	20:00	20:32	20:55
15	07:46	08:13 (MA09)	07:18	06:36	06:59 (MA04)	06:46		06:07	05:51	
	17:19	63	16:28 (MA08)	17:57	18:29	35	07:34 (MA04)	20:02	20:33	20:56
16	07:45	08:13 (MA09)	07:17	06:35	06:58 (MA04)	06:44		06:06	05:51	
	17:20	62	16:27 (MA08)	17:58	18:30	36	07:34 (MA04)	20:03	20:34	20:56
17	07:45	08:15 (MA09)	07:16	06:33	06:57 (MA04)	06:43		06:05	05:51	
	17:22	58	16:27 (MA08)	17:59	18:31	39	07:36 (MA04)	20:04	20:34	20:57
18	07:44	08:15 (MA09)	07:14	06:31	06:56 (MA04)	06:41		06:04	05:51	
	17:23	55	16:26 (MA08)	18:00	18:32	40	07:36 (MA04)	20:05	20:35	20:57
19	07:44	08:17 (MA09)	07:13	06:30	06:55 (MA04)	06:40		06:03	05:51	
	17:24	51	16:26 (MA08)	18:02	18:33	40	07:35 (MA04)	20:06	20:36	20:57
20	07:43	08:18 (MA09)	07:12	06:28	06:55 (MA04)	06:38		06:02	05:51	
	17:25	47	16:25 (MA08)	18:03	18:34	41	07:36 (MA04)	20:07	20:37	20:57
21	07:43	08:19 (MA09)	07:10	06:26	06:54 (MA04)	06:37		06:01	05:52	
	17:26	41	16:23 (MA08)	18:04	18:35	42	07:36 (MA04)	20:08	20:38	20:58
22	07:42	08:22 (MA09)	07:09	06:25	06:54 (MA04)	06:35		06:01	05:52	
	17:27	35	16:23 (MA08)	18:05	18:36	41	07:35 (MA04)	20:09	20:39	20:58
23	07:41	08:25 (MA09)	07:07	06:23	06:54 (MA04)	06:34		06:00	05:52	
	17:29	24	16:20 (MA08)	18:06	18:37	41	07:35 (MA04)	20:10	20:40	20:58
24	07:41	16:07 (MA08)	07:06	06:22	06:53 (MA04)	06:32		05:59	05:52	
	17:30	10	16:17 (MA08)	18:07	18:38	41	07:34 (MA04)	20:11	20:41	20:58
25	07:40		07:05	06:20	06:53 (MA04)	06:31		05:58	05:53	
	17:31		18:09	18:39	40	07:33 (MA04)	20:12	20:42	20:58	
26	07:39		07:03	06:18	06:54 (MA04)	06:30		05:58	05:53	
	17:32		18:10	18:41	39	07:33 (MA04)	20:13	20:43	20:58	
27	07:38		07:02	06:17	06:54 (MA04)	06:28		05:57	05:53	
	17:33		18:11	18:42	38	07:32 (MA04)	20:14	20:43	20:58	
28	07:38		07:00	06:15	06:54 (MA04)	06:27		05:57	05:54	
	17:35		18:12	18:43	37	07:31 (MA04)	20:15	20:44	20:58	
29	07:37			07:13	07:55 (MA04)	06:26		05:56	05:54	
	17:36			19:44	35	08:30 (MA04)	20:16	20:45	20:58	
30	07:36			07:12	07:55 (MA04)	06:24		05:55	05:54	
	17:37			19:45	33	08:28 (MA04)	20:17	20:46	20:58	
31	07:35			07:10	07:56 (MA04)			05:55		
	17:38			19:46	30	08:26 (MA04)		20:47		
Potential sun hours	298		298	370	775	398	79	448	451	
Total, worst case	1393									

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R16 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	07:42 (MA04) 08:10 (MA04)	06:52 17:21	07:27 16:56	07:53 (MA09) 16:09 (MA08)
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05	07:45 (MA04) 08:09 (MA04)	06:54 17:19	07:28 16:56	07:54 (MA09) 16:10 (MA08)
3	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:03	07:47 (MA04) 08:06 (MA04)	06:55 17:18	07:29 16:56	07:55 (MA09) 16:11 (MA08)
4	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02	07:51 (MA04) 08:01 (MA04)	06:56 17:17	07:30 16:56	07:55 (MA09) 16:11 (MA08)
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00	07:52 (MA04) 08:02 (MA04)	06:57 17:16	07:31 16:56	07:56 (MA09) 16:12 (MA08)
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59	07:53 (MA04) 08:03 (MA04)	06:58 17:15	07:32 16:56	07:57 (MA09) 16:12 (MA08)
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	08:04 (MA04) 08:04 (MA04)	06:59 17:14	07:33 16:55	07:58 (MA09) 16:11 (MA08)
8	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55	08:05 (MA04) 08:05 (MA04)	07:01 17:12	07:34 16:55	07:59 (MA09) 16:11 (MA08)
9	05:59 20:56	06:26 20:30	06:57 19:44	07:27 18:54	08:06 (MA04) 08:06 (MA04)	07:02 17:11	07:35 16:55	08:00 (MA09) 16:11 (MA08)
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	08:07 (MA04) 08:07 (MA04)	07:03 17:10	07:35 16:55	08:01 (MA09) 16:11 (MA08)
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:50	08:08 (MA04) 08:08 (MA04)	07:04 17:09	07:36 16:55	08:02 (MA09) 16:11 (MA08)
12	06:02 20:55	06:29 20:26	07:00 19:39	07:30 18:49	08:09 (MA04) 08:09 (MA04)	07:05 17:08	07:37 16:56	08:03 (MA09) 16:12 (MA08)
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	08:10 (MA04) 08:10 (MA04)	07:07 17:08	07:38 16:56	08:03 (MA09) 16:11 (MA08)
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	08:11 (MA04) 08:11 (MA04)	07:08 17:07	07:39 16:56	08:04 (MA09) 16:11 (MA08)
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	08:12 (MA04) 08:12 (MA04)	07:09 17:06	07:39 16:56	08:04 (MA09) 16:12 (MA08)
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	08:13 (MA04) 08:13 (MA04)	07:10 17:05	07:40 16:56	08:05 (MA09) 16:12 (MA08)
17	06:05 20:52	06:34 20:20	07:05 19:30	07:35 18:41	08:14 (MA04) 08:14 (MA04)	07:11 17:04	07:41 16:57	08:05 (MA09) 16:12 (MA08)
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	08:15 (MA04) 08:15 (MA04)	07:12 17:03	07:41 16:57	08:06 (MA09) 16:12 (MA08)
19	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	08:16 (MA04) 08:16 (MA04)	07:14 17:03	07:42 16:57	08:06 (MA09) 16:12 (MA08)
20	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	08:17 (MA04) 08:17 (MA04)	07:15 17:02	07:43 16:58	08:07 (MA09) 16:13 (MA08)
21	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	08:18 (MA04) 08:18 (MA04)	07:16 17:01	07:43 16:58	08:07 (MA09) 16:13 (MA08)
22	06:09 20:49	06:39 20:12	07:10 19:22	07:41 18:34	08:19 (MA04) 08:19 (MA04)	07:17 17:01	07:44 16:59	08:08 (MA09) 16:14 (MA08)
23	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:32	08:20 (MA04) 08:20 (MA04)	07:18 17:00	07:44 16:59	08:08 (MA09) 16:14 (MA08)
24	06:11 20:47	06:41 20:09	07:12 19:18	07:43 18:31	08:21 (MA04) 08:21 (MA04)	07:19 16:59	07:45 17:00	08:09 (MA09) 16:15 (MA08)
25	06:12 20:46	06:42 20:08	07:13 19:17	07:44 18:30	08:22 (MA04) 08:22 (MA04)	07:20 16:59	07:45 17:00	08:09 (MA09) 16:15 (MA08)
26	06:13 20:46	06:43 20:06	07:14 19:15	07:45 18:28	08:23 (MA04) 08:23 (MA04)	07:22 16:58	07:46 17:01	08:09 (MA09) 16:16 (MA08)
27	06:14 20:45	06:44 20:05	07:15 19:13	07:46 18:27	08:24 (MA04) 08:24 (MA04)	07:23 16:58	07:46 17:02	08:10 (MA09) 16:17 (MA08)
28	06:15 20:44	06:45 20:03	07:16 19:12	07:47 18:26	08:25 (MA04) 08:25 (MA04)	07:24 16:58	07:46 17:02	08:10 (MA09) 16:17 (MA08)
29	06:16 20:43	06:46 20:02	07:17 19:10	07:48 18:24	08:26 (MA04) 08:26 (MA04)	07:25 16:57	07:47 17:03	08:11 (MA09) 16:18 (MA08)
30	06:17 20:42	06:47 20:00	07:18 19:08	07:49 18:23	08:27 (MA04) 08:27 (MA04)	07:26 16:57	07:47 17:04	08:11 (MA09) 16:19 (MA08)
31	06:18 20:41	06:48 19:59		06:51 17:22		07:27 17:05	07:47 17:05	08:11 (MA09) 16:19 (MA08)
Potential sun hours	458	427	375	346	299	289	289	1999
Total, worst case			792	81	644			

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R18 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (6)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:47 17:06	08:10 (MA09) 16:10 (MA08)	07:34 17:40	06:59 18:13		05:54 20:47
2	07:47 17:06	08:10 (MA09) 16:11 (MA08)	07:33 17:41	06:57 18:14	07:07 19:48	05:54 20:48
3	07:47 17:07	08:10 (MA09) 16:11 (MA08)	07:32 17:42	06:56 18:16	07:05 19:49	05:54 20:49
4	07:48 17:08	08:10 (MA09) 16:11 (MA08)	07:31 17:43	06:54 18:17	07:03 19:50	05:53 20:50
5	07:48 17:09	08:10 (MA09) 16:11 (MA08)	07:30 17:44	06:52 18:18	07:02 19:51	05:53 20:50
6	07:48 17:10	08:09 (MA09) 16:10 (MA08)	07:29 17:46	06:51 18:19	07:00 19:52	05:52 20:51
7	07:47 17:11	08:09 (MA09) 16:10 (MA08)	07:28 17:47	06:49 18:20	07:13 (MA04) 19:53	05:52 20:52
8	07:47 17:12	08:09 (MA09) 16:10 (MA08)	07:27 17:48	06:48 18:21	07:09 (MA04) 19:54	05:52 20:52
9	07:47 17:13	08:09 (MA09) 16:09 (MA08)	07:26 17:49	06:46 18:22	07:07 (MA04) 19:55	05:52 20:53
10	07:47 17:14	08:09 (MA09) 16:09 (MA08)	07:25 17:51	06:45 18:23	07:05 (MA04) 19:56	05:52 20:53
11	07:47 17:15	08:08 (MA09) 16:08 (MA08)	07:23 17:52	06:43 18:24	07:04 (MA04) 19:57	05:51 20:54
12	07:47 17:16	08:09 (MA09) 16:07 (MA08)	07:22 17:53	06:41 18:26	07:02 (MA04) 19:58	05:51 20:54
13	07:46 17:17	08:10 (MA09) 16:06 (MA08)	07:21 17:54	06:40 18:27	07:00 (MA04) 19:59	05:51 20:55
14	07:46 17:18	08:10 (MA09) 16:04 (MA08)	07:20 17:56	06:38 18:28	07:00 (MA04) 20:00	05:51 20:55
15	07:46 17:19	08:11 (MA09) 16:00 (MA08)	07:18 17:57	06:36 18:29	06:59 (MA04) 20:02	05:51 20:56
16	07:45 17:20	08:12 (MA09) 16:00 (MA08)	07:17 17:58	06:35 18:30	06:58 (MA04) 20:03	05:51 20:56
17	07:45 17:22	08:13 (MA09) 16:00 (MA08)	07:16 17:59	06:33 18:31	06:58 (MA04) 20:04	05:51 20:57
18	07:44 17:23	08:14 (MA09) 16:00 (MA08)	07:14 18:00	06:31 18:32	06:57 (MA04) 20:05	05:51 20:57
19	07:44 17:24	08:16 (MA09) 16:00 (MA08)	07:13 18:02	06:30 18:33	06:56 (MA04) 20:06	05:51 20:57
20	07:43 17:25	08:17 (MA09) 16:00 (MA08)	07:12 18:03	06:28 18:34	06:57 (MA04) 20:07	05:51 20:57
21	07:43 17:26	08:18 (MA09) 16:00 (MA08)	07:10 18:04	06:26 18:35	06:56 (MA04) 20:08	05:52 20:58
22	07:42 17:27	08:22 (MA09) 16:00 (MA08)	07:09 18:05	06:25 18:36	06:56 (MA04) 20:09	05:52 20:58
23	07:41 17:29	08:32 (MA09) 16:00 (MA08)	07:07 18:06	06:23 18:37	06:57 (MA04) 20:10	05:52 20:58
24	07:41 17:30		07:06 18:07	06:22 18:38	06:57 (MA04) 20:11	05:52 20:58
25	07:40 17:31		07:05 18:09	06:20 18:39	06:57 (MA04) 20:12	05:53 20:58
26	07:39 17:32		07:03 18:10	06:18 18:41	06:58 (MA04) 20:13	05:53 20:58
27	07:38 17:33		07:02 18:11	06:17 18:42	06:59 (MA04) 20:14	05:53 20:58
28	07:38 17:35		07:00 18:12	06:15 18:43	07:00 (MA04) 20:15	05:54 20:58
29	07:37 17:36			07:13 19:44	08:02 (MA04) 20:16	05:54 20:58
30	07:36 17:37			07:12 19:45	08:04 (MA04) 20:17	05:55 20:58
31	07:35 17:38			07:10 19:46	08:07 (MA04) 08:16 (MA04)	05:55 20:47
Potential sun hours	298	298	370	398	448	451
Total, worst case	923		769			

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R18 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (6)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:  
The sun is shining all the day, from sunrise to sunset  
The rotor plane is always perpendicular to the line from the WTG to the sun  
The WTG is always operating

	July	August	September	October	November	December		
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	07:40 (MA04) 08:14 (MA04)	06:52 17:21	07:27 16:56	07:50 (MA09) 15:50 (MA08)
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05	34 07:42 (MA04) 08:13 (MA04)	06:54 17:19	07:28 16:56	07:51 (MA09) 15:51 (MA08)
3	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:03	31 07:43 (MA04) 08:12 (MA04)	06:55 17:18	07:29 16:56	07:52 (MA09) 15:52 (MA08)
4	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02	29 07:44 (MA04) 08:10 (MA04)	06:56 17:17	07:30 16:56	07:53 (MA09) 15:54 (MA08)
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00	26 07:46 (MA04) 08:07 (MA04)	06:57 17:16	07:31 16:56	07:54 (MA09) 15:55 (MA08)
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59	21 07:48 (MA04) 08:04 (MA04)	06:58 17:15	07:32 16:56	07:55 (MA09) 15:56 (MA08)
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	16 07:53 (MA04) 07:59 (MA04)	06:59 17:14	07:33 16:55	07:56 (MA09) 15:57 (MA08)
8	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55	6 07:01 17:12	07:01 17:12	07:34 16:55	07:57 (MA09) 15:58 (MA08)
9	05:59 20:56	06:26 20:30	06:57 19:44	07:27 18:54	07:02 17:11	07:02 17:11	07:35 16:55	07:58 (MA09) 15:59 (MA08)
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:03 17:10	07:03 17:10	07:35 16:55	07:59 (MA09) 16:00 (MA08)
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:50	07:04 17:09	07:04 17:09	07:36 16:55	08:00 (MA09) 16:00 (MA08)
12	06:02 20:55	06:29 20:26	07:00 19:39	08:00 (MA04) 08:07 (MA04)	07:30 18:49	07:05 17:08	07:37 16:56	08:01 (MA09) 16:01 (MA08)
13	06:02 20:55	06:30 20:25	07:01 19:37	07:56 (MA04) 08:12 (MA04)	07:31 18:47	07:07 17:08	07:38 16:56	08:01 (MA09) 16:01 (MA08)
14	06:03 20:54	06:31 20:24	07:02 19:35	07:53 (MA04) 08:14 (MA04)	07:32 18:46	07:08 17:07	07:39 16:56	08:02 (MA09) 16:02 (MA08)
15	06:04 20:54	06:32 20:22	07:03 19:34	07:50 (MA04) 08:16 (MA04)	07:33 18:44	07:09 17:06	07:39 16:56	08:03 (MA09) 16:03 (MA08)
16	06:05 20:53	06:33 20:21	07:04 19:32	07:48 (MA04) 08:17 (MA04)	07:34 18:43	07:10 17:05	07:40 16:56	08:04 (MA09) 16:04 (MA08)
17	06:05 20:52	06:34 20:20	07:05 19:30	07:47 (MA04) 08:18 (MA04)	07:35 18:41	07:11 17:04	07:41 16:57	08:04 (MA09) 16:04 (MA08)
18	06:06 20:52	06:35 20:18	07:06 19:29	07:46 (MA04) 08:19 (MA04)	07:36 18:40	07:12 17:03	07:41 16:57	08:05 (MA09) 16:05 (MA08)
19	06:07 20:51	06:36 20:17	07:07 19:27	07:44 (MA04) 08:19 (MA04)	07:38 18:38	07:14 17:03	07:42 16:57	08:05 (MA09) 16:05 (MA08)
20	06:08 20:50	06:37 20:15	07:08 19:25	07:43 (MA04) 08:20 (MA04)	07:39 18:37	07:15 17:02	07:43 16:58	08:06 (MA09) 16:06 (MA08)
21	06:09 20:50	06:38 20:14	07:09 19:24	07:43 (MA04) 08:20 (MA04)	07:40 18:35	07:16 17:01	07:43 16:58	08:06 (MA09) 16:06 (MA08)
22	06:09 20:49	06:39 20:12	07:10 19:22	07:42 (MA04) 08:20 (MA04)	07:41 18:34	07:17 17:01	07:44 16:59	08:07 (MA09) 16:07 (MA08)
23	06:10 20:48	06:40 20:11	07:11 19:20	07:41 (MA04) 08:20 (MA04)	07:42 18:32	07:18 17:00	07:44 16:59	08:07 (MA09) 16:07 (MA08)
24	06:11 20:47	06:41 20:09	07:12 19:19	07:40 (MA04) 08:19 (MA04)	07:43 18:31	07:19 16:59	07:45 17:00	08:08 (MA09) 16:08 (MA08)
25	06:12 20:46	06:42 20:08	07:13 19:17	07:39 (MA04) 08:19 (MA04)	06:44 17:30	07:20 16:59	07:45 17:00	08:08 (MA09) 16:08 (MA08)
26	06:13 20:46	06:43 20:06	07:14 19:15	07:39 (MA04) 08:18 (MA04)	06:45 17:28	07:22 16:58	07:46 17:01	08:08 (MA09) 16:08 (MA08)
27	06:14 20:45	06:44 20:05	07:15 19:13	07:39 (MA04) 08:18 (MA04)	06:47 17:27	07:23 16:58	07:46 17:02	08:09 (MA09) 16:09 (MA08)
28	06:15 20:44	06:45 20:03	07:16 19:12	07:39 (MA04) 08:17 (MA04)	06:48 17:26	07:24 16:58	07:46 17:02	08:09 (MA09) 16:09 (MA08)
29	06:16 20:43	06:46 20:02	07:17 19:10	07:39 (MA04) 08:16 (MA04)	06:49 17:24	07:25 16:57	07:47 17:03	08:09 (MA09) 16:09 (MA08)
30	06:17 20:42	06:47 20:00	07:18 19:08	07:40 (MA04) 08:15 (MA04)	06:50 17:23	07:26 16:57	07:47 17:04	08:09 (MA09) 16:09 (MA08)
31	06:18 20:41	06:48 19:59		06:51 17:22			07:47 17:05	08:10 (MA09) 16:10 (MA08)
Potential sun hours	458	427	375	346	299	289	289	1843
Total, worst case			616	163	289			

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R19 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (7)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June				
1	07:47	08:10 (MA09)	07:34	06:59	07:08	07:56 (MA04)	06:23	05:54		
	17:06	63	16:16 (MA08)	17:40	18:13	19:47	24	08:20 (MA04)	20:18	20:47
2	07:47	08:10 (MA09)	07:33	06:57	07:07	07:58 (MA04)	06:22	05:54		
	17:06	64	16:17 (MA08)	17:41	18:14	19:48	19	08:17 (MA04)	20:19	20:48
3	07:47	08:10 (MA09)	07:32	06:56	07:05	08:00 (MA04)	06:20	05:54		
	17:07	64	16:17 (MA08)	17:42	18:16	19:49	13	08:13 (MA04)	20:20	20:49
4	07:48	08:10 (MA09)	07:31	06:54	07:03	06:19	05:53			
	17:08	63	16:17 (MA08)	17:43	18:17	19:50	20:21	20:50		
5	07:48	08:10 (MA09)	07:30	06:52	07:02	06:18	05:53			
	17:09	63	16:17 (MA08)	17:44	18:18	19:51	20:22	20:50		
6	07:48	08:09 (MA09)	07:29	06:51	07:00	06:17	05:52			
	17:10	62	16:16 (MA08)	17:46	18:19	19:52	20:23	20:51		
7	07:47	08:09 (MA09)	07:28	06:49	06:58	06:15	05:52			
	17:11	62	16:16 (MA08)	17:47	18:20	19:53	20:25	20:52		
8	07:47	08:09 (MA09)	07:27	06:48	06:57	06:14	05:52			
	17:12	62	16:17 (MA08)	17:48	18:21	19:54	20:26	20:52		
9	07:47	08:09 (MA09)	07:26	06:46	06:55	06:13	05:52			
	17:13	62	16:17 (MA08)	17:49	18:22	19:55	20:27	20:53		
10	07:47	08:09 (MA09)	07:25	06:45	07:10 (MA04)	06:54	06:12	05:52		
	17:14	62	16:17 (MA08)	17:51	18:23	9	07:19 (MA04)	19:56	20:28	20:53
11	07:47	08:08 (MA09)	07:23	06:43	07:06 (MA04)	06:52	06:11	05:51		
	17:15	60	16:16 (MA08)	17:52	18:24	17	07:23 (MA04)	19:57	20:29	20:54
12	07:47	08:08 (MA09)	07:22	06:41	07:03 (MA04)	06:51	06:10	05:51		
	17:16	60	16:16 (MA08)	17:53	18:26	23	07:26 (MA04)	19:58	20:30	20:54
13	07:46	08:08 (MA09)	07:21	06:40	07:00 (MA04)	06:49	06:09	05:51		
	17:17	58	16:16 (MA08)	17:54	18:27	27	07:27 (MA04)	19:59	20:31	20:55
14	07:46	08:07 (MA09)	07:20	06:38	06:59 (MA04)	06:47	06:08	05:51		
	17:18	58	16:15 (MA08)	17:56	18:28	30	07:29 (MA04)	20:00	20:32	20:55
15	07:46	08:07 (MA09)	07:18	06:36	06:57 (MA04)	06:46	06:07	05:51		
	17:19	57	16:15 (MA08)	17:57	18:29	32	07:29 (MA04)	20:02	20:33	20:56
16	07:45	08:06 (MA09)	07:17	06:35	06:56 (MA04)	06:44	06:06	05:51		
	17:20	54	16:13 (MA08)	17:58	18:30	34	07:30 (MA04)	20:03	20:34	20:56
17	07:45	08:08 (MA09)	07:16	06:33	06:55 (MA04)	06:43	06:05	05:51		
	17:22	50	16:13 (MA08)	17:59	18:31	36	07:31 (MA04)	20:04	20:34	20:57
18	07:44	08:08 (MA09)	07:14	06:31	06:54 (MA04)	06:41	06:04	05:51		
	17:23	46	16:11 (MA08)	18:00	18:32	37	07:31 (MA04)	20:05	20:35	20:57
19	07:44	08:09 (MA09)	07:13	06:30	06:53 (MA04)	06:40	06:03	05:51		
	17:24	40	16:09 (MA08)	18:02	18:33	38	07:31 (MA04)	20:06	20:36	20:57
20	07:43	08:10 (MA09)	07:12	06:28	06:53 (MA04)	06:38	06:02	05:51		
	17:25	28	16:04 (MA08)	18:03	18:34	38	07:31 (MA04)	20:07	20:37	20:57
21	07:43	08:11 (MA09)	07:10	06:26	06:52 (MA04)	06:37	06:01	05:52		
	17:26	23	08:34 (MA09)	18:04	18:35	39	07:31 (MA04)	20:08	20:38	20:58
22	07:42	08:13 (MA09)	07:09	06:25	06:51 (MA04)	06:35	06:01	05:52		
	17:27	21	08:34 (MA09)	18:05	18:36	39	07:30 (MA04)	20:09	20:39	20:58
23	07:41	08:14 (MA09)	07:07	06:23	06:52 (MA04)	06:34	06:00	05:52		
	17:29	19	08:33 (MA09)	18:06	18:37	39	07:31 (MA04)	20:10	20:40	20:58
24	07:41	08:15 (MA09)	07:06	06:22	06:51 (MA04)	06:32	05:59	05:52		
	17:30	17	08:32 (MA09)	18:07	18:38	39	07:30 (MA04)	20:11	20:41	20:58
25	07:40	08:17 (MA09)	07:05	06:20	06:51 (MA04)	06:31	05:58	05:53		
	17:31	13	08:30 (MA09)	18:09	18:39	38	07:29 (MA04)	20:12	20:42	20:58
26	07:39	08:21 (MA09)	07:03	06:18	06:52 (MA04)	06:30	05:58	05:53		
	17:32	7	08:28 (MA09)	18:10	18:41	37	07:29 (MA04)	20:13	20:43	20:58
27	07:38	07:02	06:17	06:17	06:52 (MA04)	06:28	05:57	05:53		
	17:33	18:11	18:42	35	07:27 (MA04)	20:14	20:44	20:58		
28	07:38	07:00	06:15	06:15	06:52 (MA04)	06:27	05:57	05:54		
	17:35	18:12	18:43	34	07:26 (MA04)	20:15	20:44	20:58		
29	07:37	07:13	06:13	06:13	07:53 (MA04)	06:26	05:56	05:54		
	17:36	19:44	32	08:25 (MA04)	20:16	20:45	20:58			
30	07:36	07:12	06:12	06:12	07:53 (MA04)	06:24	05:55	05:54		
	17:37	19:45	30	08:23 (MA04)	20:17	20:46	20:58			
31	07:35	07:10	06:11	06:11	07:54 (MA04)	06:23	05:55	05:54		
	17:38	19:46	27	08:21 (MA04)	20:18	20:47	20:58			
Potential sun hours	298	298	370	710	398	56	448	451		
Total, worst case	1238			710						

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R19 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (7)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	07:41 (MA04) 08:05 (MA04)	06:52 17:21	07:27 16:56	07:50 (MA09) 15:58 (MA08)
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05	07:44 (MA04) 08:03 (MA04)	06:54 17:19	07:28 16:56	07:51 (MA09) 15:59 (MA08)
3	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:03	07:47 (MA04) 08:00 (MA04)	06:55 17:18	07:29 16:56	07:52 (MA09) 16:00 (MA08)
4	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02		06:56 17:17	07:30 16:56	07:53 (MA09) 16:01 (MA08)
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00		06:57 17:16	07:31 16:56	07:54 (MA09) 16:01 (MA08)
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59		06:58 17:15	07:32 16:56	07:55 (MA09) 16:02 (MA08)
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57		06:59 17:14	07:33 16:55	07:56 (MA09) 16:03 (MA08)
8	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55		07:01 17:12	07:34 16:55	07:57 (MA09) 16:04 (MA08)
9	05:59 20:56	06:26 20:30	06:57 19:44	07:27 18:54	07:55 (MA04) 08:06 (MA04)	07:02 17:11	07:35 16:55	07:58 (MA09) 16:05 (MA08)
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:51 (MA04) 08:10 (MA04)	07:03 17:10	07:35 16:55	07:59 (MA09) 16:06 (MA08)
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:50	07:49 (MA04) 08:12 (MA04)	07:29 17:09	07:36 16:55	08:00 (MA09) 16:06 (MA08)
12	06:02 20:55	06:29 20:26	07:00 19:39	07:30 18:49	07:47 (MA04) 08:13 (MA04)	07:30 17:08	07:37 16:56	08:01 (MA09) 16:07 (MA08)
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	07:45 (MA04) 08:14 (MA04)	07:31 17:08	07:38 16:56	08:01 (MA09) 16:07 (MA08)
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	07:43 (MA04) 08:15 (MA04)	07:32 17:07	07:39 16:56	08:02 (MA09) 16:08 (MA08)
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	07:42 (MA04) 08:16 (MA04)	07:33 17:06	07:39 16:56	08:03 (MA09) 16:09 (MA08)
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	07:41 (MA04) 08:16 (MA04)	07:34 17:05	07:40 16:56	08:04 (MA09) 16:10 (MA08)
17	06:05 20:52	06:34 20:20	07:05 19:30	07:35 18:41	07:40 (MA04) 08:17 (MA04)	07:35 17:04	07:41 16:57	08:04 (MA09) 16:09 (MA08)
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	07:39 (MA04) 08:17 (MA04)	07:36 17:03	07:41 16:57	08:05 (MA09) 16:10 (MA08)
19	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	07:39 (MA04) 08:17 (MA04)	07:38 17:03	07:42 16:57	08:05 (MA09) 16:10 (MA08)
20	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	07:38 (MA04) 08:17 (MA04)	07:39 17:02	07:43 16:58	08:06 (MA09) 16:11 (MA08)
21	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	07:38 (MA04) 08:17 (MA04)	07:40 17:01	07:43 16:58	08:06 (MA09) 16:11 (MA08)
22	06:09 20:49	06:39 20:12	07:10 19:22	07:41 18:34	07:37 (MA04) 08:16 (MA04)	07:41 17:01	07:44 16:59	08:07 (MA09) 16:12 (MA08)
23	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:32	07:37 (MA04) 08:16 (MA04)	07:42 17:00	07:44 16:59	08:07 (MA09) 16:12 (MA08)
24	06:11 20:47	06:41 20:09	07:12 19:19	07:43 18:31	07:36 (MA04) 08:14 (MA04)	07:43 16:59	07:45 17:00	08:08 (MA09) 16:13 (MA08)
25	06:12 20:46	06:42 20:08	07:13 19:17	07:44 17:30	07:36 (MA04) 08:14 (MA04)	07:44 16:59	07:45 17:00	08:08 (MA09) 16:13 (MA08)
26	06:13 20:46	06:43 20:06	07:14 19:15	07:45 17:28	07:36 (MA04) 08:13 (MA04)	07:45 16:58	07:46 17:01	08:08 (MA09) 16:13 (MA08)
27	06:14 20:45	06:44 20:05	07:15 19:13	07:46 17:27	07:37 (MA04) 08:12 (MA04)	07:46 16:58	07:46 17:02	08:09 (MA09) 16:15 (MA08)
28	06:15 20:44	06:45 20:03	07:16 19:12	07:47 17:26	07:37 (MA04) 08:10 (MA04)	07:47 16:58	07:46 17:02	08:09 (MA09) 16:15 (MA08)
29	06:16 20:43	06:46 20:02	07:17 19:10	07:48 17:24	07:38 (MA04) 08:09 (MA04)	07:48 16:57	07:47 17:03	08:09 (MA09) 16:15 (MA08)
30	06:17 20:42	06:47 20:00	07:18 19:08	07:49 17:23	07:39 (MA04) 08:07 (MA04)	07:49 16:57	07:47 17:04	08:09 (MA09) 16:15 (MA08)
31	06:18 20:41	06:48 19:59		06:51 17:22			07:47 17:05	08:10 (MA09) 16:16 (MA08)
Potential sun hours	458	427	375	346	299	289		
Total, worst case			718	56	548	1936		

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R24 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:  
The sun is shining all the day, from sunrise to sunset  
The rotor plane is always perpendicular to the line from the WTG to the sun  
The WTG is always operating

	January	February	March	April	May	June
1	07:47	07:34	07:56 (MA09)	06:59	07:08	06:23
	17:06	17:40	16:44 (MA08)	18:13	19:47	20:18
2	07:47	07:33	07:55 (MA09)	06:57	07:07	06:22
	17:06	17:41	16:45 (MA08)	18:14	19:48	20:19
3	07:47	07:32	07:55 (MA09)	06:56	07:05	07:41 (MA04)
	17:07	17:42	16:46 (MA08)	18:16	19:49	20:20
4	07:48	07:31	07:56 (MA09)	06:54	07:03	07:40 (MA04)
	17:08	17:43	16:47 (MA08)	18:17	19:50	20:21
5	07:48	07:30	07:57 (MA09)	06:52	07:02	07:38 (MA04)
	17:09	17:44	16:48 (MA08)	18:18	19:51	20:22
6	07:48	07:29	07:58 (MA09)	06:51	07:00	07:37 (MA04)
	17:10	17:46	16:49 (MA08)	18:19	19:52	20:23
7	07:47	07:28	07:59 (MA09)	06:49	06:58	07:36 (MA04)
	17:11	17:47	16:50 (MA08)	18:20	19:53	20:25
8	07:47	07:27	07:59 (MA09)	06:48	06:57	07:34 (MA04)
	17:12	17:48	16:50 (MA08)	18:21	19:54	20:26
9	07:47	07:26	08:00 (MA09)	06:46	06:55	07:33 (MA04)
	17:13	17:49	16:52 (MA08)	18:22	19:55	20:27
10	07:47	07:25	08:02 (MA09)	06:45	06:54	07:31 (MA04)
	17:14	17:51	16:53 (MA08)	18:23	19:56	20:28
11	07:47	07:23	08:04 (MA09)	06:43	06:52	07:30 (MA04)
	17:15	17:52	16:54 (MA08)	18:24	19:57	20:29
12	07:47	07:22	08:07 (MA09)	06:41	06:51	07:28 (MA04)
	17:16	17:53	16:55 (MA08)	18:26	19:58	20:30
13	07:46	08:08 (MA09)	07:21	16:23 (MA08)	06:40	06:49
	17:17	17:54	16:55 (MA08)	18:27	19:59	20:31
14	07:46	08:07 (MA09)	07:20	16:24 (MA08)	06:38	06:47
	17:18	17:56	16:57 (MA08)	18:28	20:00	20:32
15	07:46	08:07 (MA09)	07:18	16:26 (MA08)	06:36	06:46
	17:19	17:57	16:58 (MA08)	18:29	20:02	20:33
16	07:45	08:06 (MA09)	07:17	16:26 (MA08)	06:35	06:44
	17:20	17:58	16:58 (MA08)	18:30	20:03	20:34
17	07:45	08:06 (MA09)	07:16	16:28 (MA08)	06:33	06:43
	17:22	17:59	16:59 (MA08)	18:31	20:04	20:34
18	07:44	08:05 (MA09)	07:14	16:30 (MA08)	06:31	06:41
	17:23	18:00	17:00 (MA08)	18:32	20:05	20:35
19	07:44	08:05 (MA09)	07:13	16:31 (MA08)	06:30	06:40
	17:24	18:02	16:59 (MA08)	18:33	20:06	20:36
20	07:43	08:04 (MA09)	07:12	16:34 (MA08)	06:28	06:38
	17:25	18:03	16:57 (MA08)	18:34	20:07	20:37
21	07:43	08:03 (MA09)	07:10	16:36 (MA08)	06:26	06:37
	17:26	18:04	16:53 (MA08)	18:35	20:08	20:38
22	07:42	08:03 (MA09)	07:09	06:25	06:35	07:17 (MA04)
	17:27	18:05	18:05	18:36	20:09	20:39
23	07:41	08:02 (MA09)	07:07	06:23	06:34	07:18 (MA04)
	17:29	18:06	16:34 (MA08)	18:37	20:10	20:40
24	07:41	08:02 (MA09)	07:06	06:22	06:32	07:18 (MA04)
	17:30	18:07	16:35 (MA08)	18:38	20:11	20:41
25	07:40	08:01 (MA09)	07:05	06:20	06:31	07:19 (MA04)
	17:31	18:09	16:36 (MA08)	18:39	20:12	20:42
26	07:39	08:01 (MA09)	07:03	06:18	06:30	07:20 (MA04)
	17:32	18:10	16:38 (MA08)	18:41	20:13	20:43
27	07:38	08:00 (MA09)	07:02	06:17	06:28	07:20 (MA04)
	17:33	18:11	16:39 (MA08)	18:42	20:14	20:43
28	07:38	07:59 (MA09)	07:00	06:15	06:27	07:21 (MA04)
	17:35	18:12	16:40 (MA08)	18:43	20:15	20:44
29	07:37	07:58 (MA09)		06:13	06:26	07:23 (MA04)
	17:36	16:41 (MA08)		19:44	20:16	20:45
30	07:36	07:57 (MA09)		06:12	06:24	07:24 (MA04)
	17:37	16:42 (MA08)		19:45	20:17	20:46
31	07:35	07:56 (MA09)		06:10		05:55
	17:38	16:43 (MA08)		19:46		20:47
Potential sun hours	298	298	370	398	448	451
Total, worst case	586	925		838	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

Calculation: SHADOW\_Worse case Shadow receptor: R24 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:55 20:58	06:19 20:40	06:49 19:57	07:29 (MA04) 19:07	07:19 17:21	06:52 16:22 (MA08)
2	05:55 20:58	06:20 20:39	06:50 19:55	07:30 (MA04) 19:05	07:20 17:19	06:54 16:21 (MA08)
3	05:56 20:58	06:21 20:37	06:51 19:54	07:31 (MA04) 19:03	07:21 17:18	06:55 16:20 (MA08)
4	05:56 20:58	06:21 20:36	06:52 19:52	07:31 (MA04) 19:02	07:22 17:17	06:56 16:20 (MA08)
5	05:57 20:58	06:22 20:35	06:53 19:50	07:32 (MA04) 19:00	07:23 17:16	06:57 16:19 (MA08)
6	05:58 20:57	06:23 20:34	06:54 19:49	07:32 (MA04) 18:59	07:24 17:15	06:58 16:18 (MA08)
7	05:58 20:57	06:24 20:33	06:55 19:47	07:33 (MA04) 18:57	07:25 17:14	06:59 16:16 (MA08)
8	05:59 20:57	06:25 20:32	06:56 19:45	07:34 (MA04) 18:55	07:26 17:12	07:01 16:16 (MA08)
9	05:59 20:56	06:26 20:30	06:57 19:44	07:35 (MA04) 18:54	07:27 17:11	07:02 16:15 (MA08)
10	06:00 20:56	06:27 20:29	06:58 19:42	07:44 (MA04) 18:52	07:28 17:10	07:03 16:14 (MA08)
11	06:01 20:56	06:28 20:28	06:59 19:40	07:49 (MA04) 18:50	07:29 17:09	07:04 16:13 (MA08)
12	06:02 20:55	06:29 20:26	07:00 19:39	07:35 (MA04) 18:49	07:30 17:08	07:05 16:13 (MA08)
13	06:02 20:55	06:30 20:25	07:01 19:37	07:32 (MA04) 18:47	07:31 17:08	07:06 16:13 (MA08)
14	06:03 20:54	06:31 20:24	07:02 19:35	07:30 (MA04) 18:46	07:32 17:07	07:08 16:12 (MA08)
15	06:04 20:54	06:32 20:22	07:03 19:34	07:29 (MA04) 18:44	07:33 17:06	07:09 16:11 (MA08)
16	06:05 20:53	06:33 20:21	07:04 19:32	07:28 (MA04) 18:43	07:34 17:05	07:10 16:11 (MA08)
17	06:05 20:52	06:34 20:20	07:05 19:30	07:26 (MA04) 18:41	07:35 17:04	07:11 16:10 (MA08)
18	06:06 20:52	06:35 20:18	07:06 19:29	07:24 (MA04) 18:40	07:36 17:03	07:12 16:09 (MA08)
19	06:07 20:51	06:36 20:17	07:07 19:27	07:23 (MA04) 18:38	07:38 17:03	07:14 16:08 (MA08)
20	06:08 20:50	06:37 20:15	07:08 19:25	07:22 (MA04) 18:37	07:39 17:02	07:15 16:09 (MA08)
21	06:09 20:50	06:38 20:14	07:09 19:24	07:22 (MA04) 18:35	07:40 17:01	07:16 16:08 (MA08)
22	06:09 20:49	06:39 20:12	07:10 19:22	07:21 (MA04) 18:34	07:41 17:00	07:17 16:07 (MA08)
23	06:10 20:48	06:40 20:11	07:11 19:20	07:22 (MA04) 18:32	07:42 16:59 (MA08)	07:18 16:06 (MA08)
24	06:11 20:47	06:41 20:09	07:12 19:18	07:23 (MA04) 18:31	07:43 16:59 (MA08)	07:19 16:05 (MA08)
25	06:12 20:46	06:42 20:08	07:13 19:17	07:24 (MA04) 18:30	07:44 16:59 (MA08)	07:20 16:05 (MA08)
26	06:13 20:46	06:43 20:06	07:14 19:15	07:24 (MA04) 18:28	07:45 16:58 (MA08)	07:22 16:05 (MA08)
27	06:14 20:45	06:44 20:05	07:15 19:13	07:25 (MA04) 18:27	07:46 16:58 (MA08)	07:23 16:05 (MA08)
28	06:15 20:44	06:45 20:03	07:16 19:12	07:26 (MA04) 18:26	07:47 16:58 (MA08)	07:24 16:05 (MA08)
29	06:16 20:43	06:46 20:02	07:17 19:10	07:27 (MA04) 18:24	07:48 16:57 (MA08)	07:25 16:05 (MA08)
30	06:17 20:42	06:47 20:00	07:18 19:08	07:28 (MA04) 18:23	07:49 16:57 (MA08)	07:26 16:05 (MA08)
31	06:18 20:41	06:48 19:59	07:28 (MA04) 19:08	07:28 (MA04) 18:22	07:50 16:57 (MA08)	07:27 16:05 (MA08)
Potential sun hours	458	427	375	346	299	289
Total, worst case		686	188	367	1160	

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R28 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June		
1	07:47 17:06	07:34 17:40	06:59 18:13	07:31 (MA04) 18:13	07:08 19:47	06:23 20:18	05:54 20:47	06:24 (MA02) 14 06:38 (MA02)
2	07:47 17:06	07:33 17:41	06:57 18:14	07:31 (MA04) 18:14	07:07 19:48	06:22 20:19	05:54 20:48	06:22 (MA02) 16 06:38 (MA02)
3	07:47 17:07	07:32 17:42	06:56 18:16	07:32 (MA04) 18:16	07:05 19:49	06:20 20:20	05:54 20:49	06:22 (MA02) 16 06:38 (MA02)
4	07:48 17:08	07:31 17:43	06:54 18:17	07:34 (MA04) 18:17	07:03 19:50	06:19 20:21	05:53 20:50	06:22 (MA02) 17 06:39 (MA02)
5	07:48 17:09	07:30 17:44	17:12 (MA11) 17:13 (MA11)	06:52 18:18	07:02 19:51	06:18 20:22	05:53 20:50	06:21 (MA02) 17 06:38 (MA02)
6	07:48 17:10	07:29 17:46	17:09 (MA11) 17:14 (MA11)	06:51 18:19	07:00 19:52	06:17 20:24	05:52 20:51	06:21 (MA02) 17 06:38 (MA02)
7	07:47 17:11	07:28 17:47	17:08 (MA11) 17:15 (MA11)	06:49 18:20	06:58 19:53	06:15 20:25	05:52 20:52	06:21 (MA02) 18 06:39 (MA02)
8	07:47 17:12	07:27 17:48	17:07 (MA11) 17:16 (MA11)	06:48 18:21	06:57 19:54	06:14 20:26	05:52 20:52	06:21 (MA02) 18 06:39 (MA02)
9	07:47 17:13	07:26 17:49	17:05 (MA11) 17:16 (MA11)	06:46 18:22	06:55 19:55	06:13 20:27	05:52 20:53	06:20 (MA02) 18 06:38 (MA02)
10	07:47 17:14	07:25 17:51	17:04 (MA11) 17:17 (MA11)	06:45 18:23	06:54 19:56	06:12 20:28	05:52 20:53	06:20 (MA02) 18 06:38 (MA02)
11	07:47 17:15	07:23 17:52	17:04 (MA11) 17:18 (MA11)	06:43 18:24	06:52 19:57	06:11 20:29	05:51 20:54	06:20 (MA02) 19 06:39 (MA02)
12	07:47 17:16	07:22 17:53	07:42 (MA04) 17:20 (MA11)	06:41 18:26	06:51 19:58	06:10 20:30	05:51 20:54	06:20 (MA02) 19 06:39 (MA02)
13	07:46 17:17	07:21 17:54	07:40 (MA04) 17:20 (MA11)	06:40 18:27	06:49 19:59	06:09 20:31	05:51 20:55	06:19 (MA02) 20 06:39 (MA02)
14	07:46 17:18	07:20 17:56	07:39 (MA04) 17:21 (MA11)	06:38 18:28	06:47 20:01	06:08 20:32	05:51 20:55	06:19 (MA02) 20 06:39 (MA02)
15	07:46 17:19	07:18 17:57	07:38 (MA04) 17:22 (MA11)	06:36 18:29	06:46 20:02	06:07 20:33	05:51 20:56	06:19 (MA02) 20 06:39 (MA02)
16	07:45 17:20	07:17 17:58	07:36 (MA04) 17:22 (MA11)	06:35 18:30	06:44 20:03	06:06 20:34	05:51 20:56	06:19 (MA02) 20 06:39 (MA02)
17	07:45 17:22	07:16 17:59	07:35 (MA04) 17:23 (MA11)	06:33 18:31	06:43 20:04	06:05 20:34	05:51 20:57	06:19 (MA02) 20 06:39 (MA02)
18	07:44 17:23	07:14 18:00	07:34 (MA04) 17:25 (MA11)	06:31 18:32	06:41 20:05	06:04 20:35	05:51 20:57	06:19 (MA02) 20 06:39 (MA02)
19	07:44 17:24	07:13 18:02	07:32 (MA04) 17:23 (MA11)	06:30 18:33	06:40 20:06	06:03 20:36	05:51 20:57	06:20 (MA02) 20 06:40 (MA02)
20	07:43 17:25	07:12 18:03	07:31 (MA04) 17:22 (MA11)	06:28 18:34	06:38 20:07	06:02 20:37	05:51 20:57	06:20 (MA02) 20 06:40 (MA02)
21	07:43 17:26	07:10 18:04	07:29 (MA04) 17:18 (MA11)	06:26 18:35	06:37 20:08	06:01 20:38	05:52 20:58	06:20 (MA02) 20 06:40 (MA02)
22	07:42 17:27	07:09 18:05	07:29 (MA04) 08:02 (MA04)	06:25 18:36	06:35 20:09	06:01 20:39	05:52 20:58	06:20 (MA02) 20 06:40 (MA02)
23	07:41 17:29	07:07 18:06	07:29 (MA04) 08:03 (MA04)	06:23 18:37	06:34 20:10	06:00 20:40	05:52 20:58	06:20 (MA02) 20 06:40 (MA02)
24	07:41 17:30	07:06 18:07	07:29 (MA04) 08:02 (MA04)	06:22 18:38	06:32 20:11	05:59 20:41	05:52 20:58	06:21 (MA02) 20 06:41 (MA02)
25	07:40 17:31	07:05 18:09	07:29 (MA04) 08:02 (MA04)	06:20 18:40	06:31 20:12	05:58 20:42	05:53 20:58	06:21 (MA02) 20 06:41 (MA02)
26	07:39 17:32	07:03 18:10	07:29 (MA04) 08:01 (MA04)	06:18 18:41	06:30 20:13	05:58 20:43	05:53 20:58	06:21 (MA02) 20 06:41 (MA02)
27	07:39 17:33	07:02 18:11	07:30 (MA04) 08:01 (MA04)	06:17 18:42	06:28 20:14	05:57 20:44	05:53 20:58	06:22 (MA02) 20 06:42 (MA02)
28	07:38 17:35	07:00 18:12	07:30 (MA04) 08:00 (MA04)	06:15 18:43	06:27 20:15	05:57 20:44	05:54 20:59	06:22 (MA02) 20 06:42 (MA02)
29	07:37 17:36			07:13 19:44	06:26 20:16	05:56 20:45	05:54 20:58	06:22 (MA02) 20 06:42 (MA02)
30	07:36 17:37			07:12 19:45	06:24 20:17	05:55 20:46	05:54 20:58	06:24 (MA02) 19 06:43 (MA02)
31	07:35 17:38			07:10 19:46		05:55 20:47		
Potential sun hours	298	298	370	398	448	451	566	
Total, worst case		677	113	97				

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R28 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:55	06:24 (MA02)	06:19	06:49	07:19	06:52	16:34 (MA11)	07:27
	20:58	19 06:43 (MA02)	20:40	19:57	19:07	17:21	13 16:47 (MA11)	16:56
2	05:55	06:25 (MA02)	06:20	06:50	07:20	06:54	16:35 (MA11)	07:28
	20:58	19 06:44 (MA02)	20:39	19:55	19:05	17:19	10 16:45 (MA11)	16:56
3	05:56	06:25 (MA02)	06:21	06:51	07:21	06:55	16:36 (MA11)	07:29
	20:58	18 06:43 (MA02)	20:37	19:54	19:03	17:18	8 16:44 (MA11)	16:56
4	05:56	06:26 (MA02)	06:21	06:52	07:22	06:56	16:38 (MA11)	07:30
	20:58	18 06:44 (MA02)	20:36	19:52	19:02	17:17	6 16:44 (MA11)	16:56
5	05:57	06:26 (MA02)	06:22	06:53	07:23	06:57	16:39 (MA11)	07:31
	20:58	18 06:44 (MA02)	20:35	19:50	19:00	17:16	4 16:43 (MA11)	16:56
6	05:58	06:27 (MA02)	06:23	06:54	07:24	06:58		07:32
	20:57	18 06:45 (MA02)	20:34	19:49	18:59	17:15		16:56
7	05:58	06:28 (MA02)	06:24	06:55	07:25	06:59		07:33
	20:57	17 06:45 (MA02)	20:33	19:47	18:57	17:14		16:55
8	05:59	06:28 (MA02)	06:25	06:56	07:26	08:14 (MA04)	07:01	07:34
	20:57	17 06:45 (MA02)	20:32	19:45	18:55	10 08:24 (MA04)	17:13	16:55
9	05:59	06:29 (MA02)	06:26	06:57	07:27	08:10 (MA04)	07:02	07:35
	20:57	16 06:45 (MA02)	20:30	19:44	18:54	17 08:27 (MA04)	17:11	16:55
10	06:00	06:30 (MA02)	06:27	06:58	07:28	08:08 (MA04)	07:03	07:35
	20:56	16 06:46 (MA02)	20:29	19:42	18:52	21 08:29 (MA04)	17:10	16:55
11	06:01	06:30 (MA02)	06:28	06:59	07:29	08:06 (MA04)	07:04	07:36
	20:56	15 06:45 (MA02)	20:28	19:40	18:50	24 08:30 (MA04)	17:09	16:55
12	06:02	06:32 (MA02)	06:29	07:00	07:30	08:04 (MA04)	07:05	07:37
	20:55	14 06:46 (MA02)	20:26	19:39	18:49	27 08:31 (MA04)	17:08	16:56
13	06:02	06:33 (MA02)	06:30	07:01	07:31	08:03 (MA04)	07:07	07:38
	20:55	13 06:46 (MA02)	20:25	19:37	18:47	29 08:32 (MA04)	17:08	16:56
14	06:03	06:33 (MA02)	06:31	07:02	07:32	08:02 (MA04)	07:08	07:39
	20:54	13 06:46 (MA02)	20:24	19:35	18:46	30 08:32 (MA04)	17:07	16:56
15	06:04	06:34 (MA02)	06:32	07:03	07:33	08:02 (MA04)	07:09	07:39
	20:54	12 06:46 (MA02)	20:22	19:34	18:44	32 08:34 (MA04)	17:06	16:56
16	06:05	06:35 (MA02)	06:33	07:04	07:34	08:01 (MA04)	07:10	07:40
	20:53	11 06:46 (MA02)	20:21	19:32	18:43	33 08:34 (MA04)	17:05	16:56
17	06:05	06:36 (MA02)	06:34	07:05	07:35	08:01 (MA04)	07:11	07:41
	20:52	10 06:46 (MA02)	20:20	19:30	18:41	33 08:34 (MA04)	17:04	16:57
18	06:06	06:36 (MA02)	06:35	07:06	07:36	08:00 (MA04)	07:12	07:42
	20:52	9 06:45 (MA02)	20:18	19:29	18:40	34 08:34 (MA04)	17:03	16:57
19	06:07	06:38 (MA02)	06:36	07:07	07:38	08:00 (MA04)	07:14	07:42
	20:51	7 06:45 (MA02)	20:17	19:27	18:38	33 08:33 (MA04)	17:03	16:57
20	06:08	06:39 (MA02)	06:37	07:08	07:39	08:00 (MA04)	07:15	07:43
	20:50	6 06:45 (MA02)	20:15	19:25	18:37	33 08:33 (MA04)	17:02	16:58
21	06:09	06:41 (MA02)	06:38	07:09	07:40	08:00 (MA04)	07:16	07:43
	20:50	4 06:45 (MA02)	20:14	19:24	18:35	42 17:50 (MA11)	17:01	16:58
22	06:09	06:43 (MA02)	06:39	07:10	07:41	08:02 (MA04)	07:17	07:44
	20:49	2 06:45 (MA02)	20:12	19:22	18:34	45 17:53 (MA11)	17:01	16:59
23	06:10	06:44 (MA02)	06:40	07:11	07:42	08:03 (MA04)	07:18	07:44
	20:48	1 06:45 (MA02)	20:11	19:20	18:32	46 17:54 (MA11)	17:00	16:59
24	06:11		06:41	07:12	07:43	08:04 (MA04)	07:19	07:45
	20:47		20:09	19:19	18:31	46 17:54 (MA11)	16:59	17:00
25	06:12		06:42	07:13	06:44	07:05 (MA04)	07:20	07:45
	20:46		20:08	19:17	17:30	44 16:53 (MA11)	16:59	17:00
26	06:13		06:43	07:14	06:45	07:06 (MA04)	07:22	07:46
	20:46		20:06	19:15	17:28	40 16:51 (MA11)	16:58	17:01
27	06:14		06:44	07:15	06:47	07:08 (MA04)	07:23	07:46
	20:45		20:05	19:13	17:27	38 16:52 (MA11)	16:58	17:02
28	06:15		06:45	07:16	06:48	07:09 (MA04)	07:24	07:46
	20:44		20:03	19:12	17:26	35 16:51 (MA11)	16:58	17:02
29	06:16		06:46	07:17	06:49	07:10 (MA04)	07:25	07:47
	20:43		20:02	19:10	17:24	31 16:50 (MA11)	16:57	17:03
30	06:17		06:47	07:18	06:50	07:11 (MA04)	07:26	07:47
	20:42		20:00	19:08	17:23	24 16:48 (MA11)	16:57	17:04
31	06:18		06:48		06:51	16:34 (MA11)		07:47
	20:41		19:59		17:22	14 16:48 (MA11)		17:05
Potential sun hours	458		427	375	346	299	41	289
Total, worst case	293				761			

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)
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### SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R30 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:  
The sun is shining all the day, from sunrise to sunset  
The rotor plane is always perpendicular to the line from the WTG to the sun  
The WTG is always operating

	January	February	March	April	May	June
1	07:47 17:06	07:34 17:40	08:11 (MA04) 08:21 (MA04)	06:59 18:13	07:08 19:47	06:23 20:18
2	07:47 17:06	07:33 17:41		06:57 18:14	07:07 19:48	06:22 20:19
3	07:48 17:07	08:10 (MA04) 08:13 (MA04)		06:56 18:16	07:05 19:49	06:20 20:20
4	07:48 17:08	08:10 (MA04) 08:14 (MA04)		06:54 18:17	07:03 19:50	06:19 20:21
5	07:48 17:09	08:10 (MA04) 08:15 (MA04)		06:52 18:18	07:02 19:51	07:20 (MA02) 06:18
6	07:48 17:10	08:09 (MA04) 08:15 (MA04)		06:51 18:19	07:00 19:52	07:19 (MA02) 06:17
7	07:47 17:11	08:09 (MA04) 08:17 (MA04)		06:49 18:20	06:58 19:53	07:17 (MA02) 06:15
8	07:47 17:12	08:09 (MA04) 08:18 (MA04)		06:48 18:21	06:57 19:54	07:15 (MA02) 06:14
9	07:47 17:13	08:09 (MA04) 08:19 (MA04)		06:46 18:22	06:55 19:55	07:14 (MA02) 06:13
10	07:47 17:14	08:09 (MA04) 08:20 (MA04)		06:45 18:23	06:54 19:56	07:12 (MA02) 06:12
11	07:47 17:15	08:08 (MA04) 08:20 (MA04)		06:43 18:24	06:52 19:57	07:11 (MA02) 06:11
12	07:47 17:16	08:08 (MA04) 08:22 (MA04)		06:41 18:26	06:51 19:58	07:09 (MA02) 06:10
13	07:46 17:17	08:08 (MA04) 08:23 (MA04)		06:40 18:27	06:49 19:59	07:07 (MA02) 06:09
14	07:46 17:18	08:07 (MA04) 08:23 (MA04)		06:38 18:28	06:47 20:01	07:06 (MA02) 06:08
15	07:46 17:19	08:07 (MA04) 08:24 (MA04)		06:36 18:29	06:46 20:02	07:04 (MA02) 06:07
16	07:45 17:20	08:06 (MA04) 08:24 (MA04)		06:35 18:30	06:44 20:03	07:03 (MA02) 06:06
17	07:45 17:22	08:06 (MA04) 08:25 (MA04)		06:33 18:31	06:43 20:04	07:02 (MA02) 06:05
18	07:44 17:23	08:05 (MA04) 08:25 (MA04)		06:31 18:32	06:41 20:05	07:03 (MA02) 06:04
19	07:44 17:24	08:05 (MA04) 08:26 (MA04)		06:30 18:33	06:40 20:06	07:04 (MA02) 06:03
20	07:43 17:25	08:04 (MA04) 08:26 (MA04)		06:28 18:34	06:38 20:07	07:07 (MA02) 06:02
21	07:43 17:26	08:03 (MA04) 08:26 (MA04)		06:27 18:35	06:37 20:08	07:16 (MA02) 06:01
22	07:42 17:27	08:03 (MA04) 08:27 (MA04)		06:25 18:36	06:35 20:09	06:01 20:39
23	07:41 17:29	08:02 (MA04) 08:27 (MA04)		06:23 18:37	06:34 20:10	06:00 20:40
24	07:41 17:30	08:01 (MA04) 08:27 (MA04)		06:22 18:38	06:32 20:11	05:59 20:41
25	07:40 17:31	08:01 (MA04) 08:26 (MA04)		06:20 18:40	06:31 20:12	05:58 20:42
26	07:39 17:32	08:03 (MA04) 08:27 (MA04)		06:18 18:41	06:30 20:13	05:58 20:43
27	07:39 17:33	08:03 (MA04) 08:27 (MA04)		06:17 18:42	06:28 20:14	05:57 20:44
28	07:38 17:35	08:04 (MA04) 08:26 (MA04)		06:15 18:43	06:27 20:15	05:57 20:44
29	07:37 17:36	08:05 (MA04) 08:25 (MA04)		07:13 19:44	06:26 20:16	05:56 20:45
30	07:36 17:37	08:07 (MA04) 08:24 (MA04)		07:12 19:45	06:24 20:17	05:55 20:46
31	07:35 17:38	08:08 (MA04) 08:23 (MA04)		07:10 19:46		05:55 20:47
Potential sun hours	298	298	370	398	219	451
Total, worst case	476	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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R30 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December	
1	05:55 20:58	06:19 20:40	06:49 19:57	07:10 (MA02) 19:07	07:19 17:21	06:52 16:56	07:27 12 08:02 (MA04)
2	05:55 20:58	06:20 20:39	06:50 19:55	07:11 (MA02) 14 07:25 (MA02)	07:20 19:05	06:54 17:19	07:28 11 08:02 (MA04)
3	05:56 20:58	06:21 20:37	06:51 19:54	07:12 (MA02) 12 07:24 (MA02)	07:21 19:03	06:55 17:18	07:29 10 08:02 (MA04)
4	05:56 20:58	06:21 20:36	06:52 19:52	07:12 (MA02) 10 07:22 (MA02)	07:22 19:02	06:56 17:17	07:30 9 08:02 (MA04)
5	05:57 20:58	06:22 20:35	06:53 19:50	07:13 (MA02) 7 07:20 (MA02)	07:23 19:00	06:57 17:16	07:31 8 08:02 (MA04)
6	05:58 20:57	06:23 20:34	06:54 19:49	07:14 (MA02) 5 07:19 (MA02)	07:24 18:59	06:58 17:15	07:32 6 08:01 (MA04)
7	05:58 20:57	06:24 20:33	06:55 19:47	07:15 (MA02) 1 07:16 (MA02)	07:25 18:57	06:59 17:14	07:33 5 08:01 (MA04)
8	05:59 20:57	06:25 20:32	06:56 19:45	07:16 (MA02) 07:01	07:26 18:55	07:01 17:13	07:34 4 08:01 (MA04)
9	05:59 20:57	06:26 20:30	06:57 19:44	07:17 (MA02) 07:02	07:27 18:54	07:02 17:11	07:35 3 08:01 (MA04)
10	06:00 20:56	06:27 20:29	06:58 19:42	07:18 (MA02) 07:03	07:28 18:52	07:03 11 07:41 (MA04)	07:36 1 08:00 (MA04)
11	06:01 20:56	06:28 20:28	06:59 19:40	07:19 (MA02) 07:04	07:29 18:51	07:04 15 07:54 (MA04)	07:36 16:55
12	06:02 20:55	06:29 20:26	07:00 19:39	07:20 (MA02) 07:05	07:30 18:49	07:05 18 07:56 (MA04)	07:37 16:56
13	06:02 20:55	06:30 20:25	07:01 19:37	07:21 (MA02) 07:06	07:31 18:47	07:06 20 07:57 (MA04)	07:38 16:56
14	06:03 20:54	06:31 20:24	07:02 19:35	07:22 (MA02) 07:07	07:32 18:46	07:07 22 07:58 (MA04)	07:39 16:56
15	06:04 20:54	06:32 20:22	07:03 19:34	07:23 (MA02) 07:08	07:33 18:44	07:08 24 07:59 (MA04)	07:39 16:56
16	06:05 20:53	06:33 20:21	07:04 19:32	07:24 (MA02) 07:09	07:34 18:43	07:09 24 08:00 (MA04)	07:40 16:56
17	06:05 20:53	06:34 20:20	07:05 19:30	07:25 (MA02) 07:10	07:35 18:41	07:10 25 08:00 (MA04)	07:41 16:57
18	06:06 20:52	06:35 20:18	07:06 19:29	07:26 (MA02) 07:11	07:36 18:40	07:11 26 08:01 (MA04)	07:42 16:57
19	06:07 20:51	06:36 20:17	07:07 19:27	07:27 (MA02) 07:12	07:37 18:38	07:12 25 08:01 (MA04)	07:42 16:57
20	06:08 20:50	06:37 20:15	07:08 19:25	07:28 (MA02) 07:13	07:38 18:37	07:13 24 08:02 (MA04)	07:43 16:58
21	06:09 20:50	06:38 20:14	07:09 19:24	07:29 (MA02) 07:14	07:39 18:35	07:14 23 08:02 (MA04)	07:43 16:58
22	06:09 20:49	06:39 20:12	07:10 19:22	07:30 (MA02) 07:15	07:40 18:34	07:15 22 08:02 (MA04)	07:44 16:59
23	06:10 20:48	06:40 20:11	07:11 19:20	07:31 (MA02) 07:16	07:41 18:32	07:16 21 08:02 (MA04)	07:44 16:59
24	06:11 20:47	06:41 20:09	07:12 19:19	07:32 (MA02) 07:17	07:42 18:31	07:17 20 08:02 (MA04)	07:45 17:00
25	06:12 20:46	06:42 20:08	07:13 19:17	07:33 (MA02) 07:18	07:43 18:30	07:18 19 08:03 (MA04)	07:45 17:00
26	06:13 20:46	06:43 20:06	07:14 19:15	07:34 (MA02) 07:19	07:44 18:29	07:19 18 08:03 (MA04)	07:46 17:01
27	06:14 20:45	06:44 20:05	07:15 19:13	07:35 (MA02) 07:20	07:45 18:28	07:20 17 08:03 (MA04)	07:46 17:02
28	06:15 20:44	06:45 20:03	07:16 19:12	07:36 (MA02) 07:21	07:46 18:27	07:21 16 08:03 (MA04)	07:46 17:02
29	06:16 20:43	06:46 20:02	07:17 19:10	07:37 (MA02) 07:22	07:47 18:26	07:22 15 08:03 (MA04)	07:47 17:03
30	06:17 20:42	06:47 20:00	07:18 19:08	07:38 (MA02) 07:23	07:48 18:25	07:23 14 08:03 (MA04)	07:47 17:04
31	06:18 20:41	06:48 19:59	07:19 19:07	07:39 (MA02) 07:24	07:49 18:24	07:24 13 08:03 (MA04)	07:47 17:05
Potential sun hours	458	427	375	346	299	289	69
Total, worst case		156	64		419		

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R36 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (11)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:47 17:06	16:24 (MA11) 16:34 (MA11)	07:34 17:40	16:32 (MA11) 16:48 (MA11)	06:59 18:13	07:29 (MA04) 19:47
2	07:47 17:06	16:24 (MA11) 16:35 (MA11)	07:33 17:41	16:34 (MA11) 16:46 (MA11)	06:57 18:14	07:40 (MA04) 19:48
3	07:48 17:07	16:23 (MA11) 16:36 (MA11)	07:32 17:42	16:38 (MA11) 16:43 (MA11)	06:56 18:16	07:05 19:49
4	07:48 17:08	16:23 (MA11) 16:36 (MA11)	07:31 17:43		06:54 18:17	07:03 19:50
5	07:48 17:09	16:23 (MA11) 16:37 (MA11)	07:30 17:45		06:52 18:18	07:02 19:51
6	07:48 17:10	16:22 (MA11) 16:37 (MA11)	07:29 17:46		06:51 18:19	07:00 19:52
7	07:47 17:11	16:22 (MA11) 16:38 (MA11)	07:28 17:47		06:49 18:20	06:59 19:53
8	07:47 17:12	16:22 (MA11) 16:39 (MA11)	07:27 17:48		06:48 18:21	06:57 19:54
9	07:47 17:13	16:22 (MA11) 16:40 (MA11)	07:26 17:49		06:46 18:22	06:55 19:55
10	07:47 17:14	16:22 (MA11) 16:41 (MA11)	07:25 17:51		06:45 18:23	06:54 19:56
11	07:47 17:15	16:21 (MA11) 16:41 (MA11)	07:23 17:52		06:43 18:24	06:52 19:57
12	07:47 17:16	16:21 (MA11) 16:43 (MA11)	07:22 17:53		06:41 18:26	06:51 19:58
13	07:46 17:17	16:22 (MA11) 16:44 (MA11)	07:21 17:54		06:40 18:27	06:49 19:59
14	07:46 17:18	16:22 (MA11) 16:44 (MA11)	07:20 17:56	07:39 (MA04)	06:38 18:28	06:47 20:01
15	07:46 17:19	16:22 (MA11) 16:46 (MA11)	07:18 17:57	07:38 (MA04)	06:36 18:29	06:46 20:02
16	07:45 17:20	16:22 (MA11) 16:46 (MA11)	07:17 17:58	07:36 (MA04)	06:35 18:30	06:44 20:03
17	07:45 17:22	16:22 (MA11) 16:48 (MA11)	07:16 17:59	07:35 (MA04)	06:33 18:31	06:43 20:04
18	07:44 17:23	16:22 (MA11) 16:48 (MA11)	07:14 18:00	07:34 (MA04)	06:31 18:32	06:41 20:05
19	07:44 17:24	16:23 (MA11) 16:49 (MA11)	07:13 18:02	07:32 (MA04)	06:30 18:33	06:40 20:06
20	07:43 17:25	16:23 (MA11) 16:50 (MA11)	07:12 18:03	07:31 (MA04)	06:28 18:34	06:38 20:07
21	07:43 17:26	16:23 (MA11) 16:50 (MA11)	07:10 18:04	07:29 (MA04)	06:27 18:35	06:37 20:08
22	07:42 17:27	16:24 (MA11) 16:52 (MA11)	07:09 18:05	07:28 (MA04)	06:25 18:36	06:35 20:09
23	07:41 17:29	16:24 (MA11) 16:52 (MA11)	07:07 18:06	07:27 (MA04)	06:23 18:37	06:34 20:10
24	07:41 17:30	16:24 (MA11) 16:52 (MA11)	07:06 18:07	07:25 (MA04)	06:22 18:38	06:32 20:11
25	07:40 17:31	16:24 (MA11) 16:52 (MA11)	07:05 18:09	07:24 (MA04)	06:20 18:40	06:31 20:12
26	07:39 17:32	16:26 (MA11) 16:53 (MA11)	07:03 18:10	07:24 (MA04)	06:18 18:41	06:30 20:13
27	07:39 17:33	16:26 (MA11) 16:52 (MA11)	07:02 18:11	07:25 (MA04)	06:17 18:42	06:28 20:14
28	07:38 17:35	16:27 (MA11) 16:52 (MA11)	07:00 18:12	07:44 (MA04)	06:15 18:43	06:27 20:15
29	07:37 17:36	16:28 (MA11) 16:51 (MA11)		07:26 (MA04)	06:15 18:43	06:26 20:15
30	07:36 17:37	16:29 (MA11) 16:51 (MA11)		07:42 (MA04)	06:17 18:44	06:26 20:16
31	07:35 17:38	16:30 (MA11) 16:50 (MA11)			07:10 19:46	06:24 20:17
Potential sun hours	298	298	370	398	448	451
Total, worst case	666	261	11			

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R36 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (11)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	06:52 17:21	07:27 16:57 20
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05	06:54 17:19	07:28 16:56 19
3	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:03	06:55 17:18	07:29 16:56 18
4	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02	06:56 17:17	07:30 16:56 17
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00	06:57 17:16	07:31 16:56 16
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59	06:58 17:15	07:32 16:56 15
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	06:59 17:14	07:33 16:55 14
8	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55	07:01 17:13	16:09 (MA11) 07:34 13
9	05:59 20:57	06:26 20:30	06:57 19:44	07:27 18:54	07:02 17:11	16:14 (MA11) 07:35 13
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:03 17:10	16:15 (MA11) 07:36 12
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:51	07:04 17:09	16:16 (MA11) 07:37 10
12	06:02 20:55	06:29 20:27	07:00 19:39	07:30 18:49	07:05 08:04 (MA04) 17:09	16:17 (MA11) 07:38 22
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	07:07 08:00 (MA04) 17:08	16:18 (MA11) 07:39 23
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	07:08 08:15 (MA04) 17:07	16:19 (MA11) 07:40 25
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	07:09 08:17 (MA04) 17:06	16:20 (MA11) 07:41 26
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	07:10 08:18 (MA04) 17:05	16:21 (MA11) 07:42 27
17	06:05 20:53	06:34 20:20	07:05 19:30	07:35 18:41	07:11 08:18 (MA04) 17:04	16:22 (MA11) 07:43 28
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	07:12 08:18 (MA04) 17:03	16:23 (MA11) 07:44 28
19	06:07 20:51	06:36 20:17	07:07 19:27	07:37 18:38	07:14 08:18 (MA04) 17:03	16:24 (MA11) 07:45 28
20	06:08 20:50	06:37 20:15	07:08 19:25	07:38 18:37	07:15 08:18 (MA04) 17:02	16:25 (MA11) 07:46 28
21	06:09 20:50	06:38 20:14	07:09 19:24	07:39 18:35	07:16 08:00 (MA04) 17:01	16:26 (MA11) 07:47 27
22	06:09 20:49	06:39 20:12	07:10 19:22	07:41 18:34	07:17 08:18 (MA04) 17:01	16:27 (MA11) 07:48 27
23	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:32	07:18 08:03 (MA04) 17:00	16:28 (MA11) 07:49 26
24	06:11 20:47	06:41 20:09	07:12 19:19	07:43 18:31	07:19 08:04 (MA04) 16:59	16:29 (MA11) 07:50 26
25	06:12 20:46	06:42 20:08	07:13 19:17	07:44 17:30	07:20 07:05 (MA04) 16:59	16:30 (MA11) 07:51 26
26	06:13 20:46	06:43 20:06	07:14 19:15	07:45 17:28	07:22 07:06 (MA04) 16:58	16:31 (MA11) 07:52 24
27	06:14 20:45	06:44 20:05	07:15 19:13	07:46 17:27	07:23 07:08 (MA04) 16:58	16:32 (MA11) 07:53 24
28	06:15 20:44	06:45 20:03	07:16 19:12	07:47 17:26	07:24 07:09 (MA04) 16:58	16:33 (MA11) 07:54 23
29	06:16 20:43	06:46 20:02	07:17 19:10	07:48 17:24	07:25 16:57 17:23	16:34 (MA11) 07:55 22
30	06:17 20:42	06:47 20:00	07:18 19:08	07:49 17:23	07:26 16:57	16:35 (MA11) 07:56 21
31	06:18 20:41	06:48 19:59	07:19 19:07	07:50 17:22		16:36 (MA11) 07:57 21
Potential sun hours	458	427	375	346	299	289
Total, worst case				246	535	234

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R37 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (12)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June			
1	07:47 17:06	16:16 (MA11)	07:34 17:40	16:31 (MA11)	06:59 18:13	07:24 (MA04)	07:08 19:47	06:23 20:18	05:54 20:48
2	07:47 17:06	16:16 (MA11)	07:33 17:41	16:42 (MA11)	06:57 18:14	07:26 (MA04)	07:07 19:48	06:22 20:19	05:54 20:48
3	07:48 17:07	16:16 (MA11)	07:32 17:42		06:56 18:16	07:37 (MA04)	07:05 19:49	06:20 20:20	05:54 20:49
4	07:48 17:08	16:16 (MA11)	07:31 17:43		06:54 18:17		07:03 19:50	06:19 20:21	05:53 20:50
5	07:48 17:09	16:16 (MA11)	07:30 17:45		06:52 18:18		07:02 19:51	06:18 20:22	05:53 20:50
6	07:48 17:10	16:16 (MA11)	07:29 17:46		06:51 18:19		07:00 19:52	06:17 20:24	05:52 20:51
7	07:48 17:11	16:16 (MA11)	07:28 17:47		06:49 18:20		06:59 19:53	06:15 20:25	05:52 20:52
8	07:47 17:12	16:16 (MA11)	07:27 17:48		06:48 18:21		06:57 19:54	06:14 20:26	05:52 20:52
9	07:47 17:13	16:16 (MA11)	07:26 17:49		06:46 18:22		06:55 19:55	06:13 20:27	05:52 20:53
10	07:47 17:14	16:17 (MA11)	07:25 17:51		06:45 18:23		06:54 19:56	06:12 20:28	05:52 20:53
11	07:47 17:15	16:16 (MA11)	07:23 17:52		06:43 18:24		06:52 19:57	06:11 20:29	05:51 20:54
12	07:47 17:16	16:17 (MA11)	07:22 17:53		06:41 18:26		06:51 19:58	06:10 20:30	05:51 20:54
13	07:46 17:17	16:17 (MA11)	07:21 17:54		06:40 18:27		06:49 19:59	06:09 20:31	05:51 20:55
14	07:46 17:18	16:17 (MA11)	07:20 17:56		06:38 18:28		06:47 20:01	06:08 20:32	05:51 20:55
15	07:46 17:19	16:17 (MA11)	07:18 17:57		06:36 18:29		06:46 20:02	06:07 20:33	05:51 20:56
16	07:45 17:20	16:17 (MA11)	07:17 17:58	07:36 (MA04)	06:35 18:30		06:44 20:03	06:06 20:34	05:51 20:56
17	07:45 17:22	16:18 (MA11)	07:16 17:59	07:35 (MA04)	06:33 18:31		06:43 20:04	06:05 20:35	05:51 20:57
18	07:44 17:23	16:18 (MA11)	07:14 18:00	07:34 (MA04)	06:31 18:32		06:41 20:05	06:04 20:35	05:51 20:57
19	07:44 17:24	16:19 (MA11)	07:13 18:02	07:42 (MA04)	06:30 18:33		06:40 20:06	06:03 20:36	05:51 20:57
20	07:43 17:25	16:19 (MA11)	07:12 18:03	07:31 (MA04)	06:28 18:34		06:38 20:07	06:02 20:37	05:51 20:57
21	07:43 17:26	16:19 (MA11)	07:10 18:04	07:44 (MA04)	06:27 18:35		06:37 20:08	06:01 20:38	05:52 20:58
22	07:42 17:27	16:20 (MA11)	07:09 18:05	07:28 (MA04)	06:25 18:36		06:35 20:09	06:01 20:39	05:52 20:58
23	07:41 17:29	16:20 (MA11)	07:07 18:06	07:44 (MA04)	06:23 18:37		06:34 20:10	06:00 20:40	05:52 20:58
24	07:41 17:30	16:20 (MA11)	07:06 18:07	07:25 (MA04)	06:22 18:38		06:32 20:11	05:59 20:41	05:52 20:58
25	07:40 17:31	16:21 (MA11)	07:05 18:09	07:44 (MA04)	06:20 18:40		06:31 20:12	05:58 20:42	05:53 20:58
26	07:39 17:32	16:23 (MA11)	07:03 18:10	07:22 (MA04)	06:18 18:41		06:30 20:13	05:58 20:43	05:53 20:58
27	07:39 17:33	16:23 (MA11)	07:02 18:11	07:22 (MA04)	06:17 18:42		06:28 20:14	05:57 20:44	05:53 20:59
28	07:38 17:35	16:24 (MA11)	07:00 18:12	07:42 (MA04)	06:15 18:43		06:27 20:15	05:57 20:44	05:54 20:59
29	07:37 17:36	16:25 (MA11)		07:41 (MA04)	06:13 18:44		06:26 20:16	05:56 20:45	05:54 20:59
30	07:36 17:37	16:27 (MA11)			07:12 19:45		06:24 20:17	05:55 20:46	05:54 20:59
31	07:35 17:38	16:29 (MA11)			07:10 19:46			05:55 20:47	
Potential sun hours	298		298		370		398	448	451
Total, worst case	749		200		27				

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R37 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (12)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October		November		December
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07		06:52 17:21		07:27 16:57 25 15:58 (MA11)
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05		06:54 17:19		07:28 16:56 24 15:59 (MA11)
3	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:03		06:55 17:18		07:29 16:56 23 15:59 (MA11)
4	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02		06:56 17:17		07:30 16:56 22 16:00 (MA11)
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00		06:57 17:16		07:31 16:56 21 16:01 (MA11)
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59		06:58 17:15		07:32 16:56 20 16:02 (MA11)
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57		06:59 17:14		07:33 16:55 20 16:02 (MA11)
8	05:59 20:57	06:25 20:32	06:56 19:46	07:26 18:55		07:01 17:13		07:34 16:55 19 16:03 (MA11)
9	05:59 20:57	06:26 20:30	06:57 19:44	07:27 18:54		07:02 17:11		07:35 16:55 18 16:04 (MA11)
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52		07:03 17:10	11 16:02 (MA11)	07:36 16:55 18 16:05 (MA11)
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:51	7 08:01 (MA04)	07:04 17:09	15 16:13 (MA11)	07:36 16:55 17 16:06 (MA11)
12	06:02 20:55	06:29 20:27	07:00 19:39	07:30 18:49	13 08:08 (MA04)	07:05 17:09	19 16:15 (MA11)	07:37 16:56 16 16:07 (MA11)
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	17 08:11 (MA04)	07:07 17:08	22 16:18 (MA11)	07:38 16:56 16 16:07 (MA11)
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	20 08:13 (MA04)	07:08 17:07	24 16:19 (MA11)	07:39 16:56 15 16:08 (MA11)
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	21 08:14 (MA04)	07:09 17:06	25 16:20 (MA11)	07:39 16:56 15 16:09 (MA11)
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	21 08:15 (MA04)	07:10 17:05	26 16:20 (MA11)	07:40 16:56 15 16:10 (MA11)
17	06:05 20:53	06:34 20:20	07:05 19:30	07:35 18:41	20 08:16 (MA04)	07:11 17:04	27 16:22 (MA11)	07:41 16:57 14 16:11 (MA11)
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	19 08:16 (MA04)	07:12 17:03	29 16:23 (MA11)	07:42 16:57 14 16:11 (MA11)
19	06:07 20:51	06:36 20:17	07:07 19:27	07:37 18:38	17 08:17 (MA04)	07:14 17:03	29 16:23 (MA11)	07:42 16:57 14 16:12 (MA11)
20	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	16 08:18 (MA04)	07:15 17:02	29 16:24 (MA11)	07:43 16:58 14 16:13 (MA11)
21	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	14 08:19 (MA04)	07:16 17:01	29 16:24 (MA11)	07:43 16:58 14 16:13 (MA11)
22	06:09 20:49	06:39 20:12	07:10 19:22	07:41 18:34	12 08:20 (MA04)	07:17 17:01	30 16:25 (MA11)	07:44 16:59 14 16:14 (MA11)
23	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:32	10 08:21 (MA04)	07:18 17:00	29 16:25 (MA11)	07:44 16:59 14 16:14 (MA11)
24	06:11 20:47	06:41 20:09	07:12 19:19	07:43 18:31	8 08:22 (MA04)	07:19 16:59	29 16:26 (MA11)	07:45 17:00 14 16:15 (MA11)
25	06:12 20:46	06:42 20:08	07:13 19:17	07:44 17:30	5 07:05 (MA04)	07:20 16:59	28 16:26 (MA11)	07:45 17:00 14 16:16 (MA11)
26	06:13 20:46	06:43 20:06	07:14 19:15	07:45 17:28	2 07:06 (MA04)	07:22 16:58	28 16:27 (MA11)	07:46 17:01 14 16:17 (MA11)
27	06:14 20:45	06:44 20:05	07:15 19:13	07:46 17:27		07:23 16:58	28 16:28 (MA11)	07:46 17:02 15 16:18 (MA11)
28	06:15 20:44	06:45 20:03	07:16 19:12	07:47 17:26		07:24 16:58	27 16:29 (MA11)	07:46 17:02 15 16:19 (MA11)
29	06:16 20:43	06:46 20:02	07:17 19:10	07:49 17:24		07:25 16:57	26 16:30 (MA11)	07:47 17:03 15 16:20 (MA11)
30	06:17 20:42	06:47 20:00	07:18 19:08	07:50 17:23		07:26 16:57	25 16:31 (MA11)	07:47 17:04 16 16:21 (MA11)
31	06:18 20:41	06:48 19:59		07:51 17:22				07:47 17:05 16 16:22 (MA11)
Potential sun hours	458	427	375	346		299		289
Total, worst case					222		535	

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R39 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (13)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June		
1	07:47	16:11 (MA11)	07:34	06:59	07:21 (MA04)	07:08	06:23	05:54
	17:06	21 16:32 (MA11)	17:40	18:13	18:39 (MA04)	19:47	20:18	20:48
2	07:47	16:11 (MA11)	07:33	06:57	07:22 (MA04)	07:07	06:22	05:54
	17:06	22 16:33 (MA11)	17:41	18:14	15 07:37 (MA04)	19:48	20:19	20:48
3	07:48	16:11 (MA11)	07:32	06:56	07:23 (MA04)	07:05	06:20	05:54
	17:07	22 16:33 (MA11)	17:42	18:16	11 07:34 (MA04)	19:49	20:20	20:49
4	07:48	16:11 (MA11)	07:31	06:54		07:03	06:19	05:53
	17:08	23 16:34 (MA11)	17:43	18:17		19:50	20:21	20:50
5	07:48	16:12 (MA11)	07:30	06:52		07:02	06:18	05:53
	17:09	23 16:35 (MA11)	17:45	18:18		19:51	20:23	20:50
6	07:48	16:11 (MA11)	07:29	06:51		07:00	06:17	05:52
	17:10	24 16:35 (MA11)	17:46	18:19		19:52	20:24	20:51
7	07:48	16:11 (MA11)	07:28	06:49		06:59	06:15	05:52
	17:11	25 16:36 (MA11)	17:47	18:20		19:53	20:25	20:52
8	07:47	16:11 (MA11)	07:27	06:48		06:57	06:14	05:52
	17:12	26 16:37 (MA11)	17:48	18:21		19:54	20:26	20:52
9	07:47	16:12 (MA11)	07:26	06:46		06:55	06:13	05:52
	17:13	26 16:38 (MA11)	17:49	18:22		19:55	20:27	20:53
10	07:47	16:12 (MA11)	07:25	06:45		06:54	06:12	05:52
	17:14	27 16:39 (MA11)	17:51	18:23		19:56	20:28	20:53
11	07:47	16:12 (MA11)	07:23	06:43		06:52	06:11	05:51
	17:15	28 16:40 (MA11)	17:52	18:24		19:57	20:29	20:54
12	07:47	16:12 (MA11)	07:22	06:41		06:51	06:10	05:51
	17:16	29 16:41 (MA11)	17:53	18:26		19:58	20:30	20:54
13	07:46	16:13 (MA11)	07:21	06:40		06:49	06:09	05:51
	17:17	29 16:42 (MA11)	17:54	18:27		19:59	20:31	20:55
14	07:46	16:13 (MA11)	07:20	06:38		06:47	06:08	05:51
	17:18	29 16:42 (MA11)	17:56	18:28		20:01	20:32	20:55
15	07:46	16:13 (MA11)	07:18	06:36		06:46	06:07	05:51
	17:19	30 16:43 (MA11)	17:57	18:29		20:02	20:33	20:56
16	07:45	16:13 (MA11)	07:17	06:35		06:44	06:06	05:51
	17:20	30 16:43 (MA11)	17:58	18:30		20:03	20:34	20:56
17	07:45	16:14 (MA11)	07:16	07:35 (MA04)	06:33	06:43	06:05	05:51
	17:22	31 16:45 (MA11)	17:59	1 07:36 (MA04)	18:31	20:04	20:35	20:57
18	07:44	16:14 (MA11)	07:14	07:34 (MA04)	06:31	06:41	06:04	05:51
	17:23	31 16:45 (MA11)	18:00	4 07:38 (MA04)	18:32	20:05	20:35	20:57
19	07:44	16:15 (MA11)	07:13	07:32 (MA04)	06:30	06:40	06:03	05:51
	17:24	31 16:46 (MA11)	18:02	7 07:39 (MA04)	18:33	20:06	20:36	20:57
20	07:43	16:15 (MA11)	07:12	07:31 (MA04)	06:28	06:38	06:02	05:51
	17:25	31 16:46 (MA11)	18:03	10 07:41 (MA04)	18:34	20:07	20:37	20:57
21	07:43	16:15 (MA11)	07:10	07:29 (MA04)	06:27	06:37	06:01	05:52
	17:26	30 16:45 (MA11)	18:04	12 07:41 (MA04)	18:35	20:08	20:38	20:58
22	07:42	16:17 (MA11)	07:09	07:28 (MA04)	06:25	06:35	06:01	05:52
	17:27	29 16:46 (MA11)	18:05	14 07:42 (MA04)	18:36	20:09	20:39	20:58
23	07:41	16:17 (MA11)	07:08	07:27 (MA04)	06:23	06:34	06:00	05:52
	17:29	29 16:46 (MA11)	18:06	15 07:42 (MA04)	18:37	20:10	20:40	20:58
24	07:41	16:18 (MA11)	07:06	07:25 (MA04)	06:22	06:32	05:59	05:52
	17:30	27 16:45 (MA11)	18:07	17 07:42 (MA04)	18:38	20:11	20:41	20:58
25	07:40	16:18 (MA11)	07:05	07:24 (MA04)	06:20	06:31	05:58	05:53
	17:31	27 16:45 (MA11)	18:09	18 07:42 (MA04)	18:40	20:12	20:42	20:58
26	07:39	16:20 (MA11)	07:03	07:22 (MA04)	06:18	06:30	05:58	05:53
	17:32	25 16:45 (MA11)	18:10	19 07:41 (MA04)	18:41	20:13	20:43	20:58
27	07:39	16:21 (MA11)	07:02	07:21 (MA04)	06:17	06:28	05:57	05:53
	17:33	23 16:44 (MA11)	18:11	20 07:41 (MA04)	18:42	20:14	20:44	20:59
28	07:38	16:22 (MA11)	07:00	07:19 (MA04)	06:15	06:27	05:57	05:54
	17:35	21 16:43 (MA11)	18:12	21 07:40 (MA04)	18:43	20:15	20:44	20:59
29	07:37	16:24 (MA11)			07:13	06:26	05:56	05:54
	17:36	18 16:42 (MA11)			19:44	20:16	20:45	20:59
30	07:36	16:25 (MA11)			07:12	06:24	05:55	05:54
	17:37	16 16:41 (MA11)			19:45	20:17	20:46	20:58
31	07:35	16:28 (MA11)			07:10		05:55	
	17:38	10 16:38 (MA11)			19:46		20:47	
Potential sun hours	298		298	370		398	448	451
Total, worst case	793		158	44				

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)
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### SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R39 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (13)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October		November		December
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07		06:52 17:21		07:27 16:57 28 15:54 (MA11) 16:22 (MA11)
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05		06:54 17:19		07:28 16:56 28 15:54 (MA11) 16:22 (MA11)
3	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:03		06:55 17:18		07:29 16:56 26 15:55 (MA11) 16:21 (MA11)
4	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02		06:56 17:17		07:30 16:56 26 16:21 (MA11) 15:55 (MA11)
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00		06:57 17:16		07:31 16:56 25 16:21 (MA11) 15:56 (MA11)
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59		06:58 17:15		07:32 16:56 24 16:21 (MA11) 15:57 (MA11)
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57		06:59 17:14		07:33 16:55 23 16:21 (MA11) 15:58 (MA11)
8	05:59 20:57	06:25 20:32	06:56 19:46	07:26 18:55		07:01 17:13		07:34 16:55 23 16:21 (MA11) 15:59 (MA11)
9	05:59 20:57	06:26 20:30	06:57 19:44	07:27 18:54		07:02 17:11		07:35 16:55 22 16:21 (MA11) 15:59 (MA11)
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	6	08:00 (MA04) 07:03		07:36 16:55 22 16:00 (MA11) 16:22 (MA11)
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:51	12	08:06 (MA04) 07:04	11	17:10 15:59 (MA11) 07:36 21 16:22 (MA11)
12	06:02 20:55	06:29 20:27	07:00 19:39	07:30 18:49	17	08:09 (MA04) 07:05	16	07:05 16:10 (MA11) 07:37 20 16:22 (MA11)
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	19	08:11 (MA04) 07:08	19	07:07 16:13 (MA11) 07:38 20 16:02 (MA11)
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	20	08:12 (MA04) 07:09	21	07:08 16:14 (MA11) 07:39 19 16:22 (MA11)
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	20	08:14 (MA04) 07:06	23	07:09 16:15 (MA11) 07:39 19 16:23 (MA11)
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	19	08:14 (MA04) 07:10	25	07:10 16:16 (MA11) 07:40 19 16:04 (MA11)
17	06:05 20:53	06:34 20:20	07:05 19:30	07:35 18:41	18	08:14 (MA04) 07:12	27	07:11 16:18 (MA11) 07:41 19 16:23 (MA11)
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	16	08:13 (MA04) 07:03	28	07:12 16:19 (MA11) 07:42 19 16:24 (MA11)
19	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	15	08:13 (MA04) 07:10	29	07:14 16:20 (MA11) 07:42 19 16:05 (MA11)
20	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	13	08:12 (MA04) 07:16	29	07:15 16:21 (MA11) 07:43 18 16:24 (MA11)
21	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	11	08:00 (MA04) 07:01	30	07:16 15:51 (MA11) 07:43 18 16:07 (MA11)
22	06:10 20:49	06:39 20:12	07:10 19:22	07:41 18:34	9	08:11 (MA04) 07:10	31	07:17 16:22 (MA11) 07:44 18 16:25 (MA11)
23	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:32	7	08:03 (MA04) 07:18	31	07:18 15:51 (MA11) 07:44 18 16:07 (MA11)
24	06:11 20:47	06:41 20:09	07:12 19:19	07:43 18:31	4	08:10 (MA04) 07:19	31	07:19 16:22 (MA11) 07:45 19 16:25 (MA11)
25	06:12 20:46	06:42 20:08	07:13 19:17	07:44 17:30		08:08 (MA04) 07:20	31	07:19 16:22 (MA11) 07:45 19 16:27 (MA11)
26	06:13 20:46	06:43 20:06	07:14 19:15	07:45 17:28		07:20 16:59	31	07:45 16:23 (MA11) 17:00 19 16:27 (MA11)
27	06:14 20:45	06:44 20:05	07:15 19:13	07:46 17:27		07:22 16:58	31	07:46 15:52 (MA11) 17:01 19 16:27 (MA11)
28	06:15 20:44	06:45 20:03	07:16 19:12	07:47 17:26		07:23 16:58	30	07:46 15:52 (MA11) 17:02 19 16:28 (MA11)
29	06:16 20:43	06:46 20:02	07:17 19:10	07:49 17:24		07:24 16:57	29	07:46 15:53 (MA11) 17:03 19 16:29 (MA11)
30	06:17 20:42	06:47 20:00	07:18 19:08	07:50 17:23		07:25 16:57	29	07:47 15:53 (MA11) 17:04 19 16:29 (MA11)
31	06:18 20:41	06:48 19:59		07:51 17:22				07:47 17:05 20 16:11 (MA11) 16:31 (MA11)
Potential sun hours	458	427	375	346		299		289
Total, worst case				206		530		648

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R43 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	
1	07:47 17:06	07:34 17:40	16:32 (MA11) 18:13		07:08 19:47	06:23 20:18	05:54 20:48
2	07:47 17:06	07:33 17:41	16:32 (MA11) 18:14	07:16 (MA04) 19:48	07:07 20:19	06:22 20:48	05:54 20:48
3	07:48 17:07	07:32 17:42	16:32 (MA11) 18:16	07:14 (MA04) 19:49	07:05 20:20	06:20 20:49	05:54 20:49
4	07:48 17:08	07:31 17:43	16:32 (MA11) 18:17	07:13 (MA04) 19:50	07:03 20:21	06:19 20:50	05:53 20:50
5	07:48 17:09	07:30 17:45	16:32 (MA11) 18:18	07:11 (MA04) 19:51	07:02 20:22	06:18 20:50	05:53 20:50
6	07:48 17:10	07:29 17:46	16:32 (MA11) 18:19	07:10 (MA04) 19:52	07:00 20:24	06:17 20:51	05:52 20:51
7	07:47 17:11	07:28 17:47	16:33 (MA11) 18:20	07:08 (MA04) 19:53	06:59 20:25	06:15 20:52	05:52 20:52
8	07:47 17:12	07:27 17:48	16:33 (MA11) 18:21	07:06 (MA04) 19:54	06:57 20:26	06:14 20:52	05:52 20:52
9	07:47 17:13	07:26 17:49	16:33 (MA11) 18:22	07:05 (MA04) 19:55	06:55 20:27	06:13 20:53	05:52 20:53
10	07:47 17:14	07:25 17:51	16:34 (MA11) 18:23	07:03 (MA04) 19:56	06:54 20:28	06:12 20:53	05:52 20:53
11	07:47 17:15	07:23 17:52	16:35 (MA11) 18:24	07:02 (MA04) 19:57	06:52 20:29	06:11 20:54	05:51 20:54
12	07:47 17:16	07:22 17:53	16:36 (MA11) 18:26	07:00 (MA04) 19:58	06:51 20:30	06:10 20:54	05:51 20:54
13	07:46 17:17	07:21 17:54	16:37 (MA11) 18:27	07:01 (MA04) 19:59	06:49 20:31	06:09 20:55	05:51 20:55
14	07:46 17:18	07:20 17:56	16:38 (MA11) 18:28	07:02 (MA04) 20:01	06:47 20:32	06:08 20:55	05:51 20:55
15	07:46 17:19	07:18 17:57	16:41 (MA11) 18:29	07:04 (MA04) 20:02	06:46 20:33	06:07 20:56	05:51 20:56
16	07:45 17:20	07:17 17:58	16:43 (MA11) 18:30	07:07 (MA04) 20:03	06:44 20:34	06:06 20:56	05:51 20:56
17	07:45 17:22	07:16 17:59	16:56 (MA11) 18:31	07:12 (MA04) 20:04	06:43 20:35	06:05 20:57	05:51 20:57
18	07:44 17:23	07:14 18:00	18:32	20:05	20:35	20:57	
19	07:44 17:24	07:13 18:02	06:30 18:33	06:40 20:06	06:03 20:36	05:51 20:57	
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	06:02 20:37	05:51 20:57	
21	07:43 17:26	07:10 16:40 (MA11) 18:04	06:27 18:35	06:37 20:08	06:01 20:38	05:52 20:58	
22	07:42 17:27	07:09 16:49 (MA11) 18:05	06:25 18:36	06:35 20:09	06:01 20:39	05:52 20:58	
23	07:41 17:29	07:08 16:51 (MA11) 18:06	06:23 18:37	06:34 20:10	06:00 20:40	05:52 20:58	
24	07:41 17:30	07:06 16:52 (MA11) 18:08	06:22 18:38	06:32 20:11	05:59 20:41	05:52 20:58	
25	07:40 17:31	07:05 16:53 (MA11) 18:09	06:20 18:38	06:31 20:12	05:58 20:42	05:53 20:58	
26	07:39 17:32	07:03 16:54 (MA11) 18:10	06:18 18:41	06:30 20:13	05:58 20:43	05:53 20:58	
27	07:39 17:33	07:02 16:56 (MA11) 18:11	06:17 18:42	06:28 20:14	05:57 20:44	05:53 20:59	
28	07:38 17:35	07:00 16:57 (MA11) 18:12	06:15 18:43	06:27 20:15	05:57 20:44	05:54 20:59	
29	07:37 17:36	07:00 16:57 (MA11) 18:12	06:15 18:43	06:27 20:15	05:57 20:44	05:54 20:59	
30	07:36 17:37	07:00 16:58 (MA11) 18:12	06:15 18:43	06:27 20:15	05:57 20:44	05:54 20:59	
31	07:35 17:38	07:00 16:58 (MA11) 18:12	06:15 18:43	06:27 20:15	05:57 20:44	05:54 20:59	
Potential sun hours	298	298	370	398	448	451	
Total, worst case	219	447	206				

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R43 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	07:40 (MA04) 08:00 (MA04)	06:52 17:21	16:04 (MA11) 16:57	07:27 16:57
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05	07:40 (MA04) 08:01 (MA04)	06:54 17:19	16:03 (MA11) 16:56	07:28 16:56
3	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:03	07:41 (MA04) 08:01 (MA04)	06:55 17:18	16:02 (MA11) 16:56	07:29 16:56
4	05:56 20:58	06:22 20:36	06:52 19:52	07:22 19:02	07:42 (MA04) 08:01 (MA04)	06:56 17:17	16:03 (MA11) 16:56	07:30 16:56
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00	07:43 (MA04) 08:01 (MA04)	06:57 17:16	16:02 (MA11) 16:56	07:31 16:56
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59	07:44 (MA04) 08:00 (MA04)	06:58 17:15	16:02 (MA11) 16:56	07:32 16:56
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	07:45 (MA04) 07:59 (MA04)	06:59 17:14	16:02 (MA11) 16:55	07:33 16:55
8	05:59 20:57	06:25 20:32	06:56 19:46	07:26 18:55	07:46 (MA04) 07:58 (MA04)	07:01 17:13	16:02 (MA11) 16:55	07:34 16:55
9	06:00 20:57	06:26 20:30	06:57 19:44	07:27 18:54	07:47 (MA04) 07:57 (MA04)	07:02 17:11	16:02 (MA11) 16:55	07:35 16:55
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:48 (MA04) 07:55 (MA04)	07:03 17:10	16:03 (MA11) 16:55	07:36 16:55
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:51	07:49 (MA04) 07:53 (MA04)	07:04 17:09	16:03 (MA11) 16:55	07:36 16:55
12	06:02 20:55	06:29 20:27	07:00 19:39	07:30 18:49		07:05 17:09	16:04 (MA11) 16:56	07:37 16:56
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47		07:07 17:08	16:05 (MA11) 16:56	07:38 16:56
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46		07:08 17:07	16:05 (MA11) 16:56	07:39 16:56
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44		07:09 17:06	16:06 (MA11) 16:56	07:39 16:56
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43		07:10 17:05	16:08 (MA11) 16:56	07:40 16:56
17	06:05 20:53	06:34 20:20	07:05 19:30	07:35 18:41		07:11 17:04	16:08 (MA11) 16:57	07:41 16:57
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40		07:12 17:03	16:10 (MA11) 16:57	07:42 16:57
19	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38		07:14 17:03	16:11 (MA11) 16:57	07:42 16:57
20	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37		07:15 17:02	16:14 (MA11) 16:58	07:43 16:58
21	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35		07:16 17:01	16:16 (MA11) 16:58	07:43 16:58
22	06:10 20:49	06:39 20:12	07:10 19:22	07:41 18:34		07:17 17:01	16:18 (MA11) 16:59	07:44 16:59
23	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:32		07:18 17:00	16:19 (MA11) 16:59	07:44 16:59
24	06:11 20:47	06:41 20:09	07:12 19:19	07:43 18:31		07:19 16:59	16:20 (MA11) 17:00	07:45 17:00
25	06:12 20:46	06:42 20:08	07:13 19:17	07:44 17:30	16:16 (MA11)	07:20	16:22 (MA11)	07:45 17:00
26	06:13 20:46	06:43 20:06	07:14 19:15	07:45 17:28	16:11 (MA11)	07:22	16:26 (MA11)	07:46 17:01
27	06:14 20:45	06:44 20:05	07:15 19:13	07:46 17:27	16:26 (MA11)	07:23	16:10 (MA11)	07:46 17:02
28	06:15 20:44	06:45 20:03	07:16 19:12	07:47 17:26	16:29 (MA11)	07:24	16:08 (MA11)	07:46 17:02
29	06:16 20:43	06:46 20:02	07:17 19:10	07:48 17:24	16:30 (MA11)	07:25	16:30 (MA11)	07:47 17:03
30	06:17 20:42	06:47 20:00	07:18 19:08	07:49 17:23	16:06 (MA11)	07:26	16:06 (MA11)	07:47 17:04
31	06:18 20:41	06:48 19:59		06:51 17:22	16:31 (MA11)		16:05 (MA11)	07:47 17:05
Potential sun hours	458	427	375	346	304	299	289	
Total, worst case			44			530		

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R47 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June			
1	07:47 17:06 37	09:00 (MA08) 09:37 (MA08)	07:34 17:40	06:59 18:13	16:24 (MA11) 17:12 (MA11)	07:08 19:47	06:23 20:18	05:54 20:48	
2	07:47 17:06 36	09:01 (MA08) 09:37 (MA08)	07:33 17:41	06:57 18:14	16:24 (MA11) 17:11 (MA11)	07:07 19:48	06:22 20:19	05:54 20:48	
3	07:48 17:07 35	09:02 (MA08) 09:37 (MA08)	07:32 17:42	06:56 18:16	16:24 (MA11) 17:10 (MA11)	07:05 19:49	06:20 20:20	05:54 20:49	
4	07:48 17:08 34	09:03 (MA08) 09:37 (MA08)	07:31 17:43	06:54 18:17	16:26 (MA11) 17:09 (MA11)	07:03 19:50	06:19 20:21	05:53 20:50	
5	07:48 17:09 31	09:05 (MA08) 09:36 (MA08)	07:30 17:45	16:42 (MA11) 18:18	06:52 18:18	16:26 (MA11) 17:08 (MA11)	07:02 19:51	06:18 20:23	05:53 20:50
6	07:48 17:10 30	09:05 (MA08) 09:35 (MA08)	07:29 17:46	16:38 (MA11) 18:19	06:51 18:19	16:28 (MA11) 17:07 (MA11)	07:00 19:52	06:17 20:24	05:53 20:51
7	07:48 17:11 27	09:07 (MA08) 09:34 (MA08)	07:28 17:47	16:36 (MA11) 18:20	06:49 18:20	16:29 (MA11) 17:05 (MA11)	06:59 19:53	06:16 20:25	05:52 20:52
8	07:47 17:12 24	09:09 (MA08) 09:33 (MA08)	07:27 17:48	16:34 (MA11) 18:21	06:48 18:21	16:30 (MA11) 17:03 (MA11)	06:57 19:54	06:14 20:26	05:52 20:52
9	07:47 17:13 21	09:11 (MA08) 09:32 (MA08)	07:26 17:49	16:31 (MA11) 18:22	06:46 18:22	16:32 (MA11) 17:01 (MA11)	06:55 19:55	06:13 20:27	05:52 20:53
10	07:47 17:14 18	09:13 (MA08) 09:31 (MA08)	07:25 17:51	16:30 (MA11) 18:23	06:45 18:23	16:34 (MA11) 17:00 (MA11)	06:54 19:56	06:12 20:28	05:52 20:53
11	07:47 17:15 12	09:16 (MA08) 09:28 (MA08)	07:23 17:52	16:29 (MA11) 18:25	06:43 18:25	16:38 (MA11) 17:00 (MA11)	06:52 19:57	06:11 20:29	05:51 20:54
12	07:47 17:16		07:22 17:53	16:28 (MA11) 18:26	06:41 18:26		06:51 19:58	06:10 20:30	05:51 20:54
13	07:46 17:17		07:21 17:54	16:26 (MA11) 18:27	06:40 18:27		06:49 20:00	06:09 20:31	05:51 20:55
14	07:46 17:18		07:20 17:56	16:26 (MA11) 18:28	06:38 18:28		06:47 20:01	06:08 20:32	05:51 20:55
15	07:46 17:19		07:18 17:57	16:25 (MA11) 18:29	06:36 18:29		06:46 20:02	06:07 20:33	05:51 20:56
16	07:45 17:20		07:17 17:58	16:24 (MA11) 18:30	06:35 18:30		06:44 20:03	06:06 20:34	05:51 20:56
17	07:45 17:22		07:16 17:59	16:24 (MA11) 18:31	06:33 18:31		06:43 20:04	06:05 20:35	05:51 20:57
18	07:44 17:23		07:14 18:00	16:24 (MA11) 18:32	06:32 18:32		06:41 20:05	06:04 20:35	05:51 20:57
19	07:44 17:24		07:13 18:02	16:23 (MA11) 18:33	06:30 18:33		06:40 20:06	06:03 20:36	05:51 20:57
20	07:43 17:25		07:12 18:03	16:23 (MA11) 18:34	06:28 18:34		06:38 20:07	06:02 20:37	05:51 20:57
21	07:43 17:26		07:10 18:04	16:22 (MA11) 18:35	06:27 18:35		06:37 20:08	06:02 20:38	05:52 20:58
22	07:42 17:27		07:09 18:05	16:22 (MA11) 18:36	06:25 18:36		06:35 20:09	06:01 20:39	05:52 20:58
23	07:41 17:29		07:08 18:06	16:23 (MA11) 18:37	06:23 18:37		06:34 20:10	06:00 20:40	05:52 20:58
24	07:41 17:30		07:06 18:08	16:22 (MA11) 18:38	06:22 18:38		06:32 20:11	05:59 20:41	05:52 20:58
25	07:40 17:31		07:05 18:09	16:23 (MA11) 18:40	06:20 18:40		06:31 20:12	05:58 20:42	05:53 20:58
26	07:39 17:32		07:03 18:10	16:22 (MA11) 18:41	06:18 18:41		06:30 20:13	05:58 20:43	05:53 20:58
27	07:39 17:33		07:02 18:11	16:23 (MA11) 18:42	06:17 18:42		06:28 20:14	05:57 20:44	05:53 20:59
28	07:38 17:35		07:00 18:12	16:23 (MA11) 18:43	06:15 18:43		06:27 20:15	05:57 20:44	05:54 20:59
29	07:37 17:36				07:13 19:44		06:26 20:16	05:56 20:45	05:54 20:59
30	07:36 17:37				07:12 19:45		06:24 20:17	05:55 20:46	05:55 20:59
31	07:35 17:38				07:10 19:46			05:55 20:47	
Potential sun hours	298		298		370		398	448	451
Total, worst case	305		990		404				

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R47 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October		November		December	
1	05:55	06:19	06:49	07:19		06:52	16:00 (MA11)	07:27	08:58 (MA08)
	20:58	20:40	19:57	19:07		17:21	33 16:33 (MA11)	16:57	12 09:10 (MA08)
2	05:55	06:20	06:50	07:20	17:19 (MA11)	06:54	16:01 (MA11)	07:28	08:55 (MA08)
	20:58	20:39	19:55	19:05	13 17:32 (MA11)	17:19	31 16:32 (MA11)	16:56	18 09:13 (MA08)
3	05:56	06:21	06:51	07:21	17:14 (MA11)	06:55	16:03 (MA11)	07:29	08:54 (MA08)
	20:58	20:37	19:54	19:03	21 17:35 (MA11)	17:18	28 16:31 (MA11)	16:56	21 09:15 (MA08)
4	05:57	06:22	06:52	07:22	17:11 (MA11)	06:56	16:06 (MA11)	07:30	08:53 (MA08)
	20:58	20:36	19:52	19:02	27 17:38 (MA11)	17:17	24 16:30 (MA11)	16:56	24 09:17 (MA08)
5	05:57	06:22	06:53	07:23	17:08 (MA11)	06:57	16:08 (MA11)	07:31	08:52 (MA08)
	20:58	20:35	19:50	19:00	31 17:39 (MA11)	17:16	19 16:27 (MA11)	16:56	27 09:19 (MA08)
6	05:58	06:23	06:54	07:24	17:06 (MA11)	06:58	16:13 (MA11)	07:32	08:51 (MA08)
	20:57	20:34	19:49	18:59	35 17:41 (MA11)	17:15	10 16:23 (MA11)	16:56	30 09:21 (MA08)
7	05:58	06:24	06:55	07:25	17:04 (MA11)	06:59		07:33	08:51 (MA08)
	20:57	20:33	19:47	18:57	38 17:42 (MA11)	17:14		16:55	31 09:22 (MA08)
8	05:59	06:25	06:56	07:26	17:02 (MA11)	07:01		07:34	08:50 (MA08)
	20:57	20:32	19:46	18:55	41 17:43 (MA11)	17:13		16:55	34 09:24 (MA08)
9	06:00	06:26	06:57	07:27	17:01 (MA11)	07:02		07:35	08:50 (MA08)
	20:57	20:30	19:44	18:54	42 17:43 (MA11)	17:12		16:55	35 09:25 (MA08)
10	06:00	06:27	06:58	07:28	16:59 (MA11)	07:03		07:36	08:50 (MA08)
	20:56	20:29	19:42	18:52	45 17:44 (MA11)	17:10		16:55	36 09:26 (MA08)
11	06:01	06:28	06:59	07:29	16:58 (MA11)	07:04		07:36	08:50 (MA08)
	20:56	20:28	19:41	18:51	46 17:44 (MA11)	17:10		16:56	37 09:27 (MA08)
12	06:02	06:29	07:00	07:30	16:57 (MA11)	07:05		07:37	08:50 (MA08)
	20:55	20:27	19:39	18:49	48 17:45 (MA11)	17:09		16:56	38 09:28 (MA08)
13	06:02	06:30	07:01	07:31	16:56 (MA11)	07:07		07:38	08:50 (MA08)
	20:55	20:25	19:37	18:47	49 17:45 (MA11)	17:08		16:56	39 09:29 (MA08)
14	06:03	06:31	07:02	07:32	16:55 (MA11)	07:08		07:39	08:50 (MA08)
	20:54	20:24	19:35	18:46	50 17:45 (MA11)	17:07		16:56	40 09:30 (MA08)
15	06:04	06:32	07:03	07:33	16:55 (MA11)	07:09		07:39	08:50 (MA08)
	20:54	20:22	19:34	18:44	51 17:46 (MA11)	17:06		16:56	41 09:31 (MA08)
16	06:05	06:33	07:04	07:34	16:55 (MA11)	07:10		07:40	08:51 (MA08)
	20:53	20:21	19:32	18:43	51 17:46 (MA11)	17:05		16:56	41 09:32 (MA08)
17	06:05	06:34	07:05	07:35	16:54 (MA11)	07:11		07:41	08:51 (MA08)
	20:53	20:20	19:30	18:41	52 17:46 (MA11)	17:04		16:57	41 09:32 (MA08)
18	06:06	06:35	07:06	07:37	16:54 (MA11)	07:12		07:42	08:51 (MA08)
	20:52	20:18	19:29	18:40	51 17:45 (MA11)	17:03		16:57	42 09:33 (MA08)
19	06:07	06:36	07:07	07:38	16:53 (MA11)	07:14		07:42	08:51 (MA08)
	20:51	20:17	19:27	18:38	51 17:44 (MA11)	17:03		16:57	42 09:33 (MA08)
20	06:08	06:37	07:08	07:39	16:53 (MA11)	07:15		07:43	08:52 (MA08)
	20:50	20:15	19:25	18:37	50 17:43 (MA11)	17:02		16:58	42 09:34 (MA08)
21	06:09	06:38	07:09	07:40	16:53 (MA11)	07:16		07:43	08:53 (MA08)
	20:50	20:14	19:24	18:35	50 17:43 (MA11)	17:01		16:58	42 09:35 (MA08)
22	06:10	06:39	07:10	07:41	16:53 (MA11)	07:17		07:44	08:53 (MA08)
	20:49	20:12	19:22	18:34	50 17:43 (MA11)	17:01		16:59	42 09:35 (MA08)
23	06:10	06:40	07:11	07:42	16:53 (MA11)	07:18		07:44	08:53 (MA08)
	20:48	20:11	19:20	18:32	49 17:42 (MA11)	17:00		16:59	42 09:35 (MA08)
24	06:11	06:41	07:12	07:43	16:54 (MA11)	07:19		07:45	08:54 (MA08)
	20:47	20:09	19:19	18:31	47 17:41 (MA11)	17:00		17:00	42 09:36 (MA08)
25	06:12	06:42	07:13	06:44	15:54 (MA11)	07:20		07:45	08:54 (MA08)
	20:46	20:08	19:17	17:30	46 16:40 (MA11)	16:59		17:00	42 09:36 (MA08)
26	06:13	06:43	07:14	06:45	15:54 (MA11)	07:22		07:46	08:55 (MA08)
	20:46	20:06	19:15	17:28	45 16:39 (MA11)	16:58		17:01	42 09:37 (MA08)
27	06:14	06:44	07:15	06:47	15:55 (MA11)	07:23		07:46	08:56 (MA08)
	20:45	20:05	19:13	17:27	44 16:39 (MA11)	16:58		17:02	41 09:37 (MA08)
28	06:15	06:45	07:16	06:48	15:56 (MA11)	07:24		07:46	08:56 (MA08)
	20:44	20:03	19:12	17:26	42 16:38 (MA11)	16:58		17:02	41 09:37 (MA08)
29	06:16	06:46	07:17	06:49	15:56 (MA11)	07:25		07:47	08:57 (MA08)
	20:43	20:02	19:10	17:24	40 16:36 (MA11)	16:57		17:03	40 09:37 (MA08)
30	06:17	06:47	07:18	06:50	15:57 (MA11)	07:26		07:47	08:57 (MA08)
	20:42	20:00	19:08	17:23	38 16:35 (MA11)	16:57		17:04	40 09:37 (MA08)
31	06:18	06:48	06:51	06:51	15:59 (MA11)			07:47	08:59 (MA08)
	20:41	19:59	17:22	17:22	35 16:34 (MA11)			17:05	38 09:37 (MA08)
Potential sun hours	458	427	375	346		299		289	
Total, worst case					1278		145		1123

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R48 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (16)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:47	07:34	07:54 (MA08) 06:59	07:27 (MA08) 07:08	18:05 (MA11) 06:23	18:05 (MA11) 05:54
	17:06	17:40	28 08:22 (MA08) 18:13	66 08:33 (MA08) 19:47	36 18:41 (MA11) 20:18	43 18:48 (MA11) 20:48
2	07:47	07:33	07:53 (MA08) 06:57	07:27 (MA08) 07:07	18:03 (MA11) 06:22	18:07 (MA11) 05:54
	17:06	17:41	31 08:24 (MA08) 18:14	65 08:32 (MA08) 19:48	39 18:42 (MA11) 20:19	40 18:47 (MA11) 20:48
3	07:48	07:32	07:52 (MA08) 06:56	07:27 (MA08) 07:05	18:02 (MA11) 06:20	18:08 (MA11) 05:54
	17:07	17:42	33 08:25 (MA08) 18:16	63 08:30 (MA08) 19:49	40 18:42 (MA11) 20:20	37 18:45 (MA11) 20:49
4	07:48	07:31	07:51 (MA08) 06:54	07:28 (MA08) 07:03	18:01 (MA11) 06:19	18:10 (MA11) 05:53
	17:08	17:43	36 08:27 (MA08) 18:17	62 08:30 (MA08) 19:50	43 18:44 (MA11) 20:21	34 18:44 (MA11) 20:50
5	07:48	07:30	07:50 (MA08) 06:52	07:29 (MA08) 07:02	18:00 (MA11) 06:18	18:11 (MA11) 05:53
	17:09	17:45	38 08:28 (MA08) 18:18	59 08:28 (MA08) 19:51	45 18:45 (MA11) 20:23	30 18:41 (MA11) 20:50
6	07:48	07:29	07:49 (MA08) 06:51	07:30 (MA08) 07:00	18:00 (MA11) 06:17	18:14 (MA11) 05:53
	17:10	17:46	40 08:29 (MA08) 18:19	57 08:27 (MA08) 19:52	47 18:47 (MA11) 20:24	25 18:39 (MA11) 20:51
7	07:48	07:28	07:48 (MA08) 06:49	07:30 (MA08) 06:59	17:59 (MA11) 06:16	18:17 (MA11) 05:52
	17:11	17:47	42 08:30 (MA08) 18:20	56 08:26 (MA08) 19:53	49 18:48 (MA11) 20:25	19 18:36 (MA11) 20:52
8	07:47	07:27	07:47 (MA08) 06:48	07:32 (MA08) 06:57	17:58 (MA11) 06:14	18:21 (MA11) 05:52
	17:12	17:48	44 08:31 (MA08) 18:21	53 08:25 (MA08) 19:54	51 18:49 (MA11) 20:26	11 18:32 (MA11) 20:52
9	07:47	07:26	07:45 (MA08) 06:46	07:33 (MA08) 06:55	17:58 (MA11) 06:13	05:52
	17:13	17:50	46 08:31 (MA08) 18:22	50 08:23 (MA08) 19:55	52 18:50 (MA11) 20:27	20:53
10	07:47	07:25	07:44 (MA08) 06:45	07:34 (MA08) 06:54	17:57 (MA11) 06:12	05:52
	17:14	17:51	48 08:32 (MA08) 18:23	46 08:20 (MA08) 19:56	54 18:51 (MA11) 20:28	20:53
11	07:47	07:23	07:43 (MA08) 06:43	07:36 (MA08) 06:52	17:57 (MA11) 06:11	05:51
	17:15	17:52	50 08:33 (MA08) 18:25	43 08:19 (MA08) 19:57	56 18:53 (MA11) 20:29	20:54
12	07:47	07:22	07:42 (MA08) 06:41	07:37 (MA08) 06:51	17:57 (MA11) 06:10	05:51
	17:16	17:53	52 08:34 (MA08) 18:26	39 08:16 (MA08) 19:58	57 18:54 (MA11) 20:30	20:54
13	07:46	07:21	07:40 (MA08) 06:40	07:39 (MA08) 06:49	17:56 (MA11) 06:09	05:51
	17:17	17:54	54 08:34 (MA08) 18:27	34 08:13 (MA08) 20:00	58 18:54 (MA11) 20:31	20:55
14	07:46	07:20	07:39 (MA08) 06:38	07:42 (MA08) 06:47	17:56 (MA11) 06:08	05:51
	17:18	17:56	56 08:35 (MA08) 18:28	28 08:10 (MA08) 20:01	60 18:56 (MA11) 20:32	20:55
15	07:46	07:18	07:38 (MA08) 06:36	07:45 (MA08) 06:46	17:56 (MA11) 06:07	05:51
	17:19	17:57	58 08:36 (MA08) 18:29	21 08:06 (MA08) 20:02	61 18:57 (MA11) 20:33	20:56
16	07:45	07:17	07:36 (MA08) 06:35	07:52 (MA08) 06:44	17:56 (MA11) 06:06	05:51
	17:20	17:58	59 08:35 (MA08) 18:30	5 07:57 (MA08) 20:03	63 18:59 (MA11) 20:34	20:56
17	07:45	07:16	07:35 (MA08) 06:33	06:43	17:56 (MA11) 06:05	05:51
	17:22	17:59	61 08:36 (MA08) 18:31	20:04	64 19:00 (MA11) 20:35	20:57
18	07:44	07:14	07:34 (MA08) 06:32	06:41	17:57 (MA11) 06:04	05:51
	17:23	18:00	62 08:36 (MA08) 18:32	20:05	63 19:00 (MA11) 20:35	20:57
19	07:44	07:13	07:32 (MA08) 06:30	06:40	17:56 (MA11) 06:03	05:51
	17:24	18:02	64 08:36 (MA08) 18:33	20:06	63 18:59 (MA11) 20:36	20:57
20	07:43	07:12	07:31 (MA08) 06:28	06:38	17:57 (MA11) 06:02	05:52
	17:25	18:03	65 08:36 (MA08) 18:34	20:07	61 18:58 (MA11) 20:37	20:57
21	07:43	07:10	07:29 (MA08) 06:27	06:37	17:58 (MA11) 06:02	05:52
	17:26	18:04	66 08:35 (MA08) 18:35	20:08	60 18:58 (MA11) 20:38	20:58
22	07:42	07:09	07:28 (MA08) 06:25	06:35	17:58 (MA11) 06:01	05:52
	17:27	18:05	68 08:36 (MA08) 18:36	20:09	59 18:57 (MA11) 20:39	20:58
23	07:41	07:08	07:27 (MA08) 06:23	17:31 (MA11) 06:34	17:59 (MA11) 06:00	05:52
	17:29	18:06	69 08:36 (MA08) 18:37	3 17:34 (MA11) 20:10	58 18:57 (MA11) 20:40	20:58
24	07:41	07:06	07:26 (MA08) 06:22	17:23 (MA11) 06:32	17:59 (MA11) 05:59	05:52
	17:30	18:08	69 08:35 (MA08) 18:38	12 17:35 (MA11) 20:11	56 18:55 (MA11) 20:41	20:58
25	07:40	07:05	07:26 (MA08) 06:20	17:19 (MA11) 06:31	18:00 (MA11) 05:59	05:53
	17:31	18:09	69 08:35 (MA08) 18:40	16 17:35 (MA11) 20:12	55 18:55 (MA11) 20:42	20:58
26	07:39	08:00 (MA08) 07:03	07:26 (MA08) 06:18	17:16 (MA11) 06:30	18:01 (MA11) 05:58	05:53
	17:32	7 08:07 (MA08) 18:10	68 08:34 (MA08) 18:41	20 17:36 (MA11) 20:13	53 18:54 (MA11) 20:43	20:58
27	07:39	07:59 (MA08) 07:02	07:27 (MA08) 06:17	17:13 (MA11) 06:28	18:01 (MA11) 05:57	05:53
	17:33	12 08:11 (MA08) 18:11	67 08:34 (MA08) 18:42	24 17:37 (MA11) 20:14	51 18:52 (MA11) 20:44	20:59
28	07:38	07:58 (MA08) 07:00	07:27 (MA08) 06:15	17:11 (MA11) 06:27	18:02 (MA11) 05:57	05:54
	17:35	16 08:14 (MA08) 18:12	66 08:33 (MA08) 18:43	26 17:37 (MA11) 20:15	50 18:52 (MA11) 20:44	20:59
29	07:37	07:57 (MA08) 07:13	07:13	18:10 (MA11) 06:26	18:03 (MA11) 05:56	05:54
	17:36	19 08:16 (MA08) 19:44	28 18:38 (MA11) 20:16	48 18:51 (MA11) 20:45	05:55	20:59
30	07:36	07:56 (MA08) 07:12	07:12	18:07 (MA11) 06:24	18:04 (MA11) 05:55	05:55
	17:37	22 08:18 (MA08) 19:45	32 18:39 (MA11) 20:17	45 18:49 (MA11) 20:46	05:55	20:58
31	07:35	07:55 (MA08) 07:10	07:10	18:06 (MA11) 06:25	05:55	
	17:38	25 08:20 (MA08) 19:46	33 18:39 (MA11) 20:17	45 18:49 (MA11) 20:46	05:55	
Potential sun hours	298	298	370	398	448	451
Total, worst case	101	1509	941	1597	239	

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

Calculation: SHADOW\_Worse case Shadow receptor: R48 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (16)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:55 20:58	06:19 20:40	06:49 19:57	17:56 (MA11) 19:07	07:19 08:17 (MA08)	06:52 07:14 (MA08)
2	05:55 20:58	06:20 20:39	06:50 19:55	54 17:56 (MA11) 18:50 (MA11)	07:20 19:05	38 08:55 (MA08) 06:54 07:15 (MA08)
3	05:56 20:58	06:21 20:37	06:51 19:54	52 17:56 (MA11) 18:48 (MA11)	07:21 19:04	42 08:57 (MA08) 06:55 07:16 (MA08)
4	05:57 20:58	06:22 20:36	06:52 19:52	51 17:56 (MA11) 18:47 (MA11)	07:22 19:02	45 08:58 (MA08) 06:56 07:18 (MA08)
5	05:57 20:58	06:23 20:35	18:29 (MA11) 06:53	49 17:55 (MA11) 18:44 (MA11)	07:23 19:00	52 08:09 (MA08) 06:57 07:19 (MA08)
6	05:58 20:57	06:23 20:34	18:25 (MA11) 06:54	47 17:55 (MA11) 18:42 (MA11)	07:24 18:59	54 08:08 (MA08) 06:58 07:20 (MA08)
7	05:58 20:57	06:24 20:33	18:23 (MA11) 06:55	45 17:55 (MA11) 18:40 (MA11)	07:25 18:57	57 09:02 (MA08) 06:59 07:21 (MA08)
8	05:59 20:57	06:25 20:32	18:20 (MA11) 06:56	44 17:55 (MA11) 18:39 (MA11)	07:26 18:55	58 08:05 (MA08) 07:01 07:23 (MA08)
9	06:00 20:57	06:26 20:30	18:18 (MA11) 06:57	41 17:56 (MA11) 18:37 (MA11)	07:27 18:54	60 08:04 (MA08) 07:02 07:24 (MA08)
10	06:00 20:56	06:27 20:29	18:17 (MA11) 06:58	39 17:56 (MA11) 18:35 (MA11)	07:28 18:52	62 09:04 (MA08) 07:03 07:25 (MA08)
11	06:01 20:56	06:28 20:28	18:15 (MA11) 06:59	36 17:57 (MA11) 18:33 (MA11)	07:29 18:51	64 08:01 (MA08) 07:04 07:26 (MA08)
12	06:02 20:55	06:29 20:27	18:13 (MA11) 07:00	33 17:58 (MA11) 18:31 (MA11)	07:30 18:49	65 08:00 (MA08) 07:05 07:27 (MA08)
13	06:02 20:55	06:30 20:25	18:12 (MA11) 07:01	32 17:58 (MA11) 18:30 (MA11)	07:31 18:47	66 08:00 (MA08) 07:07 07:29 (MA08)
14	06:03 20:54	06:31 20:24	18:11 (MA11) 07:02	29 18:00 (MA11) 18:29 (MA11)	07:32 18:46	67 09:06 (MA08) 17:08 07:48 (MA08)
15	06:04 20:54	06:32 20:22	18:09 (MA11) 07:03	26 18:01 (MA11) 18:27 (MA11)	07:33 18:44	68 07:59 (MA08) 07:09 07:31 (MA08)
16	06:05 20:53	06:33 20:21	18:08 (MA11) 07:04	24 18:02 (MA11) 18:26 (MA11)	07:34 18:43	69 09:07 (MA08) 17:06 07:43 (MA08)
17	06:05 20:53	06:34 20:20	18:07 (MA11) 07:05	21 18:04 (MA11) 18:25 (MA11)	07:35 18:41	69 09:07 (MA08) 17:05 07:40 (MA08)
18	06:06 20:52	06:35 20:18	18:06 (MA11) 07:06	18 18:06 (MA11) 18:24 (MA11)	07:37 18:40	70 07:57 (MA08) 07:12 07:03
19	06:07 20:51	06:36 20:17	18:05 (MA11) 07:07	12 18:10 (MA11) 18:22 (MA11)	07:38 18:38	69 07:58 (MA08) 07:14 07:03
20	06:08 20:50	06:37 20:15	18:03 (MA11) 07:08	6 18:15 (MA11) 18:21 (MA11)	07:39 18:37	67 07:59 (MA08) 07:15 17:02
21	06:09 20:50	06:38 20:14	18:02 (MA11) 07:09	60 18:02 (MA11) 19:24	07:40 18:35	66 08:00 (MA08) 07:16 09:06 (MA08)
22	06:10 20:49	06:39 20:12	18:02 (MA11) 07:10	60 18:02 (MA11) 19:22	07:41 18:34	65 08:02 (MA08) 07:17 09:07 (MA08)
23	06:10 20:48	06:40 20:11	18:01 (MA11) 07:11	61 18:01 (MA11) 19:20	07:42 18:33	63 08:03 (MA08) 07:18 17:00
24	06:11 20:47	06:41 20:09	18:00 (MA11) 07:12	63 18:00 (MA11) 19:19	07:43 18:31	62 09:06 (MA08) 07:19 17:00
25	06:12 20:46	06:42 20:08	17:59 (MA11) 07:13	64 17:59 (MA11) 19:17	06:44 17:30	60 07:05 (MA08) 07:20 16:59
26	06:13 20:46	06:43 20:06	17:59 (MA11) 07:14	63 17:59 (MA11) 19:15	06:45 17:28	59 07:06 (MA08) 07:22 16:58
27	06:14 20:45	06:44 20:05	17:58 (MA11) 07:15	63 17:58 (MA11) 19:14	06:47 17:27	57 07:08 (MA08) 07:23 16:58
28	06:15 20:44	06:45 20:03	17:58 (MA11) 07:16	16 08:29 (MA08) 08:45 (MA08)	06:48 17:26	55 07:09 (MA08) 07:24 16:58
29	06:16 20:43	06:46 20:02	17:57 (MA11) 07:17	26 08:24 (MA08) 08:50 (MA08)	06:49 17:24	54 07:10 (MA08) 07:25 16:57
30	06:17 20:42	06:47 20:00	17:57 (MA11) 07:18	32 08:20 (MA08) 08:52 (MA08)	06:50 17:23	52 07:11 (MA08) 07:26 16:57
31	06:18 20:41	06:48 19:59	17:56 (MA11) 18:53 (MA11)	57 17:56 (MA11) 18:53 (MA11)	06:51 17:22	50 07:13 (MA08) 08:03 (MA08)
Potential sun hours	458	427	375	346	299	289
Total, worst case		1343	789	1833	485	

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R62 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:47 17:06	08:38 (MA06) 09:03 (MA06)	07:34 17:40	06:59 18:13	07:08 19:47	06:23 20:18
2	07:47 17:07	08:40 (MA06) 09:04 (MA06)	07:33 17:41	06:57 18:14	07:07 19:48	06:22 20:18
3	07:47 17:07	08:41 (MA06) 09:04 (MA06)	07:32 17:42	06:56 18:16	07:05 19:49	06:20 20:19
4	07:47 17:08	08:41 (MA06) 09:04 (MA06)	07:31 17:43	06:54 18:17	07:03 19:50	06:19 20:21
5	07:47 17:09	08:41 (MA06) 09:03 (MA06)	07:30 17:45	06:52 18:18	07:02 19:51	06:18 20:22
6	07:47 17:10	08:46 (MA06) 09:03 (MA06)	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:23
7	07:47 17:11	08:44 (MA06) 09:03 (MA06)	07:28 17:47	06:49 18:20	06:59 19:53	06:16 20:24
8	07:47 17:12	08:45 (MA06) 09:03 (MA06)	07:27 17:48	06:48 18:21	06:57 19:54	06:14 20:25
9	07:47 17:13	08:46 (MA06) 09:02 (MA06)	07:26 17:50	06:46 18:22	06:55 19:55	06:13 20:27
10	07:47 17:14	08:48 (MA06) 09:02 (MA06)	07:25 17:51	06:45 18:23	06:54 19:56	06:12 20:28
11	07:47 17:15	08:49 (MA06) 09:00 (MA06)	07:23 17:52	06:43 18:25	07:02 (MA07) 07:17 (MA07)	06:11 20:29
12	07:47 17:16	08:52 (MA06) 08:58 (MA06)	07:22 17:53	06:41 18:26	07:00 (MA07) 07:21 (MA07)	06:10 20:30
13	07:46 17:17	07:21 17:54	06:40 18:27	06:58 (MA07) 07:21 (MA07)	06:49 19:59	06:09 20:31
14	07:46 17:18	07:20 17:56	06:38 18:28	06:57 (MA07) 07:23 (MA07)	06:47 20:00	06:08 20:32
15	07:46 17:19	07:18 17:57	06:36 18:29	06:55 (MA07) 07:24 (MA07)	06:46 20:02	06:07 20:32
16	07:45 17:21	07:17 17:58	06:35 18:30	06:53 (MA07) 07:25 (MA07)	06:44 20:03	06:06 20:33
17	07:45 17:22	07:16 17:59	06:33 18:31	06:52 (MA07) 07:26 (MA07)	06:43 20:04	06:05 20:34
18	07:44 17:23	07:14 18:00	06:32 18:32	06:50 (MA07) 07:27 (MA07)	06:41 20:05	06:04 20:35
19	07:44 17:24	07:13 18:02	06:30 18:33	06:48 (MA07) 07:27 (MA07)	06:40 20:06	06:03 20:36
20	07:43 17:25	07:12 18:03	06:28 18:34	06:47 (MA07) 07:28 (MA07)	06:38 20:07	06:02 20:37
21	07:43 17:26	07:10 18:04	06:27 18:35	06:45 (MA07) 07:28 (MA07)	06:37 20:08	06:02 20:38
22	07:42 17:28	07:09 18:05	06:25 18:36	06:43 (MA07) 07:27 (MA07)	06:35 20:09	06:01 20:39
23	07:41 17:29	07:07 18:06	06:23 18:37	06:42 (MA07) 07:28 (MA07)	06:34 20:10	06:00 20:40
24	07:41 17:30	07:06 18:08	06:22 18:38	06:41 (MA07) 07:27 (MA07)	06:33 20:11	05:59 20:41
25	07:40 17:31	07:05 18:09	06:20 18:40	06:41 (MA07) 07:27 (MA07)	06:31 20:12	05:59 20:42
26	07:39 17:32	07:03 18:10	06:18 18:41	06:41 (MA07) 07:27 (MA07)	06:30 20:13	05:58 20:43
27	07:38 17:34	07:02 18:11	06:17 18:42	06:41 (MA07) 07:26 (MA07)	06:28 20:14	05:57 20:43
28	07:38 17:35	07:00 18:12	06:15 18:43	06:40 (MA07) 07:25 (MA07)	06:27 20:15	05:57 20:44
29	07:37 17:36		07:13 19:44	07:41 (MA07) 08:25 (MA07)	06:26 20:16	05:56 20:45
30	07:36 17:37		07:12 19:45	07:41 (MA07) 08:23 (MA07)	06:24 20:17	05:55 20:46
31	07:35 17:38		07:10 19:46	07:41 (MA07) 08:22 (MA07)		05:55 20:47
Potential sun hours	298	298	370	398	447	451
Total, worst case	222		783	236		

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R62 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	07:39 (MA07) 08:00 (MA07)	06:52 17:21
2	05:56 20:58	06:20 20:38	06:50 19:55	07:20 19:05	07:40 (MA07) 07:57 (MA07)	06:53 17:19
3	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:04	07:42 (MA07) 07:52 (MA07)	06:55 17:18
4	05:57 20:58	06:22 20:36	06:52 19:52	07:22 19:02	07:50 (MA07) 08:03 (MA07)	06:56 17:17
5	05:57 20:58	06:23 20:35	06:53 19:50	07:23 19:00	07:45 (MA07) 08:06 (MA07)	06:57 17:16
6	05:58 20:57	06:24 20:34	06:54 19:49	07:24 18:59	07:43 (MA07) 08:08 (MA07)	06:58 17:15
7	05:58 20:57	06:25 20:33	06:55 19:47	07:25 18:57	07:40 (MA07) 08:10 (MA07)	06:59 17:14
8	05:59 20:57	06:26 20:32	06:56 19:45	07:26 18:55	07:38 (MA07) 08:11 (MA07)	07:01 17:13
9	06:00 20:56	06:26 20:30	06:57 19:44	07:27 18:54	07:37 (MA07) 08:12 (MA07)	07:02 17:12
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:35 (MA07) 08:13 (MA07)	07:03 17:11
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:51	07:34 (MA07) 08:14 (MA07)	07:04 17:10
12	06:02 20:55	06:29 20:26	07:00 19:39	07:30 18:49	07:33 (MA07) 08:14 (MA07)	07:05 17:09
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	07:32 (MA07) 08:15 (MA07)	07:06 17:08
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	07:31 (MA07) 08:15 (MA07)	07:07 17:07
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	07:30 (MA07) 08:15 (MA07)	07:09 17:06
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	07:30 (MA07) 08:15 (MA07)	07:10 17:05
17	06:06 20:52	06:34 20:20	07:05 19:30	07:35 18:41	07:29 (MA07) 08:15 (MA07)	07:11 17:04
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	07:29 (MA07) 08:15 (MA07)	07:12 17:04
19	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	07:29 (MA07) 08:15 (MA07)	07:13 17:03
20	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	07:28 (MA07) 08:14 (MA07)	07:15 17:02
21	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	07:29 (MA07) 08:14 (MA07)	07:16 17:01
22	06:10 20:49	06:39 20:12	07:10 19:22	07:41 18:34	07:30 (MA07) 08:13 (MA07)	07:17 17:01
23	06:11 20:48	06:40 20:11	07:11 19:20	07:42 18:33	07:31 (MA07) 08:12 (MA07)	07:18 17:00
24	06:11 20:47	06:41 20:09	07:12 19:19	07:43 18:31	07:32 (MA07) 08:11 (MA07)	07:19 17:00
25	06:12 20:46	06:42 20:08	07:13 19:17	07:44 18:30	07:33 (MA07) 08:10 (MA07)	07:20 16:59
26	06:13 20:45	06:43 20:06	07:14 19:15	07:45 18:28	07:33 (MA07) 08:08 (MA07)	07:21 16:59
27	06:14 20:45	06:44 20:05	07:15 19:14	07:47 18:27	07:34 (MA07) 08:07 (MA07)	07:23 16:58
28	06:15 20:44	06:45 20:03	07:16 19:12	07:48 18:26	07:35 (MA07) 08:05 (MA07)	07:24 16:58
29	06:16 20:43	06:46 20:02	07:17 19:10	07:49 18:24	07:36 (MA07) 08:04 (MA07)	07:25 16:57
30	06:17 20:42	06:47 20:00	07:18 19:08	07:50 18:23	07:37 (MA07) 08:01 (MA07)	07:26 16:57
31	06:18 20:41	06:48 19:59		06:51 17:22		08:34 (MA06) 08:39 (MA06)
Potential sun hours	458	427	375	346	299	289
Total, worst case			992	48	5	736

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R67 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (17)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April		May		June			
1	07:47	07:34	06:59	07:08		06:23		18:46 (MA07)	05:55		19:06 (MA07)
	17:06	17:40	18:13	19:47		20:18	63	19:49 (MA07)	20:47	27	19:33 (MA07)
2	07:47	07:33	06:57	07:07		06:22		18:46 (MA07)	05:54		19:07 (MA07)
	17:07	17:41	18:14	19:48		20:19	64	19:50 (MA07)	20:48	24	19:31 (MA07)
3	07:47	07:32	06:55	07:05		06:20		18:46 (MA07)	05:54		19:09 (MA07)
	17:07	17:42	18:16	19:49		20:20	64	19:50 (MA07)	20:49	22	19:31 (MA07)
4	07:47	07:31	06:54	07:03		06:19		18:47 (MA07)	05:53		19:10 (MA07)
	17:08	17:43	18:17	19:50		20:21	63	19:50 (MA07)	20:49	20	19:30 (MA07)
5	07:47	07:30	06:52	07:02		06:18		18:46 (MA07)	05:53		19:12 (MA07)
	17:09	17:45	18:18	19:51		20:22	63	19:49 (MA07)	20:50	16	19:28 (MA07)
6	07:47	07:29	06:51	07:00		06:17		18:46 (MA07)	05:53		19:14 (MA07)
	17:10	17:46	18:19	19:52		20:23	63	19:49 (MA07)	20:51	12	19:26 (MA07)
7	07:47	07:28	06:49	06:59		06:16		18:47 (MA07)	05:52		19:17 (MA07)
	17:11	17:47	18:20	19:53		20:24	61	19:48 (MA07)	20:51	7	19:24 (MA07)
8	07:47	07:27	06:48	06:57		06:14		18:47 (MA07)	05:52		
	17:12	17:48	18:21	19:54		20:25	61	19:48 (MA07)	20:52		
9	07:47	07:26	06:46	06:55	14	19:16 (MA07)		18:47 (MA07)	05:52		
	17:13	17:50	18:22	19:55		20:26	61	19:48 (MA07)	20:53		
10	07:47	07:24	06:44	06:54	24	19:10 (MA07)		18:48 (MA07)	05:52		
	17:14	17:51	18:23	19:56		20:27	60	19:48 (MA07)	20:53		
11	07:47	07:23	06:43	06:52	29	19:07 (MA07)		18:48 (MA07)	05:51		
	17:15	17:52	18:24	19:57		20:28	59	19:47 (MA07)	20:54		
12	07:46	07:22	06:41	06:51	33	19:04 (MA07)		18:49 (MA07)	05:51		
	17:16	17:53	18:26	19:58		20:29	58	19:47 (MA07)	20:54		
13	07:46	07:21	06:40	06:49	36	19:01 (MA07)		18:49 (MA07)	05:51		
	17:17	17:54	18:27	19:59		20:30	57	19:46 (MA07)	20:55		
14	07:46	07:20	06:38	06:47	39	19:00 (MA07)		18:49 (MA07)	05:51		
	17:18	17:56	18:28	20:00		20:31	57	19:46 (MA07)	20:55		
15	07:45	07:18	06:36	06:46	41	18:58 (MA07)		18:50 (MA07)	05:51		
	17:19	17:57	18:29	20:01		20:32	55	19:45 (MA07)	20:56		
16	07:45	07:17	06:35	06:44	44	18:57 (MA07)		18:50 (MA07)	05:51		
	17:21	17:58	18:30	20:03		20:33	54	19:44 (MA07)	20:56		
17	07:45	07:16	06:33	06:43	46	18:55 (MA07)		18:51 (MA07)	05:51		
	17:22	17:59	18:31	20:04		20:34	53	19:44 (MA07)	20:56		
18	07:44	07:14	06:31	06:41	49	18:54 (MA07)		18:52 (MA07)	05:51		
	17:23	18:00	18:32	20:05		20:35	51	19:43 (MA07)	20:57		
19	07:44	07:13	06:30	06:40	50	18:52 (MA07)		18:53 (MA07)	05:51		
	17:24	18:02	18:33	20:06		20:36	50	19:43 (MA07)	20:57		
20	07:43	07:12	06:28	06:38	51	18:52 (MA07)		18:54 (MA07)	05:52		
	17:25	18:03	18:34	20:07		20:37	48	19:42 (MA07)	20:57		
21	07:43	07:10	06:26	06:37	53	18:51 (MA07)		18:54 (MA07)	05:52		
	17:26	18:04	18:35	20:08		20:38	48	19:42 (MA07)	20:57		
22	07:42	07:09	06:25	06:35	54	18:50 (MA07)		18:55 (MA07)	05:52		
	17:27	18:05	18:36	20:09		20:39	46	19:41 (MA07)	20:58		
23	07:41	07:07	06:23	06:34	56	18:49 (MA07)		18:56 (MA07)	05:52		
	17:29	18:06	18:37	20:10		20:40	45	19:41 (MA07)	20:58		
24	07:41	07:06	06:22	06:32	57	18:48 (MA07)		18:57 (MA07)	05:52		
	17:30	18:08	18:38	20:11		20:41	43	19:40 (MA07)	20:58		
25	07:40	07:04	06:20	06:31	58	18:48 (MA07)		18:57 (MA07)	05:53		
	17:31	18:09	18:39	20:12		20:42	41	19:38 (MA07)	20:58		
26	07:39	07:03	06:18	06:30	59	18:48 (MA07)		18:59 (MA07)	05:53		
	17:32	18:10	18:41	20:13		20:42	39	19:38 (MA07)	20:58		
27	07:38	07:02	06:17	06:28	60	18:47 (MA07)		19:00 (MA07)	05:53		
	17:33	18:11	18:42	20:14		20:43	37	19:37 (MA07)	20:58		
28	07:38	07:00	06:15	06:27	60	18:47 (MA07)		19:01 (MA07)	05:54		
	17:35	18:12	18:43	20:15		20:44	36	19:37 (MA07)	20:58		
29	07:37		07:13	06:26	61	18:47 (MA07)		19:02 (MA07)	05:54		
	17:36		19:44	20:16		20:45	33	19:35 (MA07)	20:58		
30	07:36		07:12	06:24	62	18:46 (MA07)		19:04 (MA07)	05:55		
	17:37		19:45	20:17		20:46	31	19:35 (MA07)	20:58		
31	07:35		07:10			05:55		19:04 (MA07)			
	17:38		19:46			20:47	30	19:34 (MA07)			
Potential sun hours	298	298	370	398		447			451		
Total, worst case				1036		1594			128		

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R67 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (17)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:55 20:58	06:19 20:39	18:59 (MA07) 06:49	19:07 (MA07) 07:19	06:52 17:21	07:27 16:57
2	05:56 20:58	06:20 20:38	18:59 (MA07) 06:50	19:09 (MA07) 07:20	06:53 17:19	07:28 16:56
3	05:56 20:58	06:21 20:37	18:57 (MA07) 06:51	19:14 (MA07) 07:21	06:55 17:14	07:29 16:56
4	05:57 20:58	06:22 20:36	18:57 (MA07) 06:52	19:14 (MA07) 07:22	06:56 17:17	07:30 16:56
5	05:57 20:58	19:25 (MA07) 06:23	18:56 (MA07) 06:53	19:00 07:23	06:57 17:16	07:31 16:56
6	05:58 20:57	19:28 (MA07) 06:24	18:56 (MA07) 06:54	19:00 07:24	06:58 17:15	07:32 16:56
7	05:58 20:57	19:21 (MA07) 06:24	18:56 (MA07) 06:55	19:00 07:25	06:59 17:14	07:33 16:56
8	05:59 20:57	19:31 (MA07) 06:24	18:56 (MA07) 06:56	19:00 07:26	06:59 17:13	07:34 16:56
9	06:00 20:56	19:34 (MA07) 06:25	18:55 (MA07) 06:57	19:00 07:27	07:00 17:12	07:35 16:55
10	06:00 20:56	19:17 (MA07) 06:26	18:55 (MA07) 06:58	19:00 07:28	07:01 17:11	07:36 16:56
11	06:01 20:56	19:35 (MA07) 06:27	18:55 (MA07) 06:59	19:00 07:29	07:02 17:10	07:37 16:56
12	06:02 20:55	19:16 (MA07) 06:28	18:55 (MA07) 07:00	19:00 07:30	07:03 17:09	07:38 16:56
13	06:02 20:55	19:40 (MA07) 06:29	18:55 (MA07) 07:01	19:00 07:31	07:04 17:08	07:39 16:56
14	06:03 20:54	19:12 (MA07) 06:30	18:55 (MA07) 07:02	19:00 07:32	07:05 17:07	07:40 16:56
15	06:04 20:54	19:43 (MA07) 06:31	18:55 (MA07) 07:03	19:00 07:33	07:06 17:06	07:41 16:56
16	06:05 20:53	19:12 (MA07) 06:32	18:55 (MA07) 07:04	19:00 07:34	07:07 17:05	07:42 16:57
17	06:05 20:52	19:44 (MA07) 06:33	18:55 (MA07) 07:05	19:00 07:35	07:08 17:04	07:43 16:57
18	06:06 20:52	19:09 (MA07) 06:34	18:55 (MA07) 07:06	19:00 07:36	07:09 17:03	07:44 16:57
19	06:07 20:51	19:47 (MA07) 06:35	18:55 (MA07) 07:07	19:00 07:37	07:10 17:02	07:45 16:58
20	06:08 20:50	19:08 (MA07) 06:36	18:55 (MA07) 07:08	19:00 07:38	07:11 17:01	07:46 16:58
21	06:09 20:50	19:48 (MA07) 06:37	18:55 (MA07) 07:09	19:00 07:39	07:12 17:00	07:47 16:59
22	06:10 20:49	19:06 (MA07) 06:38	18:55 (MA07) 07:10	19:00 07:40	07:13 16:59	07:48 16:59
23	06:10 20:48	19:05 (MA07) 06:39	18:55 (MA07) 07:11	19:00 07:41	07:14 16:58	07:49 16:59
24	06:11 20:47	19:52 (MA07) 06:40	18:56 (MA07) 07:12	19:00 07:42	07:15 16:57	07:50 16:59
25	06:12 20:46	19:04 (MA07) 06:41	18:56 (MA07) 07:13	19:00 07:43	07:16 16:56	07:51 16:59
26	06:13 20:45	19:53 (MA07) 06:42	18:57 (MA07) 07:14	19:00 07:44	07:17 16:55	07:52 16:59
27	06:14 20:44	19:02 (MA07) 06:43	18:58 (MA07) 07:15	19:00 07:45	07:18 16:54	07:53 16:59
28	06:15 20:44	19:54 (MA07) 06:44	18:59 (MA07) 07:16	19:00 07:46	07:19 16:53	07:54 16:59
29	06:16 20:43	19:01 (MA07) 06:45	18:59 (MA07) 07:17	19:00 07:47	07:20 16:52	07:55 16:59
30	06:17 20:42	19:55 (MA07) 06:46	19:00 (MA07) 07:18	19:00 07:48	07:21 16:51	07:56 16:59
31	06:18 20:41	19:00 (MA07) 06:47	19:01 (MA07) 07:19	19:00 07:49	07:22 16:50	07:57 16:59
Potential sun hours	458	427	375	346	299	289
Total, worst case	1012	1704	66			

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R68 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April		May		June			
1	07:47	07:34	06:59	07:08		06:23		18:50 (MA07)	05:55		18:58 (MA07)
	17:06	17:40	18:13	19:47		20:18	64	19:54 (MA07)	20:47	50	19:48 (MA07)
2	07:47	07:33	06:57	07:07		06:22		18:49 (MA07)	05:54		18:58 (MA07)
	17:07	17:41	18:14	19:48		20:19	65	19:54 (MA07)	20:48	49	19:47 (MA07)
3	07:47	07:32	06:55	07:05		06:20		18:49 (MA07)	05:54		19:00 (MA07)
	17:07	17:42	18:16	19:49		20:20	66	19:55 (MA07)	20:49	47	19:47 (MA07)
4	07:47	07:31	06:54	07:03		06:19		18:49 (MA07)	05:53		19:00 (MA07)
	17:08	17:43	18:17	19:50		20:21	66	19:55 (MA07)	20:49	47	19:47 (MA07)
5	07:47	07:30	06:52	07:02		06:18		18:48 (MA07)	05:53		19:00 (MA07)
	17:09	17:45	18:18	19:51		20:22	66	19:54 (MA07)	20:50	46	19:46 (MA07)
6	07:47	07:29	06:51	07:00		06:17		18:48 (MA07)	05:53		19:01 (MA07)
	17:10	17:46	18:19	19:52		20:23	66	19:54 (MA07)	20:51	45	19:46 (MA07)
7	07:47	07:28	06:49	06:59		06:16		18:48 (MA07)	05:52		19:02 (MA07)
	17:11	17:47	18:20	19:53		20:24	66	19:54 (MA07)	20:51	44	19:46 (MA07)
8	07:47	07:27	06:48	06:57		06:14		18:48 (MA07)	05:52		19:03 (MA07)
	17:12	17:48	18:21	19:54		20:25	66	19:54 (MA07)	20:52	43	19:46 (MA07)
9	07:47	07:26	06:46	06:55		06:13		18:48 (MA07)	05:52		19:04 (MA07)
	17:13	17:50	18:22	19:55		20:26	66	19:54 (MA07)	20:53	42	19:46 (MA07)
10	07:47	07:24	06:44	06:54		06:12		18:49 (MA07)	05:52		19:04 (MA07)
	17:14	17:51	18:23	19:56		20:27	65	19:54 (MA07)	20:53	41	19:45 (MA07)
11	07:47	07:23	06:43	06:52		06:11		18:49 (MA07)	05:51		19:04 (MA07)
	17:15	17:52	18:24	19:57		20:28	65	19:54 (MA07)	20:54	41	19:45 (MA07)
12	07:46	07:22	06:41	06:51		06:10		18:49 (MA07)	05:51		19:05 (MA07)
	17:16	17:53	18:26	19:58		20:29	65	19:54 (MA07)	20:54	40	19:45 (MA07)
13	07:46	07:21	06:40	06:49		06:09		18:49 (MA07)	05:51		19:05 (MA07)
	17:17	17:54	18:27	19:59	10	19:20 (MA07)	20:30	19:54 (MA07)	20:55	40	19:45 (MA07)
14	07:46	07:20	06:38	06:47		06:08		18:49 (MA07)	05:51		19:06 (MA07)
	17:18	17:56	18:28	20:00	22	19:36 (MA07)	20:31	19:54 (MA07)	20:55	39	19:45 (MA07)
15	07:45	07:18	06:36	06:46		06:07		18:49 (MA07)	05:51		19:06 (MA07)
	17:19	17:57	18:29	20:01	29	19:39 (MA07)	20:32	19:53 (MA07)	20:56	39	19:45 (MA07)
16	07:45	07:17	06:35	06:44		06:06		18:50 (MA07)	05:51		19:07 (MA07)
	17:21	17:58	18:30	20:03	33	19:41 (MA07)	20:33	19:53 (MA07)	20:56	38	19:45 (MA07)
17	07:45	07:16	06:33	06:43		06:05		18:50 (MA07)	05:51		19:07 (MA07)
	17:22	17:59	18:31	20:04	36	19:41 (MA07)	20:34	19:53 (MA07)	20:56	38	19:45 (MA07)
18	07:44	07:14	06:31	06:41		06:04		18:50 (MA07)	05:51		19:07 (MA07)
	17:23	18:00	18:32	20:05	40	19:43 (MA07)	20:35	19:52 (MA07)	20:57	38	19:45 (MA07)
19	07:44	07:13	06:30	06:40		06:03		18:51 (MA07)	05:51		19:09 (MA07)
	17:24	18:02	18:33	20:06	42	19:43 (MA07)	20:36	19:53 (MA07)	20:57	37	19:46 (MA07)
20	07:43	07:12	06:28	06:38		06:02		18:51 (MA07)	05:52		19:09 (MA07)
	17:25	18:03	18:34	20:07	46	19:45 (MA07)	20:37	19:52 (MA07)	20:57	37	19:46 (MA07)
21	07:43	07:10	06:26	06:37		06:02		18:52 (MA07)	05:52		19:09 (MA07)
	17:26	18:04	18:35	20:08	48	19:46 (MA07)	20:38	19:52 (MA07)	20:57	37	19:46 (MA07)
22	07:42	07:09	06:25	06:35		06:01		18:52 (MA07)	05:52		19:09 (MA07)
	17:27	18:05	18:36	20:09	49	19:46 (MA07)	20:39	19:51 (MA07)	20:58	37	19:46 (MA07)
23	07:41	07:07	06:23	06:34		06:00		18:53 (MA07)	05:52		19:09 (MA07)
	17:29	18:06	18:37	20:10	52	19:48 (MA07)	20:40	19:51 (MA07)	20:58	37	19:46 (MA07)
24	07:41	07:06	06:22	06:33		05:59		18:53 (MA07)	05:52		19:09 (MA07)
	17:30	18:08	18:38	20:11	54	19:48 (MA07)	20:41	19:51 (MA07)	20:58	38	19:47 (MA07)
25	07:40	07:04	06:20	06:31		05:59		18:54 (MA07)	05:53		19:09 (MA07)
	17:31	18:09	18:39	20:12	56	19:50 (MA07)	20:42	19:50 (MA07)	20:58	38	19:47 (MA07)
26	07:39	07:03	06:18	06:30		05:58		18:55 (MA07)	05:53		19:09 (MA07)
	17:32	18:10	18:41	20:13	58	19:51 (MA07)	20:42	19:50 (MA07)	20:58	38	19:47 (MA07)
27	07:38	07:02	06:17	06:28		05:57		18:55 (MA07)	05:53		19:10 (MA07)
	17:33	18:11	18:42	20:14	59	19:51 (MA07)	20:43	19:49 (MA07)	20:58	38	19:48 (MA07)
28	07:38	07:00	06:15	06:27		05:57		18:56 (MA07)	05:54		19:09 (MA07)
	17:35	18:12	18:43	20:15	61	19:52 (MA07)	20:44	19:50 (MA07)	20:58	39	19:48 (MA07)
29	07:37		07:13	06:26		05:56		18:56 (MA07)	05:54		19:10 (MA07)
	17:36		19:44	20:16	63	19:54 (MA07)	20:45	19:49 (MA07)	20:58	39	19:49 (MA07)
30	07:36		07:12	06:24		05:56		18:57 (MA07)	05:55		19:09 (MA07)
	17:37		19:45	20:17	63	19:53 (MA07)	20:46	19:49 (MA07)	20:58	40	19:49 (MA07)
31	07:35		07:10			05:55		18:57 (MA07)			
	17:38		19:46			20:47		19:48 (MA07)			
Potential sun hours	298	298	370	398		447				451	
Total, worst case					821		1901			1222	

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R68 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December				
1	05:55	19:10 (MA07)	06:19	18:59 (MA07)	06:49	07:19	06:52	07:27		
	20:58	40	19:50 (MA07)	20:39	66	20:05 (MA07)	19:57	19:07	17:21	16:57
2	05:56	19:09 (MA07)	06:20	18:59 (MA07)	06:50	07:20	06:53	07:28		
	20:58	41	19:50 (MA07)	20:38	66	20:05 (MA07)	19:55	19:05	17:19	16:56
3	05:56	19:09 (MA07)	06:21	18:58 (MA07)	06:51	07:21	06:55	07:29		
	20:58	42	19:51 (MA07)	20:37	66	20:04 (MA07)	19:54	19:03	17:18	16:56
4	05:57	19:08 (MA07)	06:22	18:58 (MA07)	06:52	07:22	06:56	07:30		
	20:58	43	19:51 (MA07)	20:36	66	20:04 (MA07)	19:52	19:02	17:17	16:56
5	05:57	19:09 (MA07)	06:23	18:58 (MA07)	06:53	07:23	06:57	07:31		
	20:58	43	19:52 (MA07)	20:35	66	20:04 (MA07)	19:50	19:00	17:16	16:56
6	05:58	19:08 (MA07)	06:24	18:58 (MA07)	06:54	07:24	06:58	07:32		
	20:57	44	19:52 (MA07)	20:34	66	20:04 (MA07)	19:49	18:59	17:15	16:56
7	05:58	19:08 (MA07)	06:24	18:58 (MA07)	06:55	07:25	06:59	07:33		
	20:57	45	19:53 (MA07)	20:33	66	20:04 (MA07)	19:47	18:57	17:14	16:56
8	05:59	19:07 (MA07)	06:25	18:58 (MA07)	06:56	07:26	07:00	07:34		
	20:57	46	19:53 (MA07)	20:31	66	20:04 (MA07)	19:45	18:55	17:13	16:56
9	06:00	19:07 (MA07)	06:26	18:58 (MA07)	06:57	07:27	07:02	07:34		
	20:56	47	19:54 (MA07)	20:30	65	20:03 (MA07)	19:44	18:54	17:12	16:55
10	06:00	19:07 (MA07)	06:27	18:58 (MA07)	06:58	07:28	07:03	07:35		
	20:56	48	19:55 (MA07)	20:29	65	20:03 (MA07)	19:42	18:52	17:11	16:56
11	06:01	19:06 (MA07)	06:28	18:58 (MA07)	06:59	07:29	07:04	07:36		
	20:56	49	19:55 (MA07)	20:28	65	20:03 (MA07)	19:40	18:51	17:10	16:56
12	06:02	19:06 (MA07)	06:29	18:58 (MA07)	07:00	07:30	07:05	07:37		
	20:55	50	19:56 (MA07)	20:26	64	20:02 (MA07)	19:39	18:49	17:09	16:56
13	06:02	19:06 (MA07)	06:30	18:59 (MA07)	07:01	07:31	07:06	07:38		
	20:55	51	19:57 (MA07)	20:25	63	20:02 (MA07)	19:37	18:47	17:08	16:56
14	06:03	19:06 (MA07)	06:31	18:59 (MA07)	07:02	07:32	07:08	07:39		
	20:54	52	19:58 (MA07)	20:24	62	20:01 (MA07)	19:35	18:46	17:07	16:56
15	06:04	19:05 (MA07)	06:32	18:59 (MA07)	07:03	07:33	07:09	07:39		
	20:54	53	19:58 (MA07)	20:22	61	20:00 (MA07)	19:34	18:44	17:06	16:56
16	06:05	19:04 (MA07)	06:33	18:59 (MA07)	07:04	07:34	07:10	07:40		
	20:53	55	19:59 (MA07)	20:21	60	19:59 (MA07)	19:32	18:43	17:05	16:57
17	06:05	19:04 (MA07)	06:34	19:00 (MA07)	07:05	07:35	07:11	07:41		
	20:52	55	19:59 (MA07)	20:20	57	19:57 (MA07)	19:30	18:41	17:04	16:57
18	06:06	19:04 (MA07)	06:35	19:00 (MA07)	07:06	07:36	07:12	07:41		
	20:52	56	20:00 (MA07)	20:18	56	19:56 (MA07)	19:29	18:40	17:03	16:57
19	06:07	19:03 (MA07)	06:36	19:00 (MA07)	07:07	07:37	07:13	07:42		
	20:51	57	20:00 (MA07)	20:17	54	19:54 (MA07)	19:27	18:38	17:03	16:58
20	06:08	19:03 (MA07)	06:37	19:01 (MA07)	07:08	07:39	07:15	07:43		
	20:50	58	20:01 (MA07)	20:15	51	19:52 (MA07)	19:25	18:37	17:02	16:58
21	06:09	19:03 (MA07)	06:38	19:02 (MA07)	07:09	07:40	07:16	07:43		
	20:50	58	20:01 (MA07)	20:14	49	19:51 (MA07)	19:24	18:35	17:01	16:58
22	06:10	19:02 (MA07)	06:39	19:02 (MA07)	07:10	07:41	07:17	07:44		
	20:49	60	20:02 (MA07)	20:12	48	19:50 (MA07)	19:22	18:34	17:01	16:59
23	06:10	19:02 (MA07)	06:40	19:03 (MA07)	07:11	07:42	07:18	07:44		
	20:48	60	20:02 (MA07)	20:11	45	19:48 (MA07)	19:20	18:32	17:00	16:59
24	06:11	19:02 (MA07)	06:41	19:05 (MA07)	07:12	07:43	07:19	07:45		
	20:47	61	20:03 (MA07)	20:09	42	19:47 (MA07)	19:18	18:31	17:00	17:00
25	06:12	19:01 (MA07)	06:42	19:06 (MA07)	07:12	06:44	07:20	07:45		
	20:46	61	20:02 (MA07)	20:08	39	19:45 (MA07)	19:17	17:30	16:59	17:01
26	06:13	19:01 (MA07)	06:43	19:08 (MA07)	07:13	06:45	07:21	07:45		
	20:45	62	20:03 (MA07)	20:06	36	19:44 (MA07)	19:15	17:28	16:59	17:01
27	06:14	19:00 (MA07)	06:44	19:10 (MA07)	07:14	06:46	07:22	07:46		
	20:44	63	20:03 (MA07)	20:05	33	19:43 (MA07)	19:13	17:27	16:58	17:02
28	06:15	19:00 (MA07)	06:45	19:12 (MA07)	07:15	06:48	07:24	07:46		
	20:44	64	20:04 (MA07)	20:03	29	19:41 (MA07)	19:12	17:26	16:58	17:02
29	06:16	19:00 (MA07)	06:46	19:16 (MA07)	07:17	06:49	07:25	07:46		
	20:43	64	20:04 (MA07)	20:02	21	19:37 (MA07)	19:10	17:24	16:57	17:03
30	06:17	19:00 (MA07)	06:47	19:22 (MA07)	07:18	06:50	07:26	07:47		
	20:42	64	20:04 (MA07)	20:00	8	19:30 (MA07)	19:08	17:23	16:57	17:04
31	06:18	19:00 (MA07)	06:48			06:51		07:47		
	20:41	64	20:04 (MA07)	19:58		17:22		17:05		
Potential sun hours	458		427		375	346	299	289		
Total, worst case	1656		1601							

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R69 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April		May		June
1	07:47	07:34	06:59	07:08		06:23		18:50 (MA07) 05:55
	17:06	17:40	18:13	19:47		20:18	59	19:49 (MA07) 20:47
2	07:47	07:33	06:57	07:07		06:22		18:50 (MA07) 05:54
	17:07	17:41	18:14	19:48		20:19	59	19:49 (MA07) 20:48
3	07:47	07:32	06:55	07:05		06:20		18:51 (MA07) 05:54
	17:07	17:42	18:16	19:49		20:20	58	19:49 (MA07) 20:49
4	07:47	07:31	06:54	07:03		06:19		18:51 (MA07) 05:53
	17:08	17:43	18:17	19:50		20:21	58	19:49 (MA07) 20:49
5	07:47	07:30	06:52	07:02		06:18		18:50 (MA07) 05:53
	17:09	17:45	18:18	19:51		20:22	58	19:48 (MA07) 20:50
6	07:47	07:29	06:51	07:00		06:17		18:51 (MA07) 05:53
	17:10	17:46	18:19	19:52		20:23	56	19:47 (MA07) 20:51
7	07:47	07:28	06:49	06:58		06:16		18:51 (MA07) 05:52
	17:11	17:47	18:20	19:53		20:24	56	19:47 (MA07) 20:51
8	07:47	07:27	06:48	06:57		19:22 (MA07) 06:14		18:52 (MA07) 05:52
	17:12	17:48	18:21	19:54	5	19:27 (MA07) 20:25	55	19:47 (MA07) 20:52
9	07:47	07:26	06:46	06:55		19:15 (MA07) 06:13		18:52 (MA07) 05:52
	17:13	17:50	18:22	19:55	19	19:34 (MA07) 20:26	54	19:46 (MA07) 20:53
10	07:47	07:24	06:44	06:54		19:11 (MA07) 06:12		18:53 (MA07) 05:52
	17:14	17:51	18:23	19:56	24	19:35 (MA07) 20:27	53	19:46 (MA07) 20:53
11	07:47	07:23	06:43	06:52		19:08 (MA07) 06:11		18:53 (MA07) 05:51
	17:15	17:52	18:24	19:57	28	19:36 (MA07) 20:28	52	19:45 (MA07) 20:54
12	07:46	07:22	06:41	06:51		19:05 (MA07) 06:10		18:54 (MA07) 05:51
	17:16	17:53	18:26	19:58	32	19:37 (MA07) 20:29	51	19:45 (MA07) 20:54
13	07:46	07:21	06:40	06:49		19:03 (MA07) 06:09		18:55 (MA07) 05:51
	17:17	17:54	18:27	19:59	34	19:37 (MA07) 20:30	49	19:44 (MA07) 20:55
14	07:46	07:20	06:38	06:47		19:02 (MA07) 06:08		18:55 (MA07) 05:51
	17:18	17:56	18:28	20:00	37	19:39 (MA07) 20:31	48	19:43 (MA07) 20:55
15	07:45	07:18	06:36	06:46		18:59 (MA07) 06:07		18:56 (MA07) 05:51
	17:19	17:57	18:29	20:01	40	19:39 (MA07) 20:32	46	19:42 (MA07) 20:56
16	07:45	07:17	06:35	06:44		18:59 (MA07) 06:06		18:57 (MA07) 05:51
	17:21	17:58	18:30	20:03	42	19:41 (MA07) 20:33	45	19:42 (MA07) 20:56
17	07:45	07:16	06:33	06:43		18:57 (MA07) 06:05		18:57 (MA07) 05:51
	17:22	17:59	18:31	20:04	44	19:41 (MA07) 20:34	44	19:41 (MA07) 20:56
18	07:44	07:14	06:31	06:41		18:56 (MA07) 06:04		18:58 (MA07) 05:51
	17:23	18:00	18:32	20:05	47	19:43 (MA07) 20:35	42	19:40 (MA07) 20:57
19	07:44	07:13	06:30	06:40		18:55 (MA07) 06:03		19:00 (MA07) 05:51
	17:24	18:02	18:33	20:06	48	19:43 (MA07) 20:36	39	19:39 (MA07) 20:57
20	07:43	07:12	06:28	06:38		18:54 (MA07) 06:02		19:01 (MA07) 05:52
	17:25	18:03	18:34	20:07	51	19:45 (MA07) 20:37	37	19:38 (MA07) 20:57
21	07:43	07:10	06:26	06:37		18:54 (MA07) 06:02		19:02 (MA07) 05:52
	17:26	18:04	18:35	20:08	52	19:46 (MA07) 20:38	35	19:37 (MA07) 20:57
22	07:42	07:09	06:25	06:35		18:53 (MA07) 06:01		19:03 (MA07) 05:52
	17:27	18:05	18:36	20:09	53	19:46 (MA07) 20:39	33	19:36 (MA07) 20:58
23	07:41	07:07	06:23	06:34		18:52 (MA07) 06:00		19:05 (MA07) 05:52
	17:29	18:06	18:37	20:10	56	19:48 (MA07) 20:40	30	19:35 (MA07) 20:58
24	07:41	07:06	06:22	06:32		18:51 (MA07) 05:59		19:06 (MA07) 05:52
	17:30	18:08	18:38	20:11	57	19:48 (MA07) 20:41	28	19:34 (MA07) 20:58
25	07:40	07:04	06:20	06:31		18:51 (MA07) 05:59		19:07 (MA07) 05:53
	17:31	18:09	18:39	20:12	59	19:50 (MA07) 20:42	25	19:32 (MA07) 20:58
26	07:39	07:03	06:18	06:30		18:51 (MA07) 05:58		19:09 (MA07) 05:53
	17:32	18:10	18:41	20:13	59	19:50 (MA07) 20:42	22	19:31 (MA07) 20:58
27	07:38	07:02	06:17	06:28		18:50 (MA07) 05:57		19:11 (MA07) 05:53
	17:33	18:11	18:42	20:14	60	19:50 (MA07) 20:43	18	19:29 (MA07) 20:58
28	07:38	07:00	06:15	06:27		18:50 (MA07) 05:57		19:14 (MA07) 05:54
	17:35	18:12	18:43	20:15	60	19:50 (MA07) 20:44	13	19:27 (MA07) 20:58
29	07:37		07:13	06:26		18:50 (MA07) 05:56		19:18 (MA07) 05:54
	17:36		19:44	20:16	60	19:50 (MA07) 20:45	4	19:22 (MA07) 20:58
30	07:36		07:12	06:24		18:50 (MA07) 05:56		19:18 (MA07) 05:55
	17:37		19:45	20:17	59	19:49 (MA07) 20:46		20:58
31	07:35		07:10			05:55		
	17:38		19:46			20:47		
Potential sun hours	298	298	370	398		447		451
Total, worst case				1026		1227		

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R69 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:55	06:19	19:04 (MA07)	06:49	19:07 (MA07)	07:19	06:52	07:27
	20:58	20:39	51 19:55 (MA07)	19:57	28 19:35 (MA07)	19:07	17:21	16:57
2	05:56	06:20	19:04 (MA07)	06:50	19:10 (MA07)	07:20	06:53	07:28
	20:58	20:38	52 19:56 (MA07)	19:55	24 19:34 (MA07)	19:05	17:19	16:56
3	05:56	06:21	19:02 (MA07)	06:51	19:13 (MA07)	07:21	06:55	07:29
	20:58	20:37	54 19:56 (MA07)	19:54	19 19:32 (MA07)	19:03	17:18	16:56
4	05:57	06:22	19:02 (MA07)	06:52	19:18 (MA07)	07:22	06:56	07:30
	20:58	20:36	54 19:56 (MA07)	19:52	6 19:24 (MA07)	19:02	17:17	16:56
5	05:57	06:23	19:01 (MA07)	06:53		07:23	06:57	07:31
	20:58	20:35	56 19:57 (MA07)	19:50		19:00	17:16	16:56
6	05:58	06:23	19:01 (MA07)	06:54		07:24	06:58	07:32
	20:57	20:34	56 19:57 (MA07)	19:49		18:59	17:15	16:56
7	05:58	06:24	19:00 (MA07)	06:55		07:25	06:59	07:33
	20:57	20:33	57 19:57 (MA07)	19:47		18:57	17:14	16:56
8	05:59	06:25	19:00 (MA07)	06:56		07:26	07:00	07:34
	20:57	20:31	57 19:57 (MA07)	19:45		18:55	17:13	16:56
9	06:00	06:26	18:59 (MA07)	06:57		07:27	07:02	07:34
	20:56	20:30	59 19:58 (MA07)	19:44		18:54	17:12	16:55
10	06:00	06:27	18:59 (MA07)	06:58		07:28	07:03	07:35
	20:56	20:29	59 19:58 (MA07)	19:42		18:52	17:11	16:56
11	06:01	06:28	18:59 (MA07)	06:59		07:29	07:04	07:36
	20:56	20:28	59 19:58 (MA07)	19:40		18:51	17:10	16:56
12	06:02	06:29	18:59 (MA07)	07:00		07:30	07:05	07:37
	20:55	20:26	59 19:58 (MA07)	19:39		18:49	17:09	16:56
13	06:02	06:30	18:58 (MA07)	07:01		07:31	07:06	07:38
	20:55	20:25	60 19:58 (MA07)	19:37		18:47	17:08	16:56
14	06:03	06:31	18:58 (MA07)	07:02		07:32	07:08	07:39
	20:54	20:24	60 19:58 (MA07)	19:35		18:46	17:07	16:56
15	06:04	19:24 (MA07)	06:32	18:58 (MA07)	07:03	07:33	07:09	07:39
	20:54	10 19:34 (MA07)	20:22	59 19:57 (MA07)	19:34	18:44	17:06	16:56
16	06:05	19:21 (MA07)	06:33	18:58 (MA07)	07:04	07:34	07:10	07:40
	20:53	16 19:37 (MA07)	20:21	59 19:57 (MA07)	19:32	18:43	17:05	16:57
17	06:05	19:20 (MA07)	06:34	18:58 (MA07)	07:05	07:35	07:11	07:41
	20:52	19 19:39 (MA07)	20:20	59 19:57 (MA07)	19:30	18:41	17:04	16:57
18	06:06	19:18 (MA07)	06:35	18:58 (MA07)	07:06	07:36	07:12	07:41
	20:52	24 19:42 (MA07)	20:18	58 19:56 (MA07)	19:29	18:40	17:03	16:57
19	06:07	19:16 (MA07)	06:36	18:57 (MA07)	07:07	07:37	07:13	07:42
	20:51	26 19:42 (MA07)	20:17	57 19:54 (MA07)	19:27	18:38	17:03	16:58
20	06:08	19:15 (MA07)	06:37	18:57 (MA07)	07:08	07:39	07:15	07:43
	20:50	29 19:44 (MA07)	20:15	55 19:52 (MA07)	19:25	18:37	17:02	16:58
21	06:09	19:14 (MA07)	06:38	18:57 (MA07)	07:09	07:40	07:16	07:43
	20:50	32 19:46 (MA07)	20:14	54 19:51 (MA07)	19:24	18:35	17:01	16:58
22	06:10	19:13 (MA07)	06:39	18:58 (MA07)	07:10	07:41	07:17	07:44
	20:49	34 19:47 (MA07)	20:12	52 19:50 (MA07)	19:22	18:34	17:01	16:59
23	06:10	19:12 (MA07)	06:40	18:58 (MA07)	07:11	07:42	07:18	07:44
	20:48	36 19:48 (MA07)	20:11	50 19:48 (MA07)	19:20	18:32	17:00	16:59
24	06:11	19:11 (MA07)	06:41	18:59 (MA07)	07:12	07:43	07:19	07:45
	20:47	38 19:49 (MA07)	20:09	48 19:47 (MA07)	19:18	18:31	17:00	17:00
25	06:12	19:09 (MA07)	06:42	18:59 (MA07)	07:12	06:44	07:20	07:45
	20:46	41 19:50 (MA07)	20:08	46 19:45 (MA07)	19:17	17:30	16:59	17:01
26	06:13	19:08 (MA07)	06:43	19:00 (MA07)	07:13	06:45	07:21	07:45
	20:45	43 19:51 (MA07)	20:06	44 19:44 (MA07)	19:15	17:28	16:59	17:01
27	06:14	19:08 (MA07)	06:44	19:01 (MA07)	07:14	06:46	07:22	07:46
	20:44	44 19:52 (MA07)	20:05	42 19:43 (MA07)	19:13	17:27	16:58	17:02
28	06:15	19:07 (MA07)	06:45	19:01 (MA07)	07:15	06:48	07:24	07:46
	20:44	45 19:52 (MA07)	20:03	40 19:41 (MA07)	19:12	17:26	16:58	17:02
29	06:16	19:06 (MA07)	06:46	19:03 (MA07)	07:17	06:49	07:25	07:46
	20:43	47 19:53 (MA07)	20:02	37 19:40 (MA07)	19:10	17:24	16:57	17:03
30	06:17	19:06 (MA07)	06:47	19:04 (MA07)	07:18	06:50	07:26	07:47
	20:42	48 19:54 (MA07)	20:00	34 19:38 (MA07)	19:08	17:23	16:57	17:04
31	06:18	19:05 (MA07)	06:48	19:05 (MA07)		06:51		07:47
	20:41	50 19:55 (MA07)	19:58	32 19:37 (MA07)		17:22		17:05
Potential sun hours	458	427		375		346	299	289
Total, worst case	582	1619		77				

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R74 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (22)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	
1	07:47 17:06 35 14:39 (MA06)	07:34 17:40 15:14 (MA06)	06:59 18:13 07:08	07:08 19:47 20:18	06:23 20:18 19:41 (MA07)	05:55 20:47 19:17 (MA07)	19:17 (MA07)
2	07:47 17:07 34 14:40 (MA06)	07:33 17:41 15:14 (MA06)	06:57 18:14 07:08	07:07 19:48 20:19	06:22 20:19 19:54 (MA07)	05:54 20:48 19:17 (MA07)	19:17 (MA07)
3	07:47 17:07 33 14:41 (MA06)	07:32 17:42 15:14 (MA06)	06:55 18:16 07:05	07:05 19:49 20:20	06:20 20:20 19:58 (MA07)	05:54 20:49 19:18 (MA07)	19:17 (MA07)
4	07:47 17:08 32 14:42 (MA06)	07:31 17:43 15:14 (MA06)	06:54 18:17 07:03	07:03 19:50 20:21	06:19 20:21 19:34 (MA07)	05:53 20:49 19:18 (MA07)	19:18 (MA07)
5	07:47 17:09 30 14:43 (MA06)	07:30 17:45 15:13 (MA06)	06:52 18:18 07:02	07:02 19:51 20:22	06:18 20:22 19:59 (MA07)	05:53 20:50 19:29 (MA07)	19:17 (MA07)
6	07:47 17:10 28 14:45 (MA06)	07:29 17:46 15:13 (MA06)	06:51 18:19 07:00	07:00 19:52 20:23	06:17 20:23 20:00 (MA07)	05:53 20:51 19:28 (MA07)	19:18 (MA07)
7	07:47 17:11 27 14:46 (MA06)	07:28 17:47 15:13 (MA06)	06:49 18:20 07:00	06:59 19:53 20:24	06:16 20:24 20:01 (MA07)	05:52 20:51 19:28 (MA07)	19:18 (MA07)
8	07:47 17:12 24 14:48 (MA06)	07:27 17:48 15:12 (MA06)	06:48 18:21 07:00	06:57 19:54 20:25	06:14 20:25 20:02 (MA07)	05:52 20:52 19:25 (MA07)	19:18 (MA07)
9	07:47 17:13 22 14:50 (MA06)	07:26 17:50 15:12 (MA06)	06:46 18:22 07:00	06:55 19:55 20:26	06:13 20:26 20:03 (MA07)	05:52 20:53 19:24 (MA07)	19:19 (MA07)
10	07:47 17:14 19 14:51 (MA06)	07:24 17:51 15:10 (MA06)	06:44 18:23 07:00	06:54 19:56 20:27	06:12 20:27 20:04 (MA07)	05:52 20:53 19:23 (MA07)	19:18 (MA07)
11	07:47 17:15 14 14:54 (MA06)	07:23 17:52 15:08 (MA06)	06:43 18:24 07:00	06:52 19:57 20:28	06:11 20:28 20:05 (MA07)	05:52 20:54 19:22 (MA07)	19:18 (MA07)
12	07:46 17:16 8 14:58 (MA06)	07:22 17:53 15:06 (MA06)	06:41 18:26 07:00	06:51 19:58 20:29	06:10 20:29 20:06 (MA07)	05:51 20:54 19:21 (MA07)	19:19 (MA07)
13	07:46 17:17 17:17	07:21 17:54 17:54	06:40 18:27 07:00	06:49 19:59 20:30	06:09 20:30 19:20 (MA07)	05:51 20:55 19:20 (MA07)	19:19 (MA07)
14	07:46 17:18 17:18	07:20 17:56 17:56	06:38 18:28 07:00	06:47 20:00 20:00	06:08 20:31 20:08 (MA07)	05:51 20:55 19:20 (MA07)	19:19 (MA07)
15	07:45 17:19 17:19	07:18 17:57 17:57	06:36 18:29 07:00	06:46 20:01 20:32	06:07 20:32 20:09 (MA07)	05:51 20:56 19:19 (MA07)	19:20 (MA07)
16	07:45 17:21 17:21	07:17 17:58 17:58	06:35 18:30 07:00	06:44 20:03 20:33	06:06 20:33 19:18 (MA07)	05:51 20:56 19:18 (MA07)	19:20 (MA07)
17	07:45 17:22 17:22	07:16 17:59 17:59	06:33 18:31 07:00	06:43 20:04 20:34	06:05 20:34 20:10 (MA07)	05:51 20:56 19:18 (MA07)	19:20 (MA07)
18	07:44 17:23 17:23	07:14 18:00 18:00	06:31 18:32 07:00	06:41 20:05 20:35	06:04 20:35 20:11 (MA07)	05:51 20:57 19:18 (MA07)	19:21 (MA07)
19	07:44 17:24 17:24	07:13 18:02 18:02	06:30 18:33 07:00	06:40 20:06 20:36	06:03 20:36 19:18 (MA07)	05:51 20:57 19:18 (MA07)	19:21 (MA07)
20	07:43 17:25 17:25	07:12 18:03 18:03	06:28 18:34 07:00	06:38 20:07 20:37	06:02 20:37 20:13 (MA07)	05:52 20:57 19:17 (MA07)	19:21 (MA07)
21	07:43 17:26 17:26	07:10 18:04 18:04	06:26 18:35 07:00	06:37 20:08 20:38	06:02 20:38 20:14 (MA07)	05:52 20:57 19:17 (MA07)	19:21 (MA07)
22	07:42 17:27 17:27	07:09 18:05 18:05	06:25 18:36 07:00	06:35 20:09 20:39	06:01 20:39 19:17 (MA07)	05:52 20:58 19:17 (MA07)	19:21 (MA07)
23	07:41 17:29 17:29	07:07 18:06 18:06	06:23 18:37 07:00	06:34 20:10 20:40	06:00 20:40 20:16 (MA07)	05:52 20:58 19:17 (MA07)	19:21 (MA07)
24	07:41 17:30 17:30	07:06 18:08 18:08	06:22 18:38 07:00	06:33 20:11 20:41	05:59 20:41 20:16 (MA07)	05:52 20:58 19:16 (MA07)	19:22 (MA07)
25	07:40 17:31 17:31	07:04 18:09 18:09	06:20 18:39 07:00	06:31 20:12 20:42	05:59 20:42 19:16 (MA07)	05:53 20:58 19:16 (MA07)	19:22 (MA07)
26	07:39 17:32 17:32	07:03 18:10 18:10	06:18 18:41 07:00	06:30 20:13 20:42	05:58 20:42 19:17 (MA07)	05:53 20:58 19:16 (MA07)	19:22 (MA07)
27	07:38 17:33 17:33	07:02 18:11 18:11	06:17 18:42 07:00	06:28 20:14 20:43	05:57 20:43 20:18 (MA07)	05:53 20:58 19:17 (MA07)	19:23 (MA07)
28	07:38 17:35 17:35	07:00 18:12 18:12	06:15 18:43 07:00	06:27 20:15 20:44	05:57 20:44 20:19 (MA07)	05:54 20:58 19:17 (MA07)	19:23 (MA07)
29	07:37 17:36 17:36		07:13 19:44 07:12	06:26 20:16 20:45	05:56 20:45 20:19 (MA07)	05:54 20:58 19:17 (MA07)	19:23 (MA07)
30	07:36 17:37 17:37		07:12 19:45 07:10	06:24 20:17 20:46	05:56 20:46 19:17 (MA07)	05:55 20:58 19:17 (MA07)	19:23 (MA07)
31	07:35 17:38 17:38		07:10 19:46 07:10	05:55 20:47 20:47	05:55 20:47 20:19 (MA07)		20:26 (MA07)
Potential sun hours	298	298	370	398	447	451	1884
Total, worst case	306				1424		

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse caseShadow receptor: R74 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (22)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July		August		September		October		November		December		
1	05:55		19:24 (MA07)	06:19	19:33 (MA07)	06:49	07:19	06:52			07:27	14:36 (MA06)	
	20:58	62	20:26 (MA07)	20:39	20:16 (MA07)	19:57	19:07	17:21			16:57	14	14:50 (MA06)
2	05:56		19:23 (MA07)	06:20	19:34 (MA07)	06:50	07:20	06:53			07:28		14:34 (MA06)
	20:58	63	20:26 (MA07)	20:38	20:15 (MA07)	19:55	19:05	17:19			16:56	19	14:53 (MA06)
3	05:56		19:24 (MA07)	06:21	19:34 (MA07)	06:51	07:21	06:55			07:29		14:33 (MA06)
	20:58	63	20:27 (MA07)	20:37	20:13 (MA07)	19:54	19:03	17:18			16:56	22	14:55 (MA06)
4	05:57		19:24 (MA07)	06:22	19:35 (MA07)	06:52	07:22	06:56			07:30		14:32 (MA06)
	20:58	62	20:26 (MA07)	20:36	20:12 (MA07)	19:52	19:02	17:17			16:56	24	14:56 (MA06)
5	05:57		19:24 (MA07)	06:23	19:36 (MA07)	06:53	07:23	06:57			07:31		14:31 (MA06)
	20:58	63	20:27 (MA07)	20:35	20:11 (MA07)	19:50	19:00	17:16			16:56	27	14:58 (MA06)
6	05:58		19:24 (MA07)	06:24	19:38 (MA07)	06:54	07:24	06:58			07:32		14:31 (MA06)
	20:57	63	20:27 (MA07)	20:34	20:10 (MA07)	19:49	18:59	17:15			16:56	28	14:59 (MA06)
7	05:58		19:24 (MA07)	06:24	19:39 (MA07)	06:55	07:25	06:59			07:33		14:30 (MA06)
	20:57	63	20:27 (MA07)	20:33	20:09 (MA07)	19:47	18:57	17:14			16:56	30	15:00 (MA06)
8	05:59		19:24 (MA07)	06:25	19:41 (MA07)	06:56	07:26	07:00			07:34		14:30 (MA06)
	20:57	63	20:27 (MA07)	20:31	20:08 (MA07)	19:45	18:55	17:13			16:56	32	15:02 (MA06)
9	06:00		19:24 (MA07)	06:26	19:44 (MA07)	06:57	07:27	07:02			07:34		14:30 (MA06)
	20:56	63	20:27 (MA07)	20:30	20:07 (MA07)	19:44	18:54	17:12			16:56	33	15:03 (MA06)
10	06:00		19:25 (MA07)	06:27	19:47 (MA07)	06:58	07:28	07:03			07:35		14:30 (MA06)
	20:56	63	20:28 (MA07)	20:29	20:06 (MA07)	19:42	18:52	17:11			16:56	34	15:04 (MA06)
11	06:01		19:24 (MA07)	06:28	19:52 (MA07)	06:59	07:29	07:04			07:36		14:30 (MA06)
	20:56	63	20:27 (MA07)	20:28	20:01 (MA07)	19:40	18:51	17:10			16:56	35	15:05 (MA06)
12	06:02		19:25 (MA07)	06:29		07:00	07:30	07:05			07:37		14:29 (MA06)
	20:55	63	20:28 (MA07)	20:26		19:39	18:49	17:09			16:56	36	15:05 (MA06)
13	06:02		19:25 (MA07)	06:30		07:01	07:31	07:06			07:38		14:29 (MA06)
	20:55	63	20:28 (MA07)	20:25		19:37	18:47	17:08			16:56	37	15:06 (MA06)
14	06:03		19:26 (MA07)	06:31		07:02	07:32	07:08			07:39		14:30 (MA06)
	20:54	62	20:28 (MA07)	20:24		19:35	18:46	17:07			16:56	37	15:07 (MA06)
15	06:04		19:25 (MA07)	06:32		07:03	07:33	07:09			07:39		14:30 (MA06)
	20:54	63	20:28 (MA07)	20:22		19:34	18:44	17:06			16:56	38	15:08 (MA06)
16	06:05		19:26 (MA07)	06:33		07:04	07:34	07:10			07:40		14:30 (MA06)
	20:53	62	20:28 (MA07)	20:21		19:32	18:43	17:05			16:57	38	15:08 (MA06)
17	06:05		19:26 (MA07)	06:34		07:05	07:35	07:11			07:41		14:30 (MA06)
	20:52	62	20:28 (MA07)	20:20		19:30	18:41	17:04			16:57	39	15:09 (MA06)
18	06:06		19:27 (MA07)	06:35		07:06	07:36	07:12			07:41		14:31 (MA06)
	20:52	61	20:28 (MA07)	20:18		19:29	18:40	17:03			16:57	39	15:10 (MA06)
19	06:07		19:26 (MA07)	06:36		07:07	07:37	07:13			07:42		14:31 (MA06)
	20:51	60	20:26 (MA07)	20:17		19:27	18:38	17:03			16:58	39	15:10 (MA06)
20	06:08		19:27 (MA07)	06:37		07:08	07:39	07:15			07:43		14:31 (MA06)
	20:50	59	20:26 (MA07)	20:15		19:25	18:37	17:02			16:58	40	15:11 (MA06)
21	06:09		19:27 (MA07)	06:38		07:09	07:40	07:16			07:43		14:31 (MA06)
	20:50	58	20:25 (MA07)	20:14		19:24	18:35	17:01			16:58	40	15:11 (MA06)
22	06:10		19:27 (MA07)	06:39		07:10	07:41	07:17			07:44		14:32 (MA06)
	20:49	58	20:25 (MA07)	20:12		19:22	18:34	17:01			16:59	40	15:12 (MA06)
23	06:10		19:28 (MA07)	06:40		07:11	07:42	07:18			07:44		14:32 (MA06)
	20:48	56	20:24 (MA07)	20:11		19:20	18:32	17:00			16:59	40	15:12 (MA06)
24	06:11		19:29 (MA07)	06:41		07:12	07:43	07:19			07:45		14:34 (MA06)
	20:47	54	20:23 (MA07)	20:09		19:18	18:31	17:00			17:00	39	15:13 (MA06)
25	06:12		19:28 (MA07)	06:42		07:12	06:44	07:20			07:45		14:34 (MA06)
	20:46	54	20:22 (MA07)	20:08		19:17	17:30	16:59			17:01	39	15:13 (MA06)
26	06:13		19:29 (MA07)	06:43		07:13	06:45	07:21			07:45		14:34 (MA06)
	20:45	52	20:21 (MA07)	20:06		19:15	17:28	16:59			17:01	39	15:13 (MA06)
27	06:14		19:29 (MA07)	06:44		07:14	06:46	07:22			07:46		14:35 (MA06)
	20:44	51	20:20 (MA07)	20:05		19:13	17:27	16:58			17:02	39	15:14 (MA06)
28	06:15		19:30 (MA07)	06:45		07:15	06:48	07:24			07:46		14:36 (MA06)
	20:44	50	20:20 (MA07)	20:03		19:12	17:26	16:58			17:02	38	15:14 (MA06)
29	06:16		19:31 (MA07)	06:46		07:17	06:49	07:25			07:46		14:36 (MA06)
	20:43	48	20:19 (MA07)	20:02		19:10	17:24	16:57			17:03	38	15:14 (MA06)
30	06:17		19:31 (MA07)	06:47		07:18	06:50	07:26			14:40 (MA06)		14:37 (MA06)
	20:42	47	20:18 (MA07)	20:00		19:08	17:23	16:57			17:04	37	15:14 (MA06)
31	06:18		19:32 (MA07)	06:48			06:51				07:47		14:38 (MA06)
	20:41	45	20:17 (MA07)	19:58			17:22				17:05	36	15:14 (MA06)
Potential sun hours	458			427		375	346	299			289		1066
Total, worst case		1819			335			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)
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## SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R77 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (20)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December						
1	07:47	07:34	06:59	07:08	06:23	05:54	06:22 (MA09)	05:55	06:29 (MA09)	06:19	06:49	07:19	06:52	07:27				
	17:06	17:40	18:13	19:47	20:18	20:47	06:49 (MA09)	20:58	24	06:53 (MA09)	20:40	19:57	19:07	17:21	16:57			
2	07:47	07:33	06:57	07:07	06:22	05:54	06:22 (MA09)	05:55	06:30 (MA09)	06:20	06:50	07:20	06:54	07:28				
	17:06	17:41	18:14	19:48	20:19	20:48	06:49 (MA09)	20:58	24	06:54 (MA09)	20:39	19:55	19:05	17:19	16:56			
3	07:47	07:32	06:56	07:05	06:20	05:54	06:23 (MA09)	05:56	06:29 (MA09)	06:21	06:51	07:21	06:55	07:29				
	17:07	17:42	18:16	19:49	20:20	20:49	06:49 (MA09)	20:58	25	06:54 (MA09)	20:37	19:54	19:03	17:18	16:56			
4	07:48	07:31	06:54	07:03	06:19	05:53	06:24 (MA09)	05:57	06:30 (MA09)	06:22	06:52	07:22	06:56	07:30				
	17:08	17:43	18:17	19:50	20:21	20:50	06:49 (MA09)	20:58	25	06:55 (MA09)	20:36	19:52	19:02	17:17	16:56			
5	07:48	07:30	06:52	07:02	06:18	05:53	06:23 (MA09)	05:57	06:30 (MA09)	06:22	06:53	07:23	06:57	07:31				
	17:09	17:45	18:18	19:51	20:22	20:50	06:49 (MA09)	20:58	25	06:55 (MA09)	20:35	19:50	19:00	17:16	16:56			
6	07:47	07:29	06:51	07:00	06:17	05:53	06:23 (MA09)	05:58	06:30 (MA09)	06:23	06:54	07:24	06:58	07:32				
	17:10	17:46	18:19	19:52	20:23	20:51	06:49 (MA09)	20:57	25	06:55 (MA09)	20:34	19:49	18:59	17:15	16:56			
7	07:47	07:28	06:49	06:59	06:16	05:52	06:24 (MA09)	05:58	06:30 (MA09)	06:24	06:55	07:25	06:59	07:33				
	17:11	17:47	18:20	19:53	20:25	20:52	06:49 (MA09)	20:57	26	06:56 (MA09)	20:33	19:47	18:57	17:14	16:55			
8	07:47	07:27	06:48	06:57	06:14	05:52	06:24 (MA09)	05:59	06:29 (MA09)	06:25	06:56	07:26	07:01	07:34				
	17:12	17:48	18:21	19:54	20:26	20:52	06:49 (MA09)	20:57	27	06:56 (MA09)	20:32	19:45	18:55	17:13	16:55			
9	07:47	07:26	06:46	06:55	06:13	05:52	06:25 (MA09)	06:00	06:30 (MA09)	06:26	06:57	07:27	07:02	07:35				
	17:13	17:49	18:22	19:55	20:27	20:53	06:50 (MA09)	20:56	26	06:56 (MA09)	20:30	19:44	18:54	17:11	16:55			
10	07:47	07:25	06:45	06:54	06:12	05:52	06:24 (MA09)	06:00	06:30 (MA09)	06:27	06:58	07:28	07:03	07:35				
	17:14	17:51	18:23	19:56	20:28	20:53	06:49 (MA09)	20:56	27	06:57 (MA09)	20:29	19:42	18:52	17:10	16:55			
11	07:47	07:23	06:43	06:52	06:11	05:51	06:25 (MA09)	06:01	06:30 (MA09)	06:28	06:59	07:29	07:04	07:36				
	17:15	17:52	18:24	19:57	20:29	20:54	06:49 (MA09)	20:56	26	06:56 (MA09)	20:28	19:40	18:51	17:09	16:56			
12	07:47	07:22	06:41	06:51	06:10	05:51	06:25 (MA09)	06:02	06:30 (MA09)	06:29	07:00	07:30	07:05	07:37				
	17:16	17:53	18:26	19:58	20:30	20:54	06:49 (MA09)	20:55	27	06:57 (MA09)	20:26	19:39	18:49	17:09	16:56			
13	07:46	07:21	06:40	06:49	06:09	05:51	06:26 (MA09)	06:02	06:30 (MA09)	06:30	07:01	07:31	07:06	07:38				
	17:17	17:54	18:27	19:59	20:31	20:55	06:49 (MA09)	20:55	27	06:57 (MA09)	20:25	19:37	18:47	17:08	16:56			
14	07:46	07:20	06:38	06:47	06:08	05:51	06:26 (MA09)	06:03	06:30 (MA09)	06:31	07:02	07:32	07:08	07:39				
	17:18	17:56	18:28	20:00	20:32	7	06:31 (MA09)	05:51	23	06:49 (MA09)	20:54	27	06:57 (MA09)	20:24	19:35	18:46	17:07	16:56
15	07:46	07:18	06:36	06:46	06:07	05:51	06:29 (MA09)	06:04	06:30 (MA09)	06:32	07:03	07:33	07:09	07:39				
	17:19	17:57	18:29	20:02	20:33	12	06:41 (MA09)	20:56	23	06:49 (MA09)	20:54	27	06:57 (MA09)	20:22	19:34	18:44	17:06	16:56
16	07:45	07:17	06:35	06:44	06:06	05:51	06:28 (MA09)	06:05	06:31 (MA09)	06:33	07:04	07:34	07:10	07:40				
	17:20	17:58	18:30	20:03	20:34	14	06:42 (MA09)	20:56	22	06:49 (MA09)	20:53	27	06:58 (MA09)	20:21	19:32	18:43	17:05	16:56
17	07:45	07:16	06:33	06:43	06:05	05:51	06:27 (MA09)	06:05	06:31 (MA09)	06:34	07:05	07:35	07:11	07:41				
	17:22	17:59	18:31	20:04	20:34	16	06:43 (MA09)	20:56	22	06:49 (MA09)	20:52	27	06:58 (MA09)	20:20	19:30	18:41	17:04	16:57
18	07:44	07:14	06:31	06:41	06:04	05:51	06:25 (MA09)	06:06	06:31 (MA09)	06:35	07:06	07:36	07:12	07:41				
	17:23	18:00	18:32	20:05	20:35	19	06:44 (MA09)	20:57	22	06:49 (MA09)	20:52	27	06:58 (MA09)	20:18	19:29	18:40	17:03	16:57
19	07:44	07:13	06:30	06:40	06:03	05:51	06:25 (MA09)	06:07	06:31 (MA09)	06:36	07:07	07:38	07:14	07:42				
	17:24	18:02	18:33	20:06	20:36	21	06:46 (MA09)	20:57	22	06:50 (MA09)	20:51	26	06:57 (MA09)	20:17	19:27	18:38	17:03	16:57
20	07:43	07:12	06:28	06:38	06:02	05:51	06:24 (MA09)	06:08	06:31 (MA09)	06:37	07:08	07:39	07:15	07:43				
	17:25	18:03	18:34	20:07	20:37	22	06:46 (MA09)	20:57	22	06:50 (MA09)	20:50	26	06:57 (MA09)	20:15	19:25	18:37	17:02	16:58
21	07:43	07:10	06:27	06:37	06:02	05:52	06:22 (MA09)	06:09	06:32 (MA09)	06:38	07:09	07:40	07:16	07:43				
	17:26	18:04	18:35	20:08	20:38	24	06:46 (MA09)	20:58	23	06:51 (MA09)	20:50	25	06:57 (MA09)	20:14	19:24	18:35	17:01	16:58
22	07:42	07:09	06:25	06:35	06:01	05:52	06:22 (MA09)	06:10	06:33 (MA09)	06:39	07:10	07:41	07:17	07:44				
	17:27	18:05	18:36	20:09	20:39	25	06:47 (MA09)	20:58	23	06:51 (MA09)	20:49	24	06:57 (MA09)	20:12	19:22	18:34	17:01	16:59
23	07:41	07:07	06:23	06:34	06:00	05:52	06:22 (MA09)	06:10	06:33 (MA09)	06:40	07:11	07:42	07:18	07:44				
	17:29	18:06	18:37	20:10	20:40	26	06:48 (MA09)	20:58	22	06:50 (MA09)	20:48	24	06:57 (MA09)	20:11	19:20	18:32	17:00	16:59
24	07:41	07:06	06:22	06:32	05:59	05:52	06:22 (MA09)	06:11	06:34 (MA09)	06:41	07:12	07:43	07:19	07:45				
	17:30	18:07	18:38	20:11	20:41	26	06:48 (MA09)	20:58	22	06:51 (MA09)	20:47	21	06:55 (MA09)	20:09	19:19	18:31	17:00	17:00
25	07:40	07:05	06:20	06:31	05:58	05:53	06:21 (MA09)	06:12	06:35 (MA09)	06:42	07:13	07:44	07:20	07:45				
	17:31	18:09	18:40	20:12	20:42	27	06:48 (MA09)	20:58	22	06:51 (MA09)	20:46	20	06:55 (MA09)	20:08	19:17	17:30	16:59	17:00
26	07:39	07:03	06:18	06:30	05:58	05:53	06:22 (MA09)	06:13	06:36 (MA09)	06:43	07:14	07:45	07:21	07:46				
	17:32	18:10	18:41	20:13	20:43	26	06:48 (MA09)	20:58	22	06:51 (MA09)	20:46	18	06:54 (MA09)	20:06	19:15	17:28	16:58	17:01
27	07:38	07:02	06:17	06:28	05:57	05:53	06:21 (MA09)	06:14	06:38 (MA09)	06:44	07:15	07:46	07:23	07:46				
	17:33	18:11	18:42	20:14	20:43	27	06:48 (MA09)	20:58	22	06:52 (MA09)	20:45	15	06:53 (MA09)	20:05	19:13	17:27	16:58	17:02
28	07:38	07:00	06:15	06:27	05:57	05:54	06:22 (MA09)	06:15	06:39 (MA09)	06:45	07:16	07:47	07:24	07:46				
	17:35	18:12	18:43	20:15	20:44	27	06:49 (MA09)	20:58	23	06:52 (MA09)	20:44	13	06:52 (MA09)	20:03	19:12	17:26	16:58	17:02
29	07:37	07:13	06:26	06:36	05:56	05:54	06:22 (MA09)	06:16	06:41 (MA09)	06:46	07:17	07:48	07:25	07:47				
	17:36	18:14	18:45	20:17	20:46	27	06:49 (MA09)	20:58	23	06:53 (MA09)	20:43	9	06:50 (MA09)	20:02	19:10	17:24	16:57	17:03
30	07:36	07:12	06:24	06:34	05:55	05:55	06:22 (MA09)	06:17	06:43 (MA09)	06:47	07:18	07:49	07:26	07:47				
	17:37	18:15	18:46	20:18	20:47	27	06:49 (MA09)	20:58	23	06:53 (MA09)	20:42	4	06:47 (MA09)	20:00	19:08	17:23	16:57	17:04
31	07:35	07:10	06:22	06:32	05:55	05:55	06:22 (MA09)	06:18	06:44 (MA09)	06:48	07:19	07:50	07:27	07:47				
	17:38	18:16	18:47	20:19	20:47	27	06:49 (MA09)	20:41	06:48	06:48	07:20	19:59	17:22	17:05	17:05			
Potential sun hours	298	298	370	398	448	451	710	694	427	375	346	299	289					
Total, worst case					400		710	694	427	375	346	299	289					

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)
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Project:

WF\_Monti\_Alà

Licensed user:

Ge.co.Dor srl  
Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
09/05/2023 16:01/3.6.361

### SHADOW - Calendar

Calculation: SHADOW\_Worse case Shadow receptor: R78 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December			
1	07:47	07:34	06:59	07:08	06:23	05:54	06:22 (MA09)	05:55	06:28 (MA09)	06:19	06:49	07:19	06:52	07:27	
	17:06	17:40	18:13	19:47	20:18	20:47	06:49 (MA09)	20:58	26	06:54 (MA09)	20:40	19:57	19:07	17:21	16:57
2	07:47	07:33	06:57	07:07	06:22	05:54	06:21 (MA09)	05:55	06:28 (MA09)	06:20	06:50	07:20	06:54	07:28	
	17:06	17:41	18:14	19:48	20:19	20:48	06:49 (MA09)	20:58	26	06:54 (MA09)	20:39	19:55	19:05	17:19	16:56
3	07:47	07:32	06:56	07:05	06:20	05:54	06:22 (MA09)	05:56	06:29 (MA09)	06:21	06:51	07:21	06:55	07:29	
	17:07	17:42	18:16	19:49	20:20	20:49	06:49 (MA09)	20:58	26	06:54 (MA09)	20:37	19:54	19:03	17:18	16:56
4	07:48	07:31	06:54	07:03	06:19	05:53	06:22 (MA09)	05:57	06:29 (MA09)	06:22	06:52	07:22	06:56	07:30	
	17:08	17:43	18:17	19:50	20:21	20:50	06:50 (MA09)	20:58	26	06:55 (MA09)	20:36	19:52	19:02	17:17	16:56
5	07:48	07:30	06:52	07:02	06:18	05:53	06:22 (MA09)	05:57	06:29 (MA09)	06:22	06:53	07:23	06:57	07:31	
	17:09	17:45	18:18	19:51	20:22	20:50	06:49 (MA09)	20:58	27	06:56 (MA09)	20:35	19:50	19:00	17:16	16:56
6	07:47	07:29	06:51	07:00	06:17	05:53	06:22 (MA09)	05:58	06:29 (MA09)	06:23	06:54	07:24	06:58	07:32	
	17:10	17:46	18:19	19:52	20:23	20:51	06:49 (MA09)	20:57	26	06:55 (MA09)	20:34	19:49	18:59	17:15	16:56
7	07:47	07:28	06:49	06:59	06:16	05:52	06:23 (MA09)	05:58	06:29 (MA09)	06:24	06:55	07:25	06:59	07:33	
	17:11	17:47	18:20	19:53	20:25	20:52	06:50 (MA09)	20:57	27	06:56 (MA09)	20:33	19:47	18:57	17:14	16:55
8	07:47	07:27	06:48	06:57	06:14	05:52	06:23 (MA09)	05:59	06:29 (MA09)	06:25	06:56	07:26	07:01	07:34	
	17:12	17:48	18:21	19:54	20:26	20:52	06:50 (MA09)	20:57	27	06:56 (MA09)	20:32	19:45	18:55	17:13	16:55
9	07:47	07:26	06:46	06:55	06:13	05:52	06:24 (MA09)	06:00	06:29 (MA09)	06:26	06:57	07:27	07:02	07:35	
	17:13	17:49	18:22	19:55	20:27	20:53	06:50 (MA09)	20:56	27	06:56 (MA09)	20:30	19:44	18:54	17:11	16:55
10	07:47	07:25	06:45	06:54	06:12	05:52	06:23 (MA09)	06:00	06:29 (MA09)	06:27	06:58	07:28	07:03	07:35	
	17:14	17:51	18:23	19:56	20:28	20:53	06:49 (MA09)	20:56	28	06:57 (MA09)	20:29	19:42	18:52	17:10	16:55
11	07:47	07:23	06:43	06:52	06:11	05:51	06:24 (MA09)	06:01	06:29 (MA09)	06:28	06:59	07:29	07:04	07:36	
	17:15	17:52	18:24	19:57	20:29	20:54	06:50 (MA09)	20:56	27	06:56 (MA09)	20:28	19:40	18:51	17:09	16:56
12	07:47	07:22	06:41	06:51	06:10	05:51	06:24 (MA09)	06:02	06:29 (MA09)	06:29	07:00	07:30	07:05	07:37	
	17:16	17:53	18:26	19:58	20:30	20:54	06:50 (MA09)	20:55	28	06:57 (MA09)	20:26	19:39	18:49	17:09	16:56
13	07:46	07:21	06:40	06:49	06:09	05:51	06:24 (MA09)	06:02	06:30 (MA09)	06:30	07:01	07:31	07:06	07:38	
	17:17	17:54	18:27	19:59	20:31	20:55	06:50 (MA09)	20:55	27	06:57 (MA09)	20:25	19:37	18:47	17:08	16:56
14	07:46	07:20	06:38	06:47	06:08	05:51	06:25 (MA09)	06:03	06:29 (MA09)	06:31	07:02	07:32	07:08	07:39	
	17:18	17:56	18:28	20:00	20:32	20:55	06:50 (MA09)	20:54	28	06:57 (MA09)	20:24	19:35	18:46	17:07	16:56
15	07:46	07:18	06:36	06:46	06:07	05:51	06:25 (MA09)	06:04	06:30 (MA09)	06:32	07:03	07:33	07:09	07:39	
	17:19	17:57	18:29	20:02	20:33	7	06:38 (MA09)	20:56	25	06:50 (MA09)	20:54	19:34	18:44	17:06	16:56
16	07:45	07:17	06:35	06:44	06:06	06:29 (MA09)	05:51	06:05	06:30 (MA09)	06:33	07:04	07:34	07:10	07:40	
	17:20	17:58	18:30	20:03	20:33	11	06:40 (MA09)	20:56	25	06:50 (MA09)	20:53	19:32	18:43	17:05	16:56
17	07:45	07:16	06:33	06:43	06:05	06:28 (MA09)	05:51	06:05	06:31 (MA09)	06:34	07:05	07:35	07:11	07:41	
	17:22	17:59	18:31	20:04	20:34	14	06:42 (MA09)	20:56	25	06:50 (MA09)	20:52	19:30	18:41	17:04	16:57
18	07:44	07:14	06:31	06:41	06:04	06:27 (MA09)	05:51	06:06	06:31 (MA09)	06:35	07:06	07:36	07:12	07:41	
	17:23	18:00	18:32	20:05	20:35	16	06:43 (MA09)	20:57	24	06:50 (MA09)	20:52	19:29	18:40	17:03	16:57
19	07:44	07:13	06:30	06:40	06:03	06:26 (MA09)	05:51	06:07	06:31 (MA09)	06:36	07:07	07:38	07:14	07:42	
	17:24	18:02	18:33	20:06	20:36	18	06:44 (MA09)	20:57	24	06:51 (MA09)	20:51	19:27	18:38	17:03	16:57
20	07:43	07:12	06:28	06:38	06:02	06:25 (MA09)	05:51	06:08	06:31 (MA09)	06:37	07:08	07:39	07:15	07:43	
	17:25	18:03	18:34	20:07	20:37	20	06:45 (MA09)	20:57	24	06:51 (MA09)	20:50	19:25	18:37	17:02	16:58
21	07:43	07:10	06:27	06:37	06:02	06:23 (MA09)	05:52	06:09	06:32 (MA09)	06:38	07:09	07:40	07:16	07:43	
	17:26	18:04	18:35	20:08	20:38	23	06:46 (MA09)	20:58	24	06:56 (MA09)	20:14	19:24	18:35	17:01	16:58
22	07:42	07:09	06:25	06:35	06:01	06:22 (MA09)	05:52	06:10	06:33 (MA09)	06:39	07:10	07:41	07:17	07:44	
	17:27	18:05	18:36	20:09	20:39	24	06:46 (MA09)	20:58	24	06:56 (MA09)	20:12	19:22	18:34	17:01	16:59
23	07:41	07:07	06:23	06:34	06:00	06:22 (MA09)	05:52	06:10	06:35 (MA09)	06:40	07:11	07:42	07:18	07:44	
	17:29	18:06	18:37	20:10	20:40	25	06:47 (MA09)	20:58	24	06:56 (MA09)	20:11	19:20	18:32	17:00	16:59
24	07:41	07:06	06:22	06:32	05:59	06:21 (MA09)	05:52	06:11	06:35 (MA09)	06:41	07:12	07:43	07:19	07:45	
	17:30	18:07	18:38	20:11	20:41	26	06:47 (MA09)	20:58	24	06:54 (MA09)	20:09	19:19	18:31	17:00	17:00
25	07:40	07:05	06:20	06:31	05:58	06:21 (MA09)	05:53	06:12	06:36 (MA09)	06:42	07:13	06:44	07:20	07:45	
	17:31	18:09	18:40	20:12	20:42	26	06:47 (MA09)	20:58	24	06:54 (MA09)	20:08	19:17	17:30	16:59	17:00
26	07:39	07:03	06:18	06:30	05:58	06:21 (MA09)	05:53	06:13	06:38 (MA09)	06:43	07:14	06:45	07:21	07:46	
	17:32	18:10	18:41	20:13	20:43	27	06:48 (MA09)	20:58	25	06:53 (MA09)	20:06	19:15	17:28	16:58	17:01
27	07:38	07:02	06:17	06:28	05:57	06:21 (MA09)	05:53	06:14	06:39 (MA09)	06:44	07:15	06:47	07:23	07:46	
	17:33	18:11	18:42	20:14	20:43	27	06:48 (MA09)	20:58	25	06:53 (MA09)	20:05	19:13	17:27	16:58	17:02
28	07:38	07:00	06:15	06:27	05:57	06:21 (MA09)	05:54	06:15	06:40 (MA09)	06:45	07:16	06:48	07:24	07:46	
	17:35	18:12	18:43	20:15	20:44	28	06:49 (MA09)	20:58	25	06:53 (MA09)	20:04	19:12	17:26	16:58	17:02
29	07:37	07:13	06:26	06:36	05:56	06:21 (MA09)	05:54	06:16	06:42 (MA09)	06:46	07:17	06:49	07:25	07:47	
	17:36	18:14	18:45	20:16	20:45	27	06:48 (MA09)	20:58	25	06:54 (MA09)	20:03	19:10	17:24	16:57	17:03
30	07:36	07:12	06:24	06:34	05:55	06:21 (MA09)	05:55	06:17	06:47 (MA09)	06:47	07:18	06:50	07:26	07:47	
	17:37	18:15	18:46	20:17	20:46	28	06:49 (MA09)	20:58	26	06:54 (MA09)	20:02	19:08	17:23	16:57	17:04
31	07:35	07:10	06:21	06:31	05:55	06:21 (MA09)	05:55	06:18	06:48	06:48	07:19	06:51	07:27	07:47	
	17:38	18:16	18:47	20:18	20:47	28	06:49 (MA09)	20:41	06:48	06:48	07:20	17:22	16:57	17:05	
Potential sun hours	298	298	370	398	448	451	458	458	427	375	346	299	289		
Total, worst case					375	766	684								

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

Calculation: SHADOW\_Worse case Shadow receptor: R84 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June			
1	07:47	07:34	07:54 (MA08)	06:59	15:27 (MA11)	07:08	06:23	05:54	
	17:06	17:40	16:14 (MA11)	18:13	16:54 (MA11)	19:47	20:18	20:48	
2	07:47	07:33	07:53 (MA08)	06:57	15:27 (MA11)	07:07	06:22	05:54	
	17:06	17:41	16:15 (MA11)	18:14	16:56 (MA11)	19:48	20:19	20:48	
3	07:48	07:32	07:52 (MA08)	06:56	15:27 (MA11)	07:05	06:20	05:54	
	17:07	17:42	16:16 (MA11)	18:16	16:58 (MA11)	19:49	20:20	20:49	
4	07:48	07:31	07:51 (MA08)	06:54	15:27 (MA11)	07:03	06:19	05:53	
	17:08	17:43	16:16 (MA11)	18:17	16:59 (MA11)	19:50	20:21	20:50	
5	07:48	07:30	07:50 (MA08)	06:53	15:27 (MA11)	07:02	06:18	05:53	
	17:09	17:45	16:17 (MA11)	18:18	16:58 (MA11)	19:51	20:23	20:50	
6	07:48	07:29	07:49 (MA08)	06:51	15:28 (MA11)	07:00	06:17	05:53	
	17:10	17:46	16:19 (MA11)	18:19	16:59 (MA11)	19:52	20:24	20:51	
7	07:48	07:28	07:48 (MA08)	06:49	15:28 (MA11)	06:59	06:16	05:52	
	17:11	17:47	16:20 (MA11)	18:20	16:58 (MA11)	19:53	20:25	20:52	
8	07:47	07:27	07:47 (MA08)	06:48	15:29 (MA11)	06:57	06:14	05:52	
	17:12	17:48	16:21 (MA11)	18:21	16:58 (MA11)	19:54	20:26	20:52	
9	07:47	07:26	07:45 (MA08)	06:46	15:29 (MA11)	06:55	06:13	05:52	
	17:13	17:50	16:22 (MA11)	18:22	16:57 (MA11)	19:55	20:27	20:53	
10	07:47	07:25	07:44 (MA08)	06:45	15:29 (MA11)	06:54	06:12	05:52	
	17:14	17:51	16:23 (MA11)	18:23	16:56 (MA11)	19:56	20:28	20:53	
11	07:47	08:08 (MA08)	07:23	07:44 (MA08)	06:43	15:30 (MA11)	06:52	06:11	05:51
	17:15	2 08:10 (MA08)	17:52	16:25 (MA11)	18:25	16:56 (MA11)	19:57	20:29	20:54
12	07:47	08:08 (MA08)	07:22	07:45 (MA08)	06:41	15:31 (MA11)	06:51	06:10	05:51
	17:16	3 08:11 (MA08)	17:53	16:26 (MA11)	18:26	16:55 (MA11)	19:58	20:30	20:54
13	07:46	08:08 (MA08)	07:21	07:45 (MA08)	06:40	15:31 (MA11)	06:49	06:09	05:51
	17:17	5 08:13 (MA08)	17:54	16:27 (MA11)	18:27	16:54 (MA11)	20:00	20:31	20:55
14	07:46	08:07 (MA08)	07:20	07:47 (MA08)	06:38	15:32 (MA11)	06:47	06:08	05:51
	17:18	7 08:14 (MA08)	17:56	16:28 (MA11)	18:28	16:53 (MA11)	20:01	20:32	20:55
15	07:46	08:07 (MA08)	07:18	07:48 (MA08)	06:36	15:33 (MA11)	06:46	06:07	05:51
	17:19	8 08:15 (MA08)	17:57	16:30 (MA11)	18:29	16:52 (MA11)	20:02	20:33	20:56
16	07:45	08:06 (MA08)	07:17	07:49 (MA08)	06:35	15:33 (MA11)	06:44	06:06	05:51
	17:20	10 08:16 (MA08)	17:58	16:31 (MA11)	18:30	16:51 (MA11)	20:03	20:34	20:56
17	07:45	08:06 (MA08)	07:16	07:52 (MA08)	06:33	15:35 (MA11)	06:43	06:05	05:51
	17:22	12 08:18 (MA08)	17:59	16:32 (MA11)	18:31	16:50 (MA11)	20:04	20:35	20:57
18	07:44	08:05 (MA08)	07:14	07:55 (MA08)	06:32	15:36 (MA11)	06:41	06:04	05:51
	17:23	13 08:18 (MA08)	18:00	16:34 (MA11)	18:32	16:49 (MA11)	20:05	20:35	20:57
19	07:44	08:05 (MA08)	07:13	07:58 (MA08)	06:30	15:37 (MA11)	06:40	06:03	05:51
	17:24	15 08:20 (MA08)	18:02	16:35 (MA11)	18:33	16:47 (MA11)	20:06	20:36	20:57
20	07:43	08:04 (MA08)	07:12	15:29 (MA11)	06:28	15:39 (MA11)	06:38	06:02	05:52
	17:25	17 08:21 (MA08)	18:03	16:37 (MA11)	18:34	16:47 (MA11)	20:07	20:37	20:57
21	07:43	08:03 (MA08)	07:10	15:29 (MA11)	06:27	15:40 (MA11)	06:37	06:02	05:52
	17:26	18 08:21 (MA08)	18:04	16:39 (MA11)	18:35	16:45 (MA11)	20:08	20:38	20:58
22	07:42	08:03 (MA08)	07:09	15:28 (MA11)	06:25	15:41 (MA11)	06:35	06:01	05:52
	17:27	20 08:23 (MA08)	18:05	16:40 (MA11)	18:36	16:43 (MA11)	20:09	20:39	20:58
23	07:41	08:02 (MA08)	07:08	15:28 (MA11)	06:23	15:43 (MA11)	06:34	06:00	05:52
	17:29	21 08:23 (MA08)	18:06	16:42 (MA11)	18:37	16:42 (MA11)	20:10	20:40	20:58
24	07:41	08:01 (MA08)	07:06	15:28 (MA11)	06:22	15:44 (MA11)	06:33	05:59	05:52
	17:30	23 08:24 (MA08)	18:08	16:44 (MA11)	18:39	16:40 (MA11)	20:11	20:41	20:58
25	07:40	08:00 (MA08)	07:05	15:28 (MA11)	06:20	15:46 (MA11)	06:31	05:59	05:53
	17:31	24 08:24 (MA08)	18:09	16:46 (MA11)	18:40	16:37 (MA11)	20:12	20:42	20:58
26	07:39	08:00 (MA08)	07:03	15:27 (MA11)	06:18	15:49 (MA11)	06:30	05:58	05:53
	17:32	26 08:26 (MA08)	18:10	16:47 (MA11)	18:41	16:36 (MA11)	20:13	20:43	20:58
27	07:39	07:59 (MA08)	07:02	15:28 (MA11)	06:17	15:51 (MA11)	06:28	05:57	05:53
	17:33	35 16:11 (MA11)	18:11	16:50 (MA11)	18:42	16:33 (MA11)	20:14	20:44	20:59
28	07:38	07:58 (MA08)	07:00	15:27 (MA11)	06:15	15:53 (MA11)	06:27	05:57	05:54
	17:35	42 16:12 (MA11)	18:12	16:52 (MA11)	18:43	16:30 (MA11)	20:15	20:44	20:59
29	07:37	07:57 (MA08)			07:13	16:57 (MA11)	06:26	05:56	05:54
	17:36	48 16:13 (MA11)			19:44	17:27 (MA11)	20:16	20:45	20:59
30	07:36	07:56 (MA08)			07:12	17:01 (MA11)	06:24	05:55	05:55
	17:37	51 16:13 (MA11)			19:45	17:22 (MA11)	20:17	20:46	20:58
31	07:35	07:55 (MA08)			07:10			05:55	
	17:38	56 16:14 (MA11)			19:46			20:47	
Potential sun hours	298	298	370	398	448	451			
Total, worst case	456	2215	2142						

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

Calculation: SHADOW\_Worse caseShadow receptor: R84 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

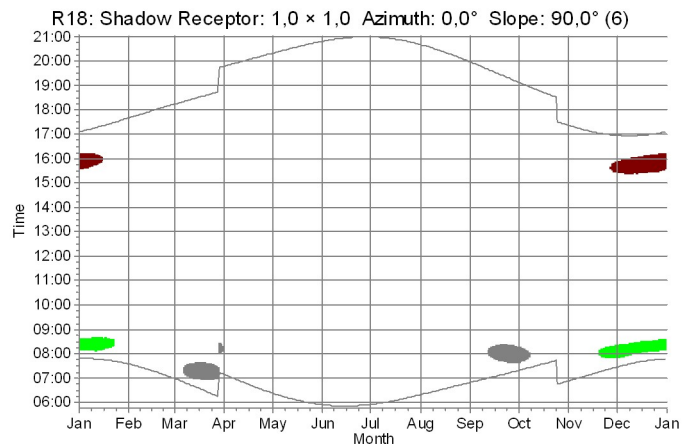
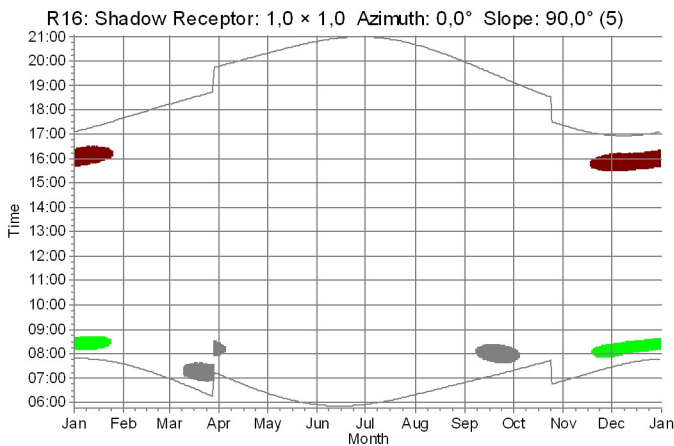
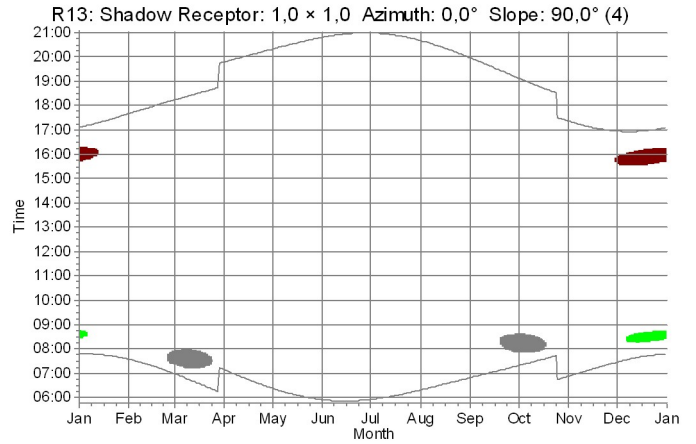
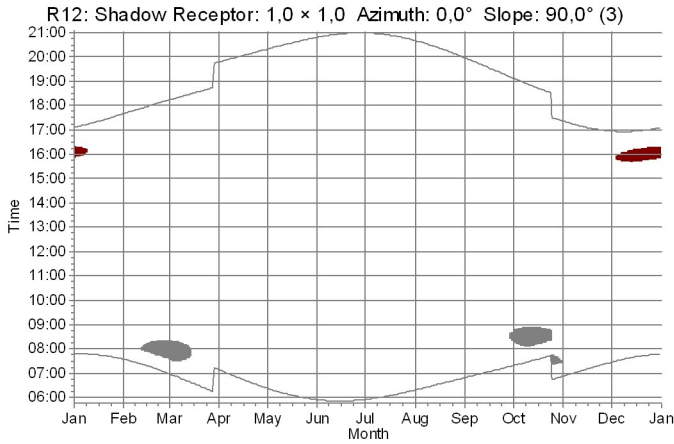
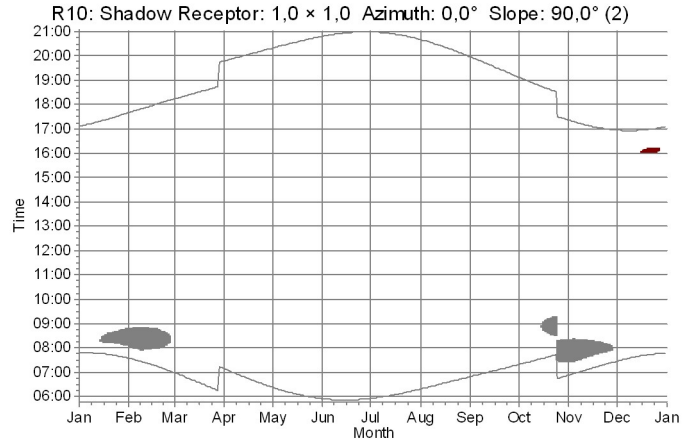
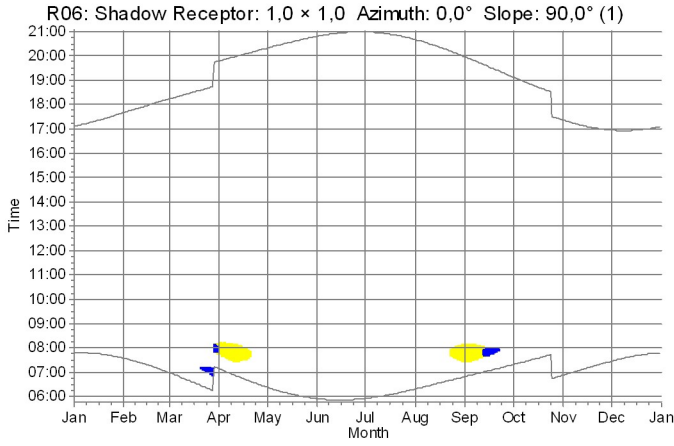
	July	August	September	October	November	December			
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	16:11 (MA11) 17:34 (MA11)	06:52 17:21	07:14 (MA08) 15:53 (MA11)	07:27 16:57	07:50 (MA08)
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05	83 16:09 (MA11)	06:54 17:19	88 07:15 (MA08)	07:28 16:56	2 07:52 (MA08)
3	05:56 20:58	06:21 20:38	06:51 19:54	07:21 19:04	85 17:34 (MA11)	06:55 17:18	85 15:51 (MA11)	07:29 16:56	
4	05:57 20:58	06:22 20:36	06:52 19:52	07:22 19:02	86 16:07 (MA11)	06:56 17:17	82 07:18 (MA08)	16:56 07:30	
5	05:57 20:58	06:23 20:35	06:53 19:50	07:23 19:00	87 17:34 (MA11)	06:57 17:16	79 15:50 (MA11)	07:31 16:56	
6	05:58 20:58	06:23 20:34	06:54 19:49	07:24 18:59	88 16:05 (MA11)	06:58 17:15	75 07:20 (MA08)	16:56 07:32	
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	89 17:34 (MA11)	06:59 17:14	73 15:47 (MA11)	16:56 07:33	
8	05:59 20:57	06:25 20:32	06:56 19:46	07:26 18:55	90 16:03 (MA11)	07:01 17:13	69 07:23 (MA08)	07:34 16:55	
9	06:00 20:57	06:26 20:30	06:57 19:44	07:27 18:54	91 17:34 (MA11)	07:02 17:12	66 15:47 (MA11)	07:35 16:55	
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	92 16:02 (MA11)	07:03 17:11	62 15:46 (MA11)	07:36 16:55	
11	06:01 20:56	06:28 20:28	06:59 19:41	07:29 18:51	92 17:34 (MA11)	07:04 17:10	59 15:45 (MA11)	16:55 07:36	
12	06:02 20:55	06:29 20:27	07:00 19:39	07:30 18:49	90 17:31 (MA11)	07:05 17:09	56 15:45 (MA11)	07:37 16:56	
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	89 16:00 (MA11)	07:06 17:08	51 15:45 (MA11)	07:38 16:56	
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	86 17:26 (MA11)	07:08 17:07	47 15:44 (MA11)	16:56 07:39	
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	84 17:23 (MA11)	07:09 17:06	41 15:44 (MA11)	16:56 07:39	
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	81 17:21 (MA11)	07:10 17:05	35 15:43 (MA11)	16:56 07:40	
17	06:05 20:53	06:34 20:20	07:05 19:30	07:35 18:41	79 17:19 (MA11)	07:11 17:04	25 07:58 (MA08)	16:56 07:41	
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	78 17:17 (MA11)	07:12 17:03	24 07:58 (MA08)	16:57 07:42	
19	06:07 20:51	06:36 20:17	07:07 19:27	07:37 18:38	76 17:15 (MA11)	07:14 17:03	23 07:58 (MA08)	16:57 07:42	
20	06:08 20:50	06:37 20:15	07:08 19:25	07:38 18:37	73 17:12 (MA11)	07:15 17:02	21 07:57 (MA08)	16:57 07:43	
21	06:09 20:50	06:38 20:14	07:09 19:24	07:39 18:35	71 17:10 (MA11)	07:16 17:01	20 07:58 (MA08)	16:58 07:43	
22	06:10 20:49	06:39 20:12	07:10 19:22	07:40 18:34	69 17:08 (MA11)	07:17 17:01	18 07:57 (MA08)	16:58 07:44	
23	06:10 20:48	06:40 20:11	07:11 19:20	07:41 18:33	67 17:07 (MA11)	07:18 17:00	17 07:57 (MA08)	16:59 07:44	
24	06:11 20:47	06:41 20:09	07:12 19:19	07:42 18:31	79 17:05 (MA11)	07:19 17:00	15 07:56 (MA08)	16:59 07:45	
25	06:12 20:46	06:42 20:08	07:13 19:17	07:43 18:30	84 17:03 (MA11)	07:20 16:59	13 07:56 (MA08)	17:00 07:45	
26	06:13 20:46	06:43 20:06	07:14 19:15	07:44 18:28	87 16:02 (MA11)	07:22 16:59	12 07:56 (MA08)	17:00 07:46	
27	06:14 20:45	06:44 20:05	07:15 19:14	07:45 18:27	88 16:00 (MA11)	07:23 16:59	10 07:55 (MA08)	17:01 07:46	
28	06:15 20:44	06:45 20:03	07:16 19:12	07:46 18:26	90 15:59 (MA11)	07:24 16:58	9 07:55 (MA08)	17:02 07:46	
29	06:16 20:43	06:46 20:02	07:17 19:10	07:47 18:25	91 15:58 (MA11)	07:25 16:57	7 07:54 (MA08)	17:02 07:47	
30	06:17 20:42	06:47 20:00	07:18 19:08	07:48 18:24	91 15:56 (MA11)	07:26 16:57	5 07:53 (MA08)	17:03 07:47	
31	06:18 20:41	06:48 19:59		06:51 17:22	90 15:55 (MA11)	07:27 16:57	3 07:52 (MA08)	17:04 07:47	
Potential sun hours	458	427	375	346	299	289			
Total, worst case			1062	2617	1190	2			

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)
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## SHADOW - Calendar, graphical

Calculation: SHADOW\_Worse case



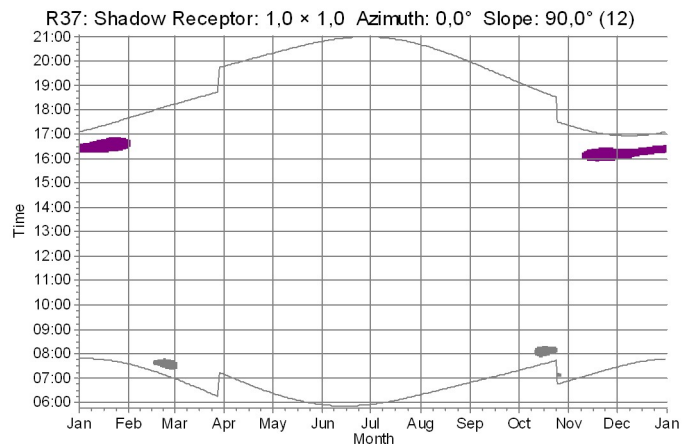
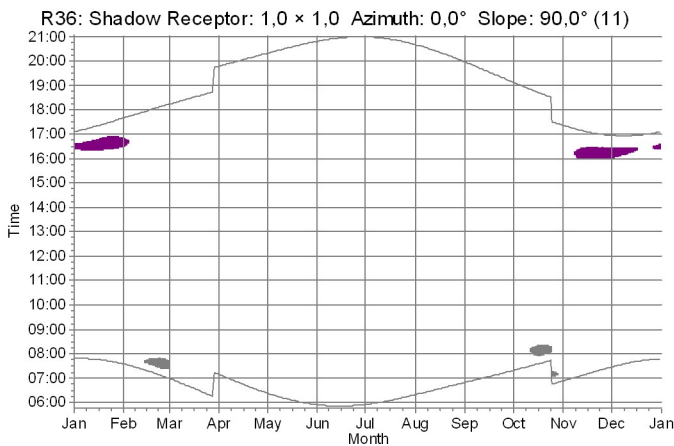
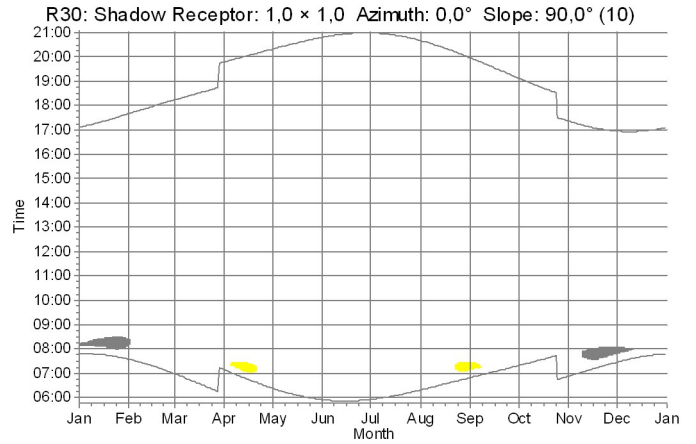
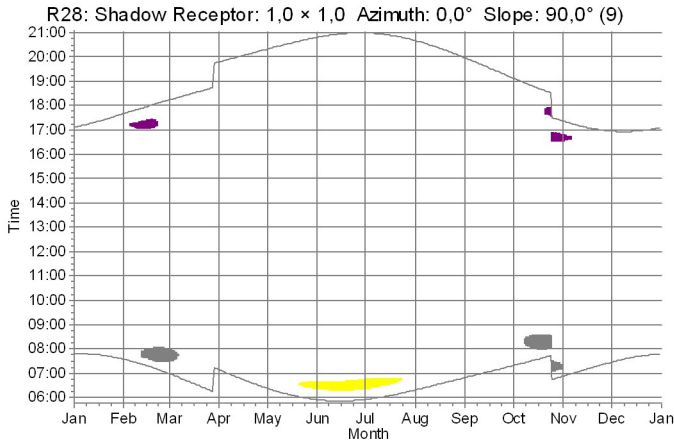
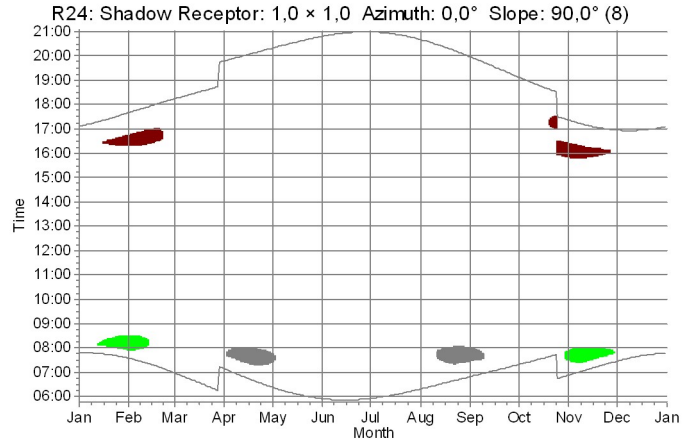
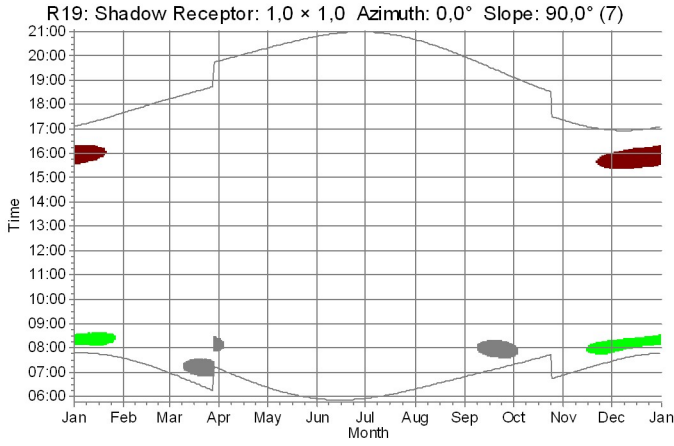
### WTGs

- MA02: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (2)
- MA03: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (3)
- MA04: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (4)

- MA08: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (8)
- MA09: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (9)

## SHADOW - Calendar, graphical

Calculation: SHADOW\_Worse case



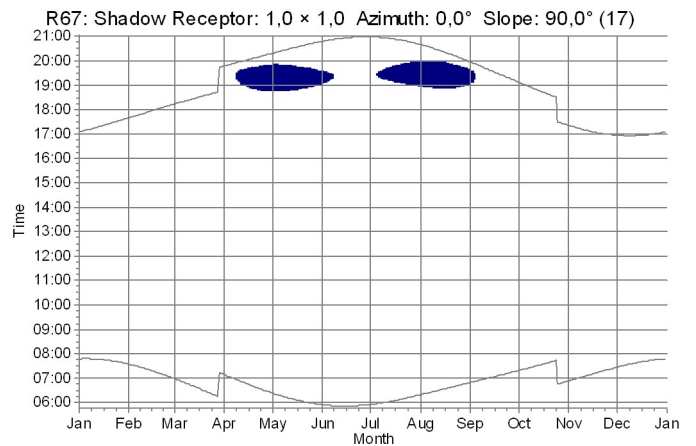
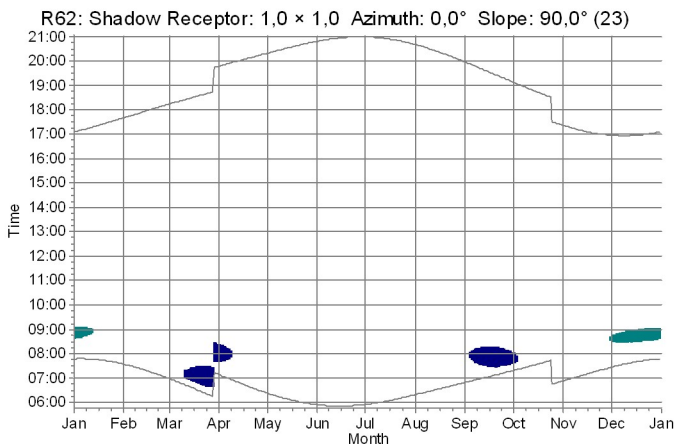
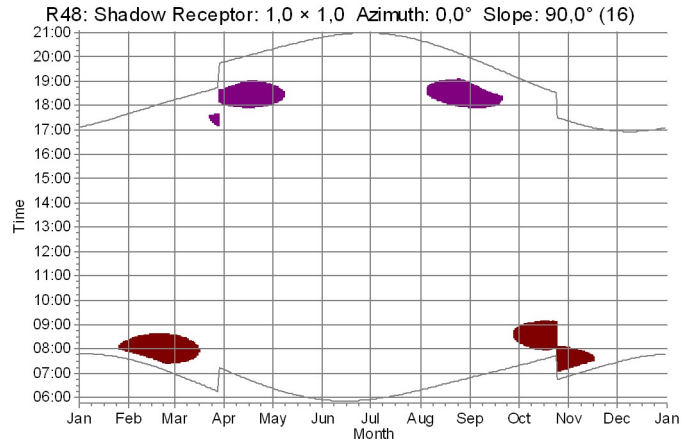
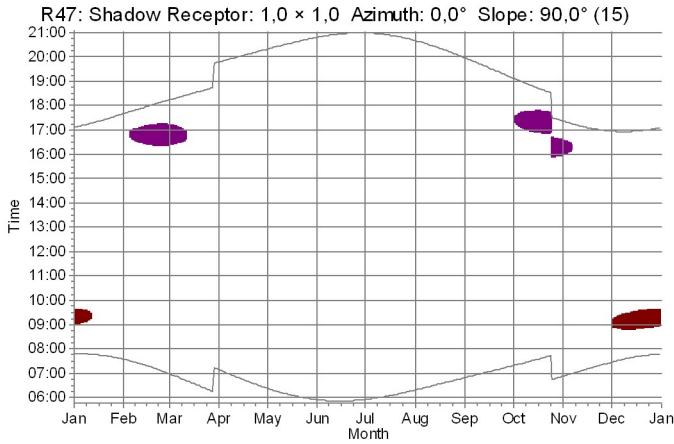
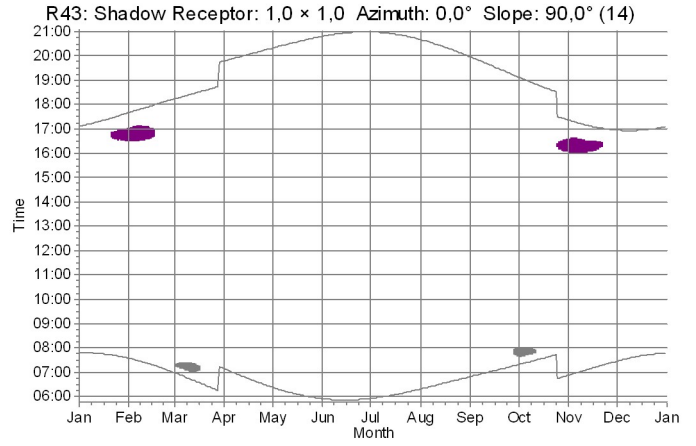
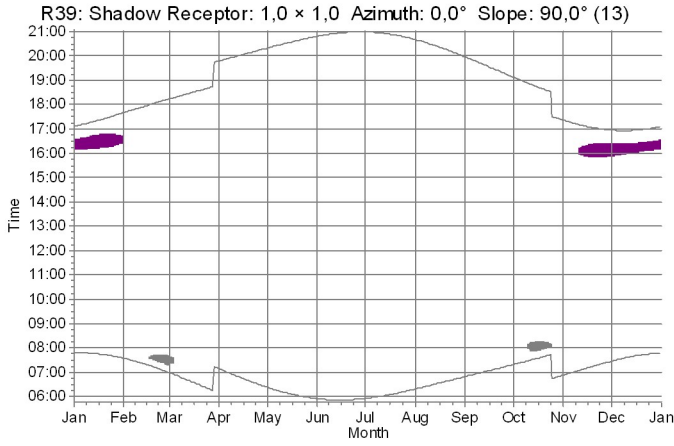
### WTGs

- MA02: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (2)
- MA04: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (4)
- MA08: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (8)

- MA09: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (9)
- MA11: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (11)

## SHADOW - Calendar, graphical

Calculation: SHADOW\_Worse case



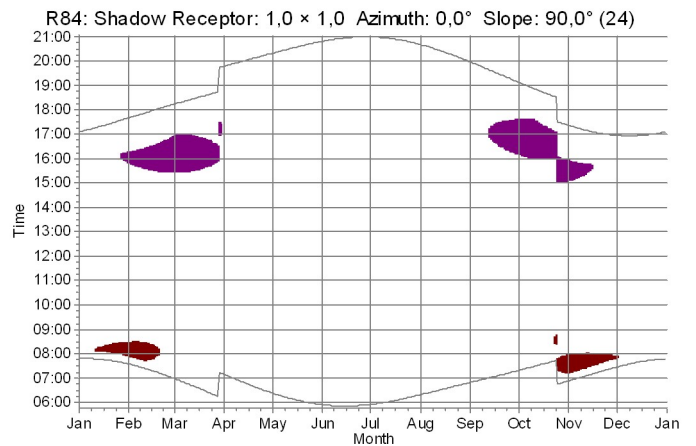
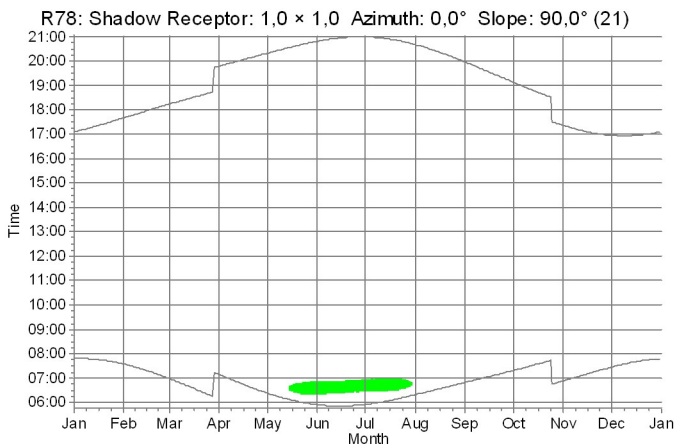
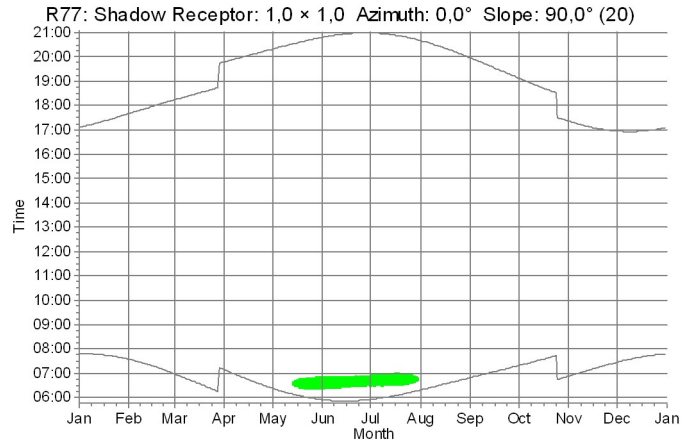
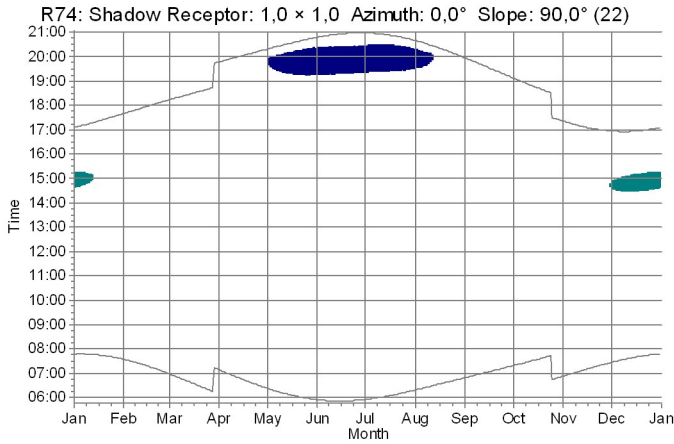
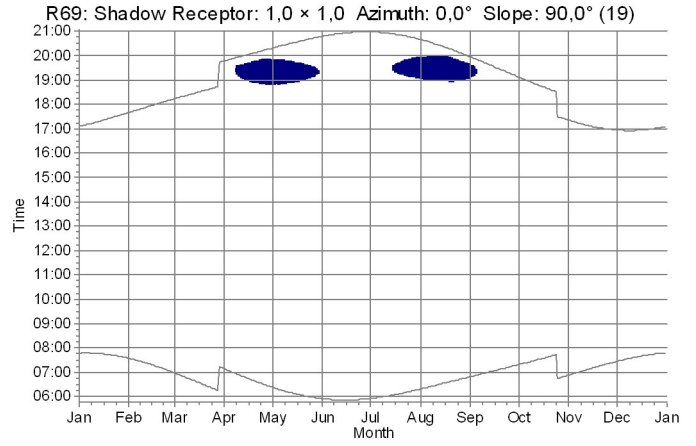
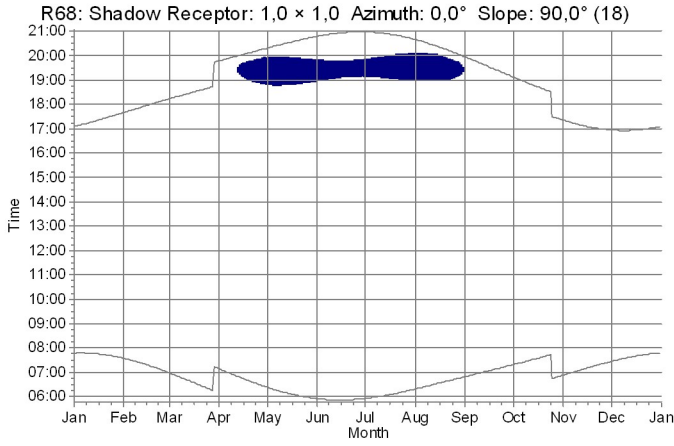
### WTGs

- MA04: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (4)
- MA06: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (6)
- MA07: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (7)

- MA08: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (8)
- MA11: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (11)

## SHADOW - Calendar, graphical

Calculation: SHADOW\_Worse case



### WTGs

- MA06: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (6)
- MA07: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (7)
- MA08: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (8)

- MA09: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (9)
- MA11: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (11)

## SHADOW - Calendar per WTG

Calculation: SHADOW\_Worse case WTG: MA01 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (1)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47	07:34	06:58	07:08	06:23	05:54	05:55	06:18	06:49	07:18	06:52	07:27
	17:05	17:39	18:13	19:47	20:18	20:47	20:58	20:40	19:57	19:07	17:20	16:56
2	07:47	07:33	06:57	07:06	06:21	05:54	05:55	06:19	06:50	07:19	06:53	07:28
	17:06	17:41	18:14	19:48	20:19	20:48	20:58	20:38	19:55	19:05	17:19	16:56
3	07:47	07:32	06:55	07:05	06:20	05:53	05:56	06:20	06:51	07:20	06:55	07:29
	17:07	17:42	18:15	19:49	20:20	20:49	20:58	20:37	19:54	19:03	17:18	16:56
4	07:47	07:31	06:54	07:03	06:19	05:53	05:56	06:21	06:52	07:22	06:56	07:30
	17:08	17:43	18:17	19:50	20:21	20:50	20:58	20:36	19:52	19:02	17:17	16:56
5	07:47	07:30	06:52	07:02	06:18	05:53	05:57	06:22	06:53	07:23	06:57	07:31
	17:09	17:44	18:18	19:51	20:22	20:50	20:58	20:35	19:50	19:00	17:16	16:55
6	07:47	07:29	06:51	07:00	06:16	05:52	05:57	06:23	06:54	07:24	06:58	07:32
	17:10	17:46	18:19	19:52	20:23	20:51	20:57	20:34	19:49	18:58	17:15	16:55
7	07:47	07:28	06:49	06:58	06:15	05:52	05:58	06:24	06:55	07:25	06:59	07:33
	17:11	17:47	18:20	19:53	20:24	20:52	20:57	20:33	19:47	18:57	17:13	16:55
8	07:47	07:27	06:48	06:57	06:14	05:52	05:59	06:25	06:56	07:26	07:01	07:34
	17:12	17:48	18:21	19:54	20:25	20:52	20:57	20:31	19:45	18:55	17:12	16:55
9	07:47	07:26	06:46	06:55	06:13	05:52	05:59	06:26	06:57	07:27	07:02	07:35
	17:13	17:49	18:22	19:55	20:26	20:53	20:56	20:30	19:44	18:54	17:11	16:55
10	07:47	07:24	06:44	06:54	06:12	05:51	06:00	06:27	06:58	07:28	07:03	07:35
	17:14	17:51	18:23	19:56	20:27	20:53	20:56	20:29	19:42	18:52	17:10	16:55
11	07:47	07:23	06:43	06:52	06:11	05:51	06:01	06:28	06:59	07:29	07:04	07:36
	17:15	17:52	18:24	19:57	20:29	20:54	20:56	20:28	19:40	18:50	17:09	16:55
12	07:47	07:22	06:41	06:50	06:10	05:51	06:01	06:29	07:00	07:30	07:05	07:37
	17:16	17:53	18:25	19:58	20:30	20:54	20:55	20:26	19:39	18:49	17:08	16:55
13	07:46	07:21	06:40	06:49	06:09	05:51	06:02	06:30	07:01	07:31	07:06	07:38
	17:17	17:54	18:27	19:59	20:31	20:55	20:55	20:25	19:37	18:47	17:07	16:56
14	07:46	07:20	06:38	06:47	06:08	05:51	06:03	06:31	07:02	07:32	07:08	07:39
	17:18	17:55	18:28	20:00	20:31	20:55	20:54	20:24	19:35	18:46	17:07	16:56
15	07:46	07:18	06:36	06:46	06:07	05:51	06:04	06:32	07:03	07:33	07:09	07:39
	17:19	17:57	18:29	20:01	20:32	20:56	20:54	20:22	19:34	18:44	17:06	16:56
16	07:45	07:17	06:35	06:44	06:06	05:51	06:04	06:33	07:04	07:34	07:10	07:40
	17:20	17:58	18:30	20:02	20:33	20:56	20:53	20:21	19:32	18:43	17:05	16:56
17	07:45	07:16	06:33	06:43	06:05	05:51	06:05	06:34	07:04	07:35	07:11	07:41
	17:21	17:59	18:31	20:04	20:34	20:56	20:52	20:20	19:30	18:41	17:04	16:57
18	07:44	07:14	06:31	06:41	06:04	05:51	06:06	06:35	07:05	07:36	07:12	07:41
	17:23	18:00	18:32	20:05	20:35	20:57	20:52	20:18	19:29	18:40	17:03	16:57
19	07:44	07:13	06:30	06:40	06:03	05:51	06:07	06:36	07:06	07:37	07:13	07:42
	17:24	18:01	18:33	20:06	20:36	20:57	20:51	20:17	19:27	18:38	17:02	16:57
20	07:43	07:12	06:28	06:38	06:02	05:51	06:08	06:37	07:07	07:39	07:15	07:43
	17:25	18:03	18:34	20:07	20:37	20:57	20:50	20:15	19:25	18:37	17:02	16:58
21	07:43	07:10	06:26	06:37	06:01	05:51	06:08	06:38	07:08	07:40	07:16	07:43
	17:26	18:04	18:35	20:08	20:38	20:58	20:50	20:14	19:23	18:35	17:01	16:58
22	07:42	07:09	06:25	06:35	06:01	05:52	06:09	06:39	07:09	07:41	07:17	07:44
	17:27	18:05	18:36	20:09	20:39	20:58	20:49	20:12	19:22	18:34	17:00	16:59
23	07:41	07:07	06:23	06:34	06:00	05:52	06:10	06:40	07:10	07:42	07:18	07:44
	17:28	18:06	18:37	20:10	20:40	20:58	20:48	20:11	19:20	18:32	17:00	16:59
24	07:41	07:06	06:21	06:32	05:59	05:52	06:11	06:41	07:11	07:43	07:19	07:45
	17:30	18:07	18:38	20:11	20:41	20:58	20:47	20:09	19:18	18:31	16:59	17:00
25	07:40	07:04	06:20	06:31	05:58	05:52	06:12	06:42	07:12	06:44	07:20	07:45
	17:31	18:09	18:39	20:12	20:42	20:58	20:46	20:08	19:17	17:30	16:59	17:00
26	07:39	07:03	06:18	06:29	05:58	05:53	06:13	06:43	07:13	06:45	07:21	07:46
	17:32	18:10	18:40	20:13	20:43	20:58	20:45	20:06	19:15	17:28	16:58	17:01
27	07:38	07:02	06:16	06:28	05:57	05:53	06:14	06:44	07:14	06:46	07:23	07:46
	17:33	18:11	18:41	20:14	20:43	20:58	20:45	20:05	19:13	17:27	16:58	17:01
28	07:38	07:00	06:15	06:27	05:56	05:53	06:15	06:45	07:15	06:48	07:24	07:46
	17:34	18:12	18:43	20:15	20:44	20:58	20:44	20:03	19:12	17:25	16:57	17:02
29	07:37		07:13	06:25	05:56	05:54	06:16	06:46	07:16	06:49	07:25	07:46
	17:36		19:44	20:16	20:45	20:58	20:43	20:02	19:10	17:24	16:57	17:03
30	07:36		07:11	06:24	05:55	05:54	06:17	06:47	07:17	06:50	07:26	07:47
	17:37		19:45	20:17	20:46	20:58	20:42	20:00	19:08	17:23	16:57	17:04
31	07:35		07:10		05:55		06:17	06:48		06:51		07:47
	17:38		19:46		20:47		20:41	19:58		17:22		17:04
Potential sun hours	298	298	370	398	448	451	458	427	375	346	299	289
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

Calculation: SHADOW\_Worse case WTG: MA02 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (2)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:47 17:06	07:34 17:39	06:59 18:13	07:08 19:47	07:45-08:11/26 20:18	06:23 20:47
2	07:47 17:06	07:33 17:41	06:57 18:14	07:07 19:48	07:43-08:11/28 20:19	06:22 20:48
3	07:47 17:07	07:32 17:42	06:55 18:15	07:05 19:49	07:40-08:10/30 20:20	06:20 20:49
4	07:47 17:08	07:31 17:43	06:54 18:17	07:03 19:50	07:39-08:11/32 20:21	06:19 20:50
5	07:48 17:09	07:30 17:44	06:52 18:18	07:02 19:51	07:20-07:21/1 07:37-08:10/33	06:18 20:22
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 19:52	07:19-07:24/5 07:34-08:10/36	06:20 20:23
7	07:47 17:11	07:28 17:47	06:49 18:20	06:58 19:53	07:17-07:24/7 07:33-08:10/37	06:15 20:24
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	07:15-07:25/10 07:31-08:09/38	06:14 20:26
9	07:47 17:13	07:26 17:49	06:46 18:22	06:55 19:55	07:14-07:26/12 07:29-08:09/40	06:13 20:27
10	07:47 17:14	07:25 17:51	06:44 18:23	06:54 19:56	07:12-07:26/14 07:27-08:08/41	06:12 20:28
11	07:47 17:15	07:23 17:52	06:43 18:24	06:52 19:57	07:11-07:26/15 07:28-08:08/40	06:11 20:29
12	07:47 17:16	07:22 17:53	06:41 18:25	06:50 19:58	07:09-07:26/17 07:28-08:06/38	06:10 20:30
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	07:07-07:25/18 07:28-08:05/37	06:09 20:31
14	07:46 17:18	07:20 17:55	06:38 18:28	06:47 20:00	07:06-07:25/19 07:29-08:04/35	06:08 20:32
15	07:46 17:19	07:18 17:57	06:36 18:29	06:46 20:01	07:04-07:24/20 07:29-08:02/33	06:07 20:33
16	07:45 17:20	07:17 17:58	06:35 18:30	06:44 20:03	07:03-07:23/20 07:31-08:01/30	06:06 20:33
17	07:45 17:21	07:16 17:59	06:33 18:31	06:43 20:04	07:02-07:22/20 07:31-07:59/28	06:05 20:34
18	07:44 17:23	07:14 18:00	06:31 18:32	06:41 20:05	07:03-07:21/18 07:33-07:57/24	06:04 20:35
19	07:44 17:24	07:13 18:01	06:30 18:33	06:40 20:06	07:04-07:18/14 07:35-07:54/19	06:03 20:36
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	07:07-07:16/9 07:39-07:51/12	06:02 20:37
21	07:43 17:26	07:10 18:04	06:26 18:35	06:37 20:08	06:33-06:34/1	06:01 20:38
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	06:32-06:35/3	06:01 20:39
23	07:41 17:28	07:07 18:06	06:23 18:37	06:34 20:10	06:31-06:36/5	06:00 20:58
24	07:41 17:30	07:06 18:07	06:21 18:38	06:32 20:11	06:29-06:36/7	05:59 20:58
25	07:40 17:31	07:05 18:09	06:20 18:39	06:31 20:12	06:27-06:36/9	05:58 20:58
26	07:39 17:32	07:03 18:10	06:18 18:40	06:30 20:13	06:27-06:37/10	05:53 20:58
27	07:38 17:33	07:02 18:11	06:16 18:42	06:28 20:14	06:26-06:37/11	05:53 20:58
28	07:38 17:35	07:00 18:12	06:15 18:43	06:27 20:15	06:26-06:38/12	05:54 20:58
29	07:37 17:36	07:00 18:13	06:15 18:43	06:25 20:16	06:25-06:37/12	05:54 20:58
30	07:36 17:37	07:00 18:14	06:15 18:43	06:25 20:16	06:25-06:38/13	05:54 20:58
31	07:35 17:38	07:00 18:15	06:15 18:43	06:24 20:17	06:24-06:38/14	05:54 20:58
Potential sun hours	298	298	370	398	448	451
Sum of minutes with flicker	0	0	103	856	97	566

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

Calculation: SHADOW\_Worse case WTG: MA02 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (2)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:55 06:24-06:43/19 20:58	06:19 20:40	06:49 07:10-07:25/15 19:57 07:27-08:07/40	07:18 19:07	06:52 17:20	07:27 16:56
2	05:55 06:25-06:44/19 20:58	06:19 20:39	06:50 07:11-07:25/14 19:55 07:26-08:07/41	07:20 19:05	06:53 17:19	07:28 16:56
3	05:56 06:25-06:43/18 20:58	06:20 20:37	06:51 07:12-07:24/12 19:54 07:27-08:07/40	07:21 19:03	06:55 17:18	07:29 16:56
4	05:56 06:26-06:44/18 20:58	06:21 20:36	06:52 07:12-07:22/10 19:52 07:28-08:06/38	07:22 19:02	06:56 17:17	07:30 16:56
5	05:57 06:26-06:44/18 20:58	06:22 20:35	06:53 07:13-07:20/7 19:50 07:29-08:06/37	07:23 19:00	06:57 17:16	07:31 16:56
6	05:58 06:27-06:45/18 20:57	06:23 20:34	06:54 07:14-07:19/5 19:49 07:30-08:06/36	07:24 18:58	06:58 17:15	07:32 16:55
7	05:58 06:28-06:45/17 20:57	06:24 20:33	06:55 07:15-07:16/1 19:47 07:32-08:06/34	07:25 18:57	06:59 17:13	07:33 16:55
8	05:59 06:28-06:45/17 20:57	06:25 20:32	06:56 07:33-08:05/32 19:45	07:26 18:55	07:01 17:12	07:34 16:55
9	05:59 06:29-06:45/16 20:56	06:26 20:30	06:57 07:34-08:05/31 19:44	07:27 18:54	07:02 17:11	07:35 16:55
10	06:00 06:30-06:46/16 20:56	06:27 20:29	06:58 07:36-08:04/28 19:42	07:28 18:52	07:03 17:10	07:35 16:55
11	06:01 06:30-06:45/15 20:56	06:28 20:28	06:59 07:37-08:03/26 19:40	07:29 18:50	07:04 17:09	07:36 16:55
12	06:01 06:32-06:46/14 20:55	06:29 20:26	07:00 07:39-08:02/23 19:39	07:30 18:49	07:05 17:08	07:37 16:55
13	06:02 06:33-06:46/13 20:55	06:30 20:25	07:01 07:40-08:01/21 19:37	07:31 18:47	07:06 17:07	07:38 16:56
14	06:03 06:33-06:46/13 20:54	06:31 20:24	07:02 07:41-08:00/19 19:35	07:32 18:46	07:08 17:07	07:39 16:56
15	06:04 06:34-06:46/12 20:54	06:32 20:22	07:03 07:42-07:59/17 19:34	07:33 18:44	07:09 17:06	07:39 16:56
16	06:04 06:35-06:46/11 20:53	06:33 20:21	07:04 07:44-07:57/13 19:32	07:34 18:43	07:10 17:05	07:40 16:56
17	06:05 06:36-06:46/10 20:52	06:34 20:20	07:05 07:45-07:55/10 19:30	07:35 18:41	07:11 17:04	07:41 16:57
18	06:06 06:36-06:45/9 20:52	06:35 20:18	07:06 07:47-07:52/5 19:29	07:36 18:40	07:12 17:03	07:41 16:57
19	06:07 06:38-06:45/7 20:51	06:36 20:17	07:07 19:27	07:38 18:38	07:14 17:03	07:42 16:57
20	06:08 06:39-06:45/6 20:50	06:37 20:15	07:08 19:25	07:39 18:37	07:15 17:02	07:43 16:58
21	06:09 06:41-06:45/4 20:50	06:38 20:14	07:08 19:24	07:40 18:35	07:16 17:01	07:43 16:58
22	06:09 06:43-06:45/2 20:49	06:39 20:12	07:09 19:22	07:41 18:34	07:17 17:01	07:44 16:59
23	06:10 06:44-06:45/1 20:48	06:40 07:10-07:20/10 20:11 07:42-07:55/13	07:10 19:20	07:42 18:32	07:18 17:00	07:44 16:59
24	06:11 20:47	06:41 07:08-07:22/14 20:09 07:38-07:58/20	07:11 19:18	07:43 18:31	07:19 16:59	07:45 17:00
25	06:12 20:46	06:42 07:06-07:24/18 20:08 07:36-08:00/24	07:12 19:17	06:44 17:30	07:20 16:59	07:45 17:00
26	06:13 20:45	06:43 07:05-07:25/20 20:06 07:34-08:02/28	07:13 19:15	06:45 17:28	07:21 16:58	07:46 17:01
27	06:14 20:45	06:44 07:05-07:25/20 20:05 07:32-08:03/31	07:14 19:13	06:47 17:27	07:23 16:58	07:46 17:02
28	06:15 20:44	06:45 07:06-07:26/20 20:03 07:31-08:04/33	07:15 19:12	06:48 17:26	07:24 16:57	07:46 17:02
29	06:16 20:43	06:46 07:07-07:26/19 20:02 07:30-08:05/35	07:16 19:10	06:49 17:24	07:25 16:57	07:47 17:03
30	06:17 20:42	06:47 07:08-07:26/18 20:00 07:28-08:06/38	07:17 19:08	06:50 17:23	07:26 16:57	07:47 17:04
31	06:18 20:41	06:48 07:09-07:26/17 19:58 07:27-08:06/39		06:51 17:22		07:47 17:04
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	293	417	555	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

Calculation: SHADOW\_Worse case WTG: MA03 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (3)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47 17:05	07:34 17:39	06:59 18:13	07:08 19:47	06:23 20:18	05:54 20:47	05:55 20:58	06:18 20:40	06:49 19:57	07:18 19:07	06:52 17:20	07:27 16:56
2	07:47 17:06	07:33 17:41	06:57 18:14	07:07 19:48	06:21 20:19	05:54 20:48	05:55 20:58	06:19 20:38	06:50 19:55	07:19 19:05	06:53 17:19	07:28 16:56
3	07:47 17:07	07:32 17:42	06:55 18:15	07:05 19:49	06:20 20:20	05:53 20:49	05:56 20:58	06:20 20:37	06:51 19:54	07:21 19:03	06:55 17:18	07:29 16:56
4	07:47 17:08	07:31 17:43	06:54 18:17	07:03 19:50	06:19 20:21	05:53 20:50	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02	06:56 17:17	07:30 16:56
5	07:47 17:09	07:30 17:44	06:52 18:18	07:02 19:51	06:18 20:22	05:53 20:50	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00	06:57 17:16	07:31 16:56
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:23	05:52 20:51	05:57 20:57	06:23 20:34	06:54 19:49	07:24 18:58	06:58 17:15	07:32 16:55
7	07:47 17:11	07:28 17:47	06:49 18:20	06:58 19:53	06:15 20:24	05:52 20:52	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	06:59 17:13	07:33 16:55
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	06:14 20:25	05:52 20:52	05:59 20:57	06:25 20:31	06:56 19:45	07:26 18:55	07:01 17:12	07:34 16:55
9	07:47 17:13	07:26 17:49	06:46 18:22	06:55 19:55	06:13 20:26	05:52 20:53	05:59 20:56	06:26 20:30	06:57 19:44	07:27 18:54	07:02 17:11	07:35 16:55
10	07:47 17:14	07:24 17:51	06:44 18:23	06:54 19:56	06:12 20:27	05:51 20:53	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:03 17:10	07:35 16:55
11	07:47 17:15	07:23 17:52	06:43 18:24	06:52 19:57	06:11 20:29	05:51 20:54	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:50	07:04 17:09	07:36 16:55
12	07:47 17:16	07:22 17:53	06:41 18:25	06:50 19:58	06:10 20:30	05:51 20:54	06:01 20:55	06:29 20:26	07:00 19:39	07:44-07:54/10	07:30 18:49	07:05 17:08
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	06:09 20:30	05:51 20:55	06:02 20:55	06:30 20:25	07:01 19:37	07:42-07:56/14	07:31 18:47	07:06 17:07
14	07:46 17:18	07:20 17:55	06:38 18:28	06:47 20:00	06:08 20:31	05:51 20:55	06:03 20:54	06:31 20:24	07:02 19:35	07:41-07:57/16	07:32 18:46	07:08 17:07
15	07:46 17:19	07:18 17:57	06:36 18:29	06:46 20:01	06:07 20:32	05:51 20:56	06:04 20:54	06:32 20:22	07:03 19:34	07:42-07:58/16	07:33 18:44	07:09 17:06
16	07:45 17:20	07:17 17:58	06:35 18:30	06:44 20:03	06:06 20:33	05:51 20:56	06:04 20:53	06:33 20:21	07:04 19:32	07:44-07:58/14	07:34 18:43	07:10 17:05
17	07:45 17:21	07:16 17:59	06:33 18:31	06:43 20:04	06:05 20:34	05:51 20:56	06:05 20:52	06:34 20:20	07:05 19:30	07:45-07:59/14	07:35 18:41	07:11 17:04
18	07:44 17:23	07:14 18:00	06:31 18:32	06:41 20:05	06:04 20:35	05:51 20:57	06:06 20:52	06:35 20:18	07:05 19:29	07:47-07:58/11	07:36 18:40	07:12 17:03
19	07:44 17:24	07:13 18:01	06:30 18:33	06:40 20:06	06:03 20:36	05:51 20:57	06:07 20:51	06:36 20:17	07:06 19:27	07:49-07:58/9	07:37 18:38	07:13 17:03
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	06:02 20:37	05:51 20:57	06:08 20:50	06:37 20:15	07:07 19:25	07:50-07:58/8	07:39 18:37	07:15 17:02
21	07:43 17:26	07:10 18:04	06:26 18:35	06:37 20:08	06:01 20:38	05:51 20:58	06:08 20:50	06:38 20:14	07:08 19:23	07:52-07:57/5	07:40 18:35	07:16 17:01
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	06:01 20:39	05:52 20:58	06:09 20:49	06:39 20:12	07:09 19:22	07:53-07:56/3	07:41 18:34	07:17 17:01
23	07:41 17:28	07:07 18:06	06:23 18:37	06:34 20:10	06:00 20:40	05:52 20:58	06:10 20:48	06:40 20:11	07:10 19:20		07:42 18:32	07:18 17:00
24	07:41 17:30	07:06 18:07	06:21 18:38	06:32 20:11	05:59 20:41	05:52 20:58	06:11 20:47	06:41 20:09	07:11 19:18		07:43 18:31	07:19 16:59
25	07:40 17:31	07:04 18:09	06:20 18:39	06:31 20:12	05:58 20:42	05:52 20:58	06:12 20:46	06:42 20:08	07:12 19:17		06:44 17:30	07:20 16:59
26	07:39 17:32	07:03 18:10	06:18 18:40	06:30 20:13	05:58 20:43	05:53 20:58	06:13 20:45	06:43 20:06	07:13 19:15		06:45 17:28	07:21 16:58
27	07:38 17:33	07:02 18:11	06:16 18:42	06:28 20:14	05:57 20:43	05:53 20:58	06:14 20:45	06:44 20:05	07:14 19:13		06:46 17:27	07:23 16:58
28	07:38 17:34	07:00 18:12	06:15 18:43	06:27 20:15	05:56 20:44	05:54 20:58	06:15 20:44	06:45 20:03	07:15 19:12		06:48 17:26	07:24 16:57
29	07:37 17:36		07:13 19:44	06:25 20:16	05:56 20:45	05:54 20:58	06:16 20:43	06:46 20:02	07:16 19:10		06:49 17:24	07:25 16:57
30	07:36 17:37		07:11 19:45	06:24 20:17	05:55 20:46	05:54 20:58	06:17 20:42	06:47 20:00	07:17 19:08		06:50 17:23	07:26 16:57
31	07:35 17:38		07:10 19:46		05:55 20:47		06:18 20:41	06:48 19:58			06:51 17:22	07:27 17:04
Potential sun hours	298	298	370	398	448	451	458	427	375	346	299	289
Sum of minutes with flicker	0	0	116	0	0	0	0	0	120	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

Calculation: SHADOW\_Worse case WTG: MA04 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (4)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:47 17:06	07:34 08:05-08:47/42 17:39	06:59 07:21-08:19/58 18:13	07:08 07:56-08:25/29 19:47	06:23 07:27-07:43/16 20:18	05:54 20:47
2	07:47 08:10-08:11/1 17:06	07:33 08:04-08:48/44 17:41	06:57 07:16-07:18/2 18:14 07:22-08:18/56	07:07 07:58-08:22/24 19:48	06:22 07:31-07:39/8 20:19	05:54 20:48
3	07:47 08:10-08:13/3 17:07	07:32 08:02-08:48/46 17:42	06:55 07:14-08:17/63 18:15	07:05 07:41-07:49/8 19:49 08:00-08:19/19	06:20 20:20	05:53 20:49
4	07:47 08:10-08:14/4 17:08	07:31 08:01-08:49/48 17:43	06:54 07:13-08:17/64 18:17	07:03 07:40-07:53/13 19:50 08:05-08:16/11	06:19 20:21	05:53 20:50
5	07:47 08:10-08:15/5 17:09	07:30 08:00-08:49/49 17:44	06:52 07:11-08:16/65 18:18	07:02 07:38-07:54/16 19:51	06:18 20:22	05:53 20:50
6	07:47 08:09-08:15/6 17:10	07:29 07:59-08:50/51 17:46	06:51 07:10-08:16/66 18:19	07:00 07:37-07:57/20 19:52	06:17 20:23	05:52 20:51
7	07:47 08:09-08:17/8 17:11	07:28 07:58-08:50/52 17:47	06:49 07:08-08:14/66 18:20	06:58 07:36-07:57/21 19:53	06:15 20:24	05:52 20:52
8	07:47 08:09-08:18/9 17:12	07:27 07:56-08:49/53 17:48	06:48 07:06-08:13/67 18:21	06:57 07:34-07:58/24 19:54	06:14 20:25	05:52 20:52
9	07:47 08:09-08:19/10 17:13	07:26 07:56-08:49/53 17:49	06:46 07:05-08:12/67 18:22	06:55 07:33-07:59/26 19:55	06:13 20:27	05:52 20:53
10	07:47 08:09-08:20/11 17:14	07:25 07:57-08:49/52 17:51	06:44 07:03-08:10/67 18:23	06:54 07:31-07:59/28 19:56	06:12 20:28	05:51 20:53
11	07:47 08:08-08:20/12 17:15	07:23 07:57-08:49/52 17:52	06:43 07:02-08:09/67 18:24	06:52 07:30-08:00/30 19:57	06:11 20:29	05:51 20:54
12	07:47 08:08-08:22/14 17:16	07:22 07:42-07:52/10 17:53 07:58-08:49/51	06:41 07:00-08:06/66 18:26	06:50 07:28-08:00/32 19:58	06:10 20:30	05:51 20:54
13	07:46 08:08-08:23/15 17:17	07:21 07:40-07:54/14 17:54 07:57-08:48/51	06:40 07:00-08:03/63 18:27	06:49 07:27-07:59/32 19:59	06:09 20:31	05:51 20:55
14	07:46 08:07-08:23/16 17:18	07:20 07:39-08:48/69 17:56	06:38 06:59-08:00/61 18:28	06:47 07:26-08:00/34 20:00	06:08 20:32	05:51 20:55
15	07:46 08:07-08:25/18 17:19	07:18 07:38-08:48/70 17:57	06:36 06:57-07:54/57 18:29	06:46 07:24-07:59/35 20:01	06:07 20:32	05:51 20:56
16	07:45 08:06-08:27/21 17:20	07:17 07:36-08:47/71 17:58	06:35 06:56-07:53/57 18:30	06:44 07:23-08:00/37 20:03	06:06 20:33	05:51 20:56
17	07:45 08:06-08:30/24 17:22	07:16 07:35-08:46/71 17:59	06:33 06:55-07:52/57 18:31	06:43 07:21-07:59/38 20:04	06:05 20:34	05:51 20:56
18	07:44 08:05-08:31/26 17:23	07:14 07:34-08:46/72 18:00	06:31 06:54-07:51/57 18:32	06:41 07:21-07:59/38 20:05	06:04 20:35	05:51 20:57
19	07:44 08:05-08:34/29 17:24	07:13 07:32-08:44/72 18:02	06:30 06:53-07:49/56 18:33	06:40 07:19-07:58/39 20:06	06:03 20:36	05:51 20:57
20	07:43 08:04-08:35/31 17:25	07:12 07:31-08:43/72 18:03	06:28 06:53-07:48/55 18:34	06:38 07:18-07:58/40 20:07	06:02 20:37	05:51 20:57
21	07:43 08:03-08:36/33 17:26	07:10 07:29-08:41/72 18:04	06:26 06:52-07:45/53 18:35	06:37 07:17-07:58/41 20:08	06:01 20:38	05:52 20:58
22	07:42 08:03-08:38/35 17:27	07:09 07:28-08:40/72 18:05	06:25 06:51-07:42/51 18:36	06:35 07:17-07:56/39 20:09	06:01 20:39	05:52 20:58
23	07:41 08:02-08:39/37 17:29	07:07 07:27-08:38/71 18:06	06:23 06:52-07:40/48 18:37	06:34 07:18-07:56/38 20:10	06:00 20:40	05:52 20:58
24	07:41 08:01-08:40/39 17:30	07:06 07:25-08:36/71 18:07	06:21 06:51-07:34/43 18:38	06:32 07:18-07:54/36 20:11	05:59 20:41	05:52 20:58
25	07:40 08:01-08:41/40 17:31	07:05 07:24-08:33/69 18:09	06:20 06:51-07:33/42 18:39	06:31 07:19-07:54/35 20:12	05:58 20:42	05:53 20:58
26	07:39 08:03-08:43/40 17:32	07:03 07:22-08:28/66 18:10	06:18 06:52-07:33/41 18:41	06:30 07:20-07:53/33 20:13	05:58 20:43	05:53 20:58
27	07:38 08:03-08:44/41 17:33	07:02 07:21-08:19/58 18:11	06:16 06:52-07:32/40 18:42	06:28 07:20-07:51/31 20:14	05:57 20:43	05:53 20:58
28	07:38 08:04-08:45/41 17:35	07:00 07:19-08:19/60 18:12	06:15 06:52-07:31/39 18:43	06:27 07:21-07:49/28 20:15	05:56 20:44	05:54 20:58
29	07:37 08:05-08:45/40 17:36		07:13 07:53-08:30/37 19:44	06:25 07:23-07:48/25 20:16	05:56 20:45	05:54 20:58
30	07:36 08:07-08:46/39 17:37		07:12 07:53-08:28/35 19:45	06:24 07:24-07:45/21 20:17	05:55 20:46	05:54 20:58
31	07:35 08:06-08:47/41 17:38		07:10 07:54-08:26/32 19:46		05:55 20:47	
Potential sun hours	298	298	370	398	448	451
Sum of minutes with flicker	689	1704	1698	921	24	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

Calculation: SHADOW\_Worse case WTG: MA04 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (4)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:55 20:58	06:19 20:40	06:49 07:29-07:59/30 19:57	07:19 07:40-08:44/64 19:07	06:52 07:26-08:19/53 17:20	07:27 07:50-08:02/12 16:56
2	05:55 20:58	06:20 20:38	06:50 07:30-07:58/28 19:55	07:20 07:40-08:46/66 19:05	06:53 07:26-08:19/53 17:19	07:28 07:51-08:02/11 16:56
3	05:56 20:58	06:20 20:37	06:51 07:31-07:57/26 19:54	07:21 07:41-08:48/67 19:03	06:55 07:26-08:19/53 17:18	07:29 07:52-08:02/10 16:56
4	05:56 20:58	06:21 20:36	06:52 07:31-07:55/24 19:52	07:22 07:42-08:49/67 19:02	06:56 07:28-08:20/52 17:17	07:30 07:53-08:02/9 16:56
5	05:57 20:58	06:22 20:35	06:53 07:32-07:53/21 19:50	07:23 07:43-08:50/67 19:00	06:57 07:29-08:19/50 17:16	07:31 07:54-08:02/8 16:56
6	05:58 20:57	06:23 20:34	06:54 07:32-07:52/20 19:49	07:24 07:44-08:50/66 18:58	06:58 07:30-08:19/49 17:15	07:32 07:55-08:01/6 16:55
7	05:58 20:57	06:24 20:33	06:55 07:33-07:50/17 19:47	07:25 07:45-08:51/66 18:57	06:59 07:31-08:19/48 17:14	07:33 07:56-08:01/5 16:55
8	05:59 20:57	06:25 20:32	06:56 07:34-07:47/13 19:45	07:26 07:46-08:51/65 18:55	07:01 07:33-08:19/46 17:12	07:34 07:57-08:01/4 16:55
9	05:59 20:56	06:26 20:30	06:57 07:35-07:44/9 19:44	07:27 07:47-08:52/65 18:54	07:02 07:35-08:19/44 17:11	07:35 07:58-08:01/3 16:55
10	06:00 20:56	06:27 20:29	06:58 07:51-08:15/24 19:42	07:28 07:48-08:52/64 18:52	07:03 07:36-08:18/42 17:10	07:35 07:59-08:00/1 16:55
11	06:01 20:56	06:28 07:38-07:49/11 20:28	06:59 07:49-08:17/28 19:40	07:29 07:49-07:53/4 18:50	07:04 07:37-08:18/41 17:09	07:36 16:55
12	06:01 20:55	06:29 07:35-07:52/17 20:26	07:00 07:47-08:18/31 19:39	07:30 07:54-08:52/58 18:49	07:05 07:38-08:18/40 17:08	07:37 16:56
13	06:02 20:55	06:30 07:32-07:54/22 20:25	07:01 07:45-08:19/34 19:37	07:31 07:53-08:52/59 18:47	07:06 07:37-08:17/40 17:08	07:38 16:56
14	06:03 20:54	06:31 07:30-07:56/26 20:24	07:02 07:43-08:20/37 19:35	07:32 07:52-08:51/59 18:46	07:08 07:36-08:17/41 17:07	07:39 16:56
15	06:04 20:54	06:32 07:29-07:58/29 20:22	07:03 07:42-08:21/39 19:34	07:33 07:54-08:51/57 18:44	07:09 07:35-08:16/41 17:06	07:39 16:56
16	06:04 20:53	06:33 07:28-07:59/31 20:21	07:04 07:41-08:21/40 19:32	07:34 07:55-09:03/68 18:43	07:10 07:36-08:16/40 17:05	07:40 16:56
17	06:05 20:52	06:34 07:26-08:00/34 20:20	07:05 07:40-08:21/41 19:30	07:35 07:56-09:06/70 18:41	07:11 07:35-08:15/40 17:04	07:41 16:57
18	06:06 20:52	06:35 07:24-07:59/35 20:18	07:06 07:39-08:22/43 19:29	07:36 07:57-09:08/71 18:40	07:12 07:35-08:14/39 17:03	07:41 16:57
19	06:07 20:51	06:36 07:23-08:00/37 20:17	07:07 07:39-08:22/43 19:27	07:38 07:58-09:10/72 18:38	07:13 07:36-08:13/37 17:03	07:42 16:57
20	06:08 20:50	06:37 07:22-08:01/39 20:15	07:08 07:38-08:25/47 19:25	07:39 07:59-09:11/72 18:37	07:15 07:38-08:13/35 17:02	07:43 16:58
21	06:09 20:50	06:38 07:22-08:01/39 20:14	07:09 07:38-08:28/50 19:24	07:40 08:00-09:12/72 18:35	07:16 07:39-08:12/33 17:01	07:43 16:58
22	06:09 20:49	06:39 07:21-08:02/41 20:12	07:09 07:37-08:30/53 19:22	07:41 08:02-09:14/72 18:34	07:17 07:40-08:11/31 17:01	07:44 16:59
23	06:10 20:48	06:40 07:22-08:02/40 20:11	07:10 07:37-08:31/54 19:20	07:42 08:03-09:15/72 18:32	07:18 07:41-08:10/29 17:00	07:44 16:59
24	06:11 20:47	06:41 07:23-08:02/39 20:09	07:11 07:36-08:32/56 19:18	07:43 08:04-09:16/72 18:31	07:19 07:42-08:09/27 16:59	07:45 17:00
25	06:12 20:46	06:42 07:24-08:02/38 20:08	07:12 07:36-08:33/57 19:17	06:44 07:05-08:16/71 17:30	07:20 07:44-08:08/24 16:59	07:45 17:00
26	06:13 20:45	06:43 07:24-08:02/38 20:06	07:13 07:36-08:33/57 19:15	06:45 07:06-08:16/70 17:28	07:21 07:45-08:06/21 16:58	07:46 17:01
27	06:14 20:45	06:44 07:25-08:02/37 20:05	07:14 07:37-08:34/57 19:13	06:47 07:08-08:18/70 17:27	07:23 07:46-08:04/18 16:58	07:46 17:02
28	06:15 20:44	06:45 07:26-08:01/35 20:03	07:15 07:37-08:34/57 19:12	06:48 07:09-08:18/69 17:26	07:24 07:47-08:03/16 16:58	07:46 17:02
29	06:16 20:43	06:46 07:27-08:01/34 20:02	07:16 07:38-08:37/59 19:10	06:49 07:10-07:24/14 17:24	07:25 07:48-08:03/15 16:57	07:46 17:03
30	06:17 20:42	06:47 07:28-08:00/32 20:00	07:17 07:39-08:41/62 19:08	06:50 07:11-07:20/9 17:23	07:26 07:49-08:03/14 16:57	07:47 17:04
31	06:18 20:41	06:48 07:28-08:00/32 19:58		06:51 07:27-08:19/52 17:22		07:47 17:04
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	0	686	1185	2053	1112	69

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

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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## SHADOW - Calendar per WTG

Calculation: SHADOW\_Worse case WTG: MA05 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (5)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47	07:34	06:59	07:08	06:23	05:55	05:55	06:19	06:49	07:19	06:52	07:27
	17:06	17:40	18:13	19:47	20:18	20:47	20:58	20:40	19:57	19:07	17:21	16:57
2	07:47	07:33	06:57	07:07	06:22	05:54	05:56	06:20	06:50	07:20	06:54	07:28
	17:07	17:41	18:15	19:48	20:19	20:48	20:58	20:39	19:55	19:05	17:19	16:56
3	07:47	07:32	06:56	07:05	06:20	05:54	05:56	06:21	06:51	07:21	06:55	07:29
	17:07	17:42	18:16	19:49	20:20	20:49	20:58	20:37	19:54	19:04	17:18	16:56
4	07:48	07:31	06:54	07:03	06:19	05:53	05:57	06:22	06:52	07:22	06:56	07:30
	17:08	17:43	18:17	19:50	20:21	20:50	20:58	20:36	19:52	19:02	17:17	16:56
5	07:48	07:30	06:53	07:02	06:18	05:53	05:57	06:23	06:53	07:23	06:57	07:31
	17:09	17:45	18:18	19:51	20:22	20:50	20:58	20:35	19:50	19:00	17:16	16:56
6	07:48	07:29	06:51	07:00	06:17	05:53	05:58	06:24	06:54	07:24	06:58	07:32
	17:10	17:46	18:19	19:52	20:24	20:51	20:57	20:34	19:49	18:59	17:15	16:56
7	07:47	07:28	06:49	06:59	06:16	05:52	05:58	06:25	06:55	07:25	06:59	07:33
	17:11	17:47	18:20	19:53	20:25	20:52	20:57	20:33	19:47	18:57	17:14	16:56
8	07:47	07:27	06:48	06:57	06:14	05:52	05:59	06:26	06:56	07:26	07:01	07:34
	17:12	17:48	18:21	19:54	20:26	20:52	20:57	20:32	19:46	18:55	17:13	16:56
9	07:47	07:26	06:46	06:55	06:13	05:52	06:00	06:26	06:57	07:27	07:02	07:35
	17:13	17:50	18:22	19:55	20:27	20:53	20:56	20:30	19:44	18:54	17:12	16:56
10	07:47	07:25	06:45	06:54	06:12	05:52	06:00	06:27	06:58	07:28	07:03	07:35
	17:14	17:51	18:23	19:56	20:28	20:53	20:56	20:29	19:42	18:52	17:11	16:56
11	07:47	07:23	06:43	06:52	06:11	05:52	06:01	06:28	06:59	07:29	07:04	07:36
	17:15	17:52	18:25	19:57	20:29	20:54	20:56	20:28	19:41	18:51	17:10	16:56
12	07:47	07:22	06:41	06:51	06:10	05:51	06:02	06:29	07:00	07:30	07:05	07:37
	17:16	17:53	18:26	19:58	20:30	20:54	20:55	20:27	19:39	18:49	17:09	16:56
13	07:46	07:21	06:40	06:49	06:09	05:51	06:02	06:30	07:01	07:31	07:07	07:38
	17:17	17:54	18:27	20:00	20:31	20:55	20:55	20:25	19:37	18:47	17:08	16:56
14	07:46	07:20	06:38	06:48	06:08	05:51	06:03	06:31	07:02	07:32	07:08	07:39
	17:18	17:56	18:28	20:01	20:32	20:55	20:54	20:24	19:36	18:46	17:07	16:56
15	07:46	07:18	06:36	06:46	06:07	05:51	06:04	06:32	07:03	07:33	07:09	07:39
	17:19	17:57	18:29	20:02	20:33	20:56	20:54	20:22	19:34	18:44	17:06	16:56
16	07:45	07:17	06:35	06:44	06:06	05:51	06:05	06:33	07:04	07:34	07:10	07:40
	17:21	17:58	18:30	20:03	20:34	20:56	20:53	20:21	19:32	18:43	17:05	16:57
17	07:45	07:16	06:33	06:43	06:05	05:51	06:06	06:34	07:05	07:35	07:11	07:41
	17:22	17:59	18:31	20:04	20:34	20:56	20:52	20:20	19:30	18:41	17:04	16:57
18	07:44	07:14	06:32	06:41	06:04	05:51	06:06	06:35	07:06	07:37	07:12	07:41
	17:23	18:01	18:32	20:05	20:35	20:57	20:52	20:18	19:29	18:40	17:04	16:57
19	07:44	07:13	06:30	06:40	06:03	05:51	06:07	06:36	07:07	07:38	07:14	07:42
	17:24	18:02	18:33	20:06	20:36	20:57	20:51	20:17	19:27	18:38	17:03	16:58
20	07:43	07:12	06:28	06:38	06:02	05:52	06:08	06:37	07:08	07:39	07:15	07:43
	17:25	18:03	18:34	20:07	20:37	20:57	20:50	20:15	19:25	18:37	17:02	16:58
21	07:43	07:10	06:27	06:37	06:02	05:52	06:09	06:38	07:09	07:40	07:16	07:43
	17:26	18:04	18:35	20:08	20:38	20:58	20:50	20:14	19:24	18:35	17:01	16:58
22	07:42	07:09	06:25	06:35	06:01	05:52	06:10	06:39	07:10	07:41	07:17	07:44
	17:28	18:05	18:36	20:09	20:39	20:58	20:49	20:12	19:22	18:34	17:01	16:59
23	07:41	07:08	06:23	06:34	06:00	05:52	06:11	06:40	07:11	07:42	07:18	07:44
	17:29	18:06	18:37	20:10	20:40	20:58	20:48	20:11	19:20	18:33	17:00	16:59
24	07:41	07:06	06:22	06:33	05:59	05:52	06:11	06:41	07:12	07:43	07:19	07:45
	17:30	18:08	18:39	20:11	20:41	20:58	20:47	20:09	19:19	18:31	17:00	17:00
25	07:40	07:05	06:20	06:31	05:59	05:53	06:12	06:42	07:13	06:44	07:20	07:45
	17:31	18:09	18:40	20:12	20:42	20:58	20:46	20:08	19:17	17:30	16:59	17:01
26	07:39	07:03	06:18	06:30	05:58	05:53	06:13	06:43	07:14	06:45	07:22	07:46
	17:32	18:10	18:41	20:13	20:43	20:58	20:46	20:06	19:15	17:28	16:59	17:01
27	07:39	07:02	06:17	06:28	05:57	05:53	06:14	06:44	07:15	06:47	07:23	07:46
	17:34	18:11	18:42	20:14	20:44	20:58	20:45	20:05	19:14	17:27	16:58	17:02
28	07:38	07:00	06:15	06:27	05:57	05:54	06:15	06:45	07:16	06:48	07:24	07:46
	17:35	18:12	18:43	20:15	20:44	20:58	20:44	20:03	19:12	17:26	16:58	17:03
29	07:37		07:13	06:26	05:56	05:54	06:16	06:46	07:17	06:49	07:25	07:47
	17:36		19:44	20:16	20:45	20:58	20:43	20:02	19:10	17:24	16:57	17:03
30	07:36		07:12	06:24	05:56	05:55	06:17	06:47	07:18	06:50	07:26	07:47
	17:37		19:45	20:17	20:46	20:58	20:42	20:00	19:09	17:23	16:57	17:04
31	07:35		07:10		05:55		06:18	06:48		06:51		07:47
	17:38		19:46		20:47		20:41	19:59		17:22		17:05
Potential sun hours	298	298	370	398	447	451	458	427	375	346	299	289
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

Calculation: SHADOW\_Worse case WTG: MA06 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (6)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47 14:39-15:14/35 17:06 08:38-09:03/25	07:34 06:59 17:40 18:13	07:08 06:23 19:47 20:18	06:23 05:55 20:47 20:58	05:55 05:55 20:39 19:57	06:19 06:49 19:07 17:21	06:52 07:19 17:21 16:57	07:27 14:36-14:50/14 16:57 08:32-08:42/10				
2	07:47 14:40-15:14/34 17:07 08:40-09:04/24	07:33 06:57 17:41 18:14	07:07 06:22 19:48 20:19	06:22 05:54 20:48 20:58	05:54 05:56 20:38 19:55	06:20 06:51 19:05 17:19	06:50 06:55 17:19 16:56	07:28 14:34-14:53/19 16:56 08:30-08:44/14				
3	07:47 14:41-15:14/33 17:07 08:41-09:04/23	07:32 06:55 17:42 18:16	07:05 06:20 19:49 20:20	06:20 05:54 20:49 20:58	05:54 05:57 20:37 19:54	06:21 06:51 19:03 17:18	06:52 07:22 17:18 16:56	07:29 14:33-14:55/22 16:56 08:30-08:45/15				
4	07:47 14:42-15:14/32 17:08 08:41-09:04/23	07:31 06:54 17:43 18:17	07:03 06:19 19:50 20:21	06:19 05:53 20:49 20:58	05:53 05:57 20:36 19:52	06:22 06:52 19:02 17:17	06:56 07:22 17:17 16:56	07:30 14:32-14:56/24 16:56 08:29-08:47/18				
5	07:47 14:43-15:13/30 17:09 08:41-09:03/22	07:30 06:52 17:45 18:18	07:02 06:18 19:51 20:22	06:18 05:53 20:50 20:58	05:53 05:57 20:35 19:50	06:23 06:53 17:23 16:57	07:23 06:57 17:16 16:56	07:31 14:31-14:58/27 16:56 08:29-08:48/19				
6	07:47 14:45-15:13/28 17:10 08:42-09:03/21	07:29 06:51 17:46 18:19	07:00 06:17 19:52 20:23	06:17 05:53 20:51 20:57	05:58 06:24 20:34 19:49	06:54 07:24 18:59 17:15	06:58 07:24 17:15 16:56	07:32 14:31-14:59/28 16:56 08:29-08:49/20				
7	07:47 14:46-15:13/27 17:11 08:44-09:03/19	07:28 06:49 17:47 18:20	06:59 06:16 19:53 20:24	06:16 05:52 20:51 20:57	05:58 06:25 20:33 19:47	06:55 07:25 18:57 17:14	06:59 07:25 17:14 16:56	07:33 14:30-15:00/30 16:56 08:28-08:50/22				
8	07:47 14:48-15:12/24 17:12 08:45-09:03/18	07:27 06:48 17:48 18:21	06:57 06:14 19:54 20:25	06:14 05:52 20:52 20:57	05:59 06:25 20:31 19:45	06:56 07:26 18:55 17:13	07:00 07:26 17:13 16:56	07:34 14:30-15:02/32 16:56 08:29-08:51/22				
9	07:47 14:50-15:12/22 17:13 08:46-09:02/16	07:26 06:46 17:50 18:22	06:55 06:13 19:55 20:26	06:13 05:52 20:53 20:56	06:00 06:26 20:30 19:44	06:57 07:27 18:54 17:12	07:02 07:27 17:12 16:56	07:34 14:30-15:03/33 16:56 08:29-08:52/23				
10	07:47 14:51-15:10/19 17:14 08:48-09:02/14	07:24 06:44 17:51 18:23	06:54 06:12 19:56 20:27	06:12 05:52 20:53 20:56	06:00 06:27 20:29 19:42	06:58 07:28 18:52 17:11	07:03 07:28 17:11 16:56	07:35 14:30-15:04/34 16:56 08:29-08:53/24				
11	07:47 14:54-15:08/14 17:15 08:49-09:00/11	07:23 06:43 17:52 18:24	06:52 06:11 19:57 20:28	06:11 05:52 20:54 20:56	06:01 06:28 20:28 19:40	06:59 07:29 18:51 17:10	07:04 07:29 17:10 16:56	07:36 14:30-15:05/35 16:56 08:29-08:54/25				
12	07:46 14:58-15:06/8 17:16 08:52-08:58/6	07:22 06:41 17:53 18:26	06:10 06:10 19:58 20:29	06:10 05:51 20:54 20:55	06:02 06:26 20:36 19:39	07:00 07:30 18:49 17:09	07:05 07:30 17:09 16:56	07:37 14:29-15:05/36 16:56 08:30-08:54/24				
13	07:46 17:17 17:17	07:21 06:40 17:54 18:27	06:49 06:09 19:59 20:30	06:09 05:51 20:55 20:55	06:02 06:26 20:25 19:37	07:01 07:31 18:47 17:08	07:06 07:31 17:08 16:56	07:38 14:29-15:06/37 16:56 08:29-08:54/25				
14	07:46 17:18 17:18	07:20 06:38 17:56 18:28	06:47 06:08 20:00 20:31	06:08 05:51 20:55 20:54	06:31 06:31 20:24 19:35	07:02 07:32 18:46 17:07	07:08 07:32 17:07 16:56	07:39 14:30-15:07/37 16:56 08:30-08:55/25				
15	07:45 17:19 17:19	07:18 06:36 17:57 18:29	06:46 06:07 20:01 20:32	06:07 05:51 20:54 20:52	06:32 07:03 19:34 18:44	07:03 07:33 17:09 16:56	07:09 07:33 17:09 16:56	07:39 14:30-15:08/38 16:56 08:30-08:56/26				
16	07:45 17:21 17:21	07:17 06:35 17:58 18:30	06:44 06:06 20:03 20:33	06:06 05:51 20:56 20:53	06:33 07:04 19:32 18:43	07:04 07:34 17:05 16:56	07:10 07:34 17:05 16:56	07:40 14:30-15:08/38 16:57 08:30-08:56/26				
17	07:45 17:22 17:22	07:16 06:33 17:59 18:31	06:43 06:05 20:04 20:34	06:05 05:51 20:56 20:52	06:34 07:05 19:30 18:41	07:05 07:35 17:01 16:56	07:11 07:35 17:04 16:57	07:41 14:30-15:09/39 16:57 08:30-08:57/27				
18	07:44 17:23 17:23	07:14 06:31 18:00 18:32	06:41 06:04 20:05 20:35	06:04 05:51 20:57 20:52	06:06 06:35 20:18 19:29	07:06 07:36 18:40 17:04	07:06 07:36 17:04 16:57	07:42 14:31-15:10/39 16:58 08:31-08:58/27				
19	07:44 17:24 17:24	07:13 06:30 18:02 18:33	06:40 06:03 20:06 20:36	06:03 05:51 20:57 20:51	06:07 06:36 20:17 19:27	07:07 07:38 18:38 17:03	07:07 07:38 17:03 16:58	07:42 14:31-15:10/39 16:58 08:31-08:58/27				
20	07:43 17:25 17:25	07:12 06:28 18:03 18:34	06:38 06:02 20:07 20:37	06:02 05:52 20:57 20:50	06:08 06:37 20:15 19:25	07:08 07:39 18:37 17:02	07:08 07:39 17:02 16:58	07:43 14:31-15:11/40 16:58 08:32-08:59/27				
21	07:43 17:26 17:26	07:10 06:26 18:04 18:35	06:37 06:02 20:08 20:38	06:02 05:52 20:57 20:50	06:09 06:38 20:14 19:24	07:09 07:40 18:35 17:01	07:09 07:40 17:01 16:58	07:43 14:31-15:11/40 16:58 08:32-08:59/27				
22	07:42 17:28 17:28	07:09 06:25 18:05 18:36	06:35 06:01 20:09 20:39	06:01 05:52 20:58 20:49	06:39 07:10 20:12 19:22	07:10 07:41 18:34 17:01	07:10 07:41 17:01 16:58	07:44 14:32-15:12/40 16:59 08:33-09:00/27				
23	07:41 17:29 17:29	07:07 06:23 18:06 18:37	06:34 06:00 20:10 20:40	06:00 05:52 20:58 20:48	06:40 07:11 20:11 19:20	07:11 07:42 18:33 17:00	07:11 07:42 17:00 16:59	07:44 14:32-15:12/40 16:59 08:33-09:00/27				
24	07:41 17:30 17:30	07:06 06:22 18:08 18:38	06:33 05:59 20:11 20:41	05:59 05:52 20:47 20:58	06:41 07:12 20:09 19:19	07:12 07:43 18:31 17:00	07:12 07:43 17:00 16:57	07:45 14:34-15:13/39 17:00 08:34-09:01/27				
25	07:40 17:31 17:31	07:05 06:20 18:09 18:39	06:31 05:59 20:12 20:42	05:59 05:53 20:58 20:46	06:42 07:13 20:08 19:17	07:13 07:44 17:30 16:59	07:13 07:44 16:59 16:57	07:45 14:34-15:13/39 17:01 08:34-09:01/27				
26	07:39 17:32 17:32	07:03 06:18 18:10 18:41	06:30 05:58 20:13 20:42	05:58 05:53 20:58 20:45	06:43 07:14 20:06 19:15	07:14 07:45 17:28 16:59	07:14 07:45 16:59 16:57	07:45 14:34-15:13/39 17:01 08:34-09:01/27				
27	07:38 17:33 17:33	07:02 06:17 18:11 18:42	06:28 05:57 20:14 20:43	05:57 05:53 20:58 20:44	06:44 07:15 20:05 19:13	07:15 07:46 17:27 16:58	07:15 07:46 16:58 16:56	07:46 14:35-15:14/39 17:02 08:36-09:02/26				
28	07:38 17:35 17:35	07:00 06:15 18:12 18:43	06:27 05:57 20:15 20:44	05:57 05:54 20:58 20:44	06:45 07:16 20:03 19:12	07:16 07:47 17:26 16:58	07:16 07:47 16:58 16:56	07:46 14:36-15:14/38 17:02 08:36-09:02/26				
29	07:37 17:36 17:36	07:00 06:15 18:12 18:43	06:26 05:56 20:16 20:45	05:56 05:54 20:58 20:43	06:46 07:17 20:02 19:10	07:17 07:48 17:24 16:57	07:17 07:48 16:57 16:56	07:46 14:36-15:14/38 17:03 08:36-09:02/26				
30	07:36 17:37 17:37	07:00 06:15 18:12 18:43	06:25 05:55 20:17 20:46	05:55 05:54 20:58 20:42	06:47 07:18 20:00 19:08	07:18 07:49 17:23 16:57	07:18 07:49 16:57 16:56	07:47 14:37-15:14/37 17:04 08:37-09:02/25				
31	07:35 17:38 17:38	07:00 06:15 18:12 18:43	06:24 05:54 20:18 20:47	05:54 05:54 20:47 20:58	06:48 07:19 20:01 19:58	07:19 07:50 17:22 16:57	07:19 07:50 16:57 16:56	07:47 14:38-15:14/36 17:05 08:37-09:02/25				
Potential sun hours	298	298	370	398	447	451	458	427	375	346	299	289
Sum of minutes with flicker	528	0	0	0	0	0	0	0	0	0	11	1802

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

Calculation: SHADOW\_Worse case WTG: MA07 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (7)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	
1	07:47 17:06	07:34 17:40	06:59 18:13	07:08 19:47	07:42-08:22/40 20:18	06:23 18:46-19:54/68 20:47	05:55 18:58-20:20/82
2	07:47 17:07	07:33 17:41	06:57 18:14	07:07 19:48	07:42-08:20/38 20:19	06:22 18:46-19:54/68 20:48	05:54 18:58-20:20/82
3	07:47 17:07	07:32 17:42	06:56 18:16	07:05 19:49	07:43-08:18/35 20:20	06:20 18:46-19:58/72 20:49	05:54 19:00-20:20/80
4	07:47 17:08	07:31 17:43	06:54 18:17	07:03 19:50	07:44-08:17/33 20:21	06:19 18:47-19:59/72 20:49	05:53 19:00-20:21/81
5	07:47 17:09	07:30 17:45	06:52 18:18	07:02 19:51	07:45-08:15/30 20:22	06:18 18:46-19:59/73 20:50	05:53 19:00-20:20/80
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 19:52	07:47-08:13/26 20:23	06:17 18:46-20:00/74 20:51	05:53 19:01-20:21/80
7	07:47 17:11	07:28 17:47	06:49 18:20	06:59 19:53	07:49-08:10/21 20:24	06:16 18:47-20:01/74 20:52	05:52 19:02-20:21/79
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	19:22-19:27/5 07:52-08:05/13	06:14 20:25 18:47-20:03/76	05:52 19:03-20:21/78
9	07:47 17:13	07:26 17:50	06:46 18:22	06:55 19:55	19:15-19:34/19 20:26	06:13 20:26 18:47-20:04/76	05:52 19:04-20:22/78
10	07:47 17:14	07:24 17:51	06:44 18:23	06:54 19:56	19:10-19:35/25 20:27	06:12 20:27 18:48-20:05/77	05:52 19:04-20:21/77
11	07:47 17:15	07:23 17:52	06:43 18:24	06:52 19:57	19:07-19:36/29 20:28	06:11 20:28 18:48-20:06/77	05:52 19:04-20:21/77
12	07:46 17:16	07:22 17:53	06:41 18:26	06:51 19:58	19:04-19:37/33 20:29	06:10 20:29 18:49-20:07/78	05:51 19:05-20:22/77
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	19:01-19:37/36 20:30	06:09 20:30 18:49-20:08/79	05:51 19:05-20:22/77
14	07:46 17:18	07:20 17:56	06:38 18:28	06:47 20:00	19:00-19:39/39 20:31	06:08 20:31 18:49-20:09/80	05:51 19:06-20:22/76
15	07:45 17:19	07:18 17:57	06:36 18:29	06:46 20:01	18:58-19:39/41 20:32	06:07 20:32 18:50-20:09/79	05:51 19:06-20:22/76
16	07:45 17:21	07:17 17:58	06:35 18:30	06:44 20:03	18:57-19:41/44 20:33	06:06 20:33 18:50-20:10/80	05:51 19:07-20:22/75
17	07:45 17:22	07:16 17:59	06:33 18:31	06:43 20:04	18:55-19:41/46 20:34	06:05 20:34 18:50-20:11/81	05:51 19:07-20:22/75
18	07:44 17:23	07:14 18:00	06:31 18:32	06:41 20:05	18:54-19:43/49 20:35	06:04 20:35 18:50-20:12/82	05:51 19:07-20:24/77
19	07:44 17:24	07:13 18:02	06:30 18:33	06:40 20:06	18:52-19:43/51 20:36	06:03 20:36 18:51-20:13/82	05:51 19:09-20:24/75
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	18:52-19:45/53 20:37	06:02 20:37 18:52-20:14/82	05:52 19:09-20:24/75
21	07:43 17:26	07:10 18:04	06:27 18:35	06:37 20:08	18:51-19:46/55 20:38	06:02 20:38 18:52-20:14/82	05:52 19:09-20:24/75
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	18:50-19:46/56 20:39	06:01 20:39 18:52-20:16/83	05:52 19:09-20:24/75
23	07:41 17:29	07:07 18:06	06:23 18:37	06:34 20:10	18:49-19:48/59 20:40	06:00 20:40 18:53-20:16/83	05:52 19:09-20:24/75
24	07:41 17:30	07:06 18:08	06:22 18:38	06:33 20:11	18:48-19:48/60 20:41	05:59 20:41 18:53-20:16/83	05:52 19:09-20:25/76
25	07:40 17:31	07:05 18:09	06:20 18:39	06:31 20:12	18:48-19:50/62 20:42	05:59 20:42 18:54-20:17/83	05:53 19:09-20:24/75
26	07:39 17:32	07:03 18:10	06:18 18:41	06:30 20:13	18:48-19:51/63 20:43	05:58 20:43 18:55-20:18/83	05:53 19:09-20:24/75
27	07:38 17:34	07:02 18:11	06:17 18:42	06:28 20:14	18:47-19:51/64 20:44	05:57 20:44 18:55-20:18/83	05:53 19:10-20:25/75
28	07:38 17:35	07:00 18:12	06:15 18:43	06:27 20:15	18:47-19:52/65 20:45	05:57 20:45 18:56-20:19/83	05:54 19:09-20:25/76
29	07:37 17:36		07:13 19:44	06:26 20:16	18:47-19:54/67 20:46	05:56 20:46 18:56-20:19/83	05:54 19:10-20:26/76
30	07:36 17:37		07:12 19:45	06:24 20:17	18:46-19:53/67 20:47	05:56 20:47 18:57-20:20/83	05:55 19:09-20:26/77
31	07:35 17:38		07:10 19:46			05:55 20:47 18:57-20:19/82	
Potential sun hours	298	298	370	398	447	451	2312
Sum of minutes with flicker	0	0	783	1324	2433		2312

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

Calculation: SHADOW\_Worse case WTG: MA07 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (7)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:55 19:10-20:26/76	06:19 18:59-20:16/77	06:49 19:07-19:35/28	07:19 07:39-08:00/21	06:52	07:27
	20:58	20:40	19:57	19:07	17:21	16:57
2	05:56 19:09-20:26/77	06:20 18:59-20:15/76	06:50 19:09-19:34/25	07:20 07:40-07:57/17	06:53	07:28
	20:58	20:38	19:55	19:05	17:19	16:56
3	05:56 19:09-20:27/78	06:21 18:57-20:13/76	06:51 19:13-19:32/19	07:21 07:42-07:52/10	06:55	07:29
	20:58	20:37	19:54	19:03	17:18	16:56
4	05:57 19:08-20:26/78	06:22 18:57-20:12/75	06:52 19:18-19:24/6	07:22	06:56	07:30
	20:58	20:36	19:52	19:02	17:17	16:56
5	05:57 19:09-20:27/78	06:23 18:56-20:11/75	06:53 07:45-08:06/21	07:23	06:57	07:31
	20:58	20:35	19:50	19:00	17:16	16:56
6	05:58 19:08-20:27/79	06:24 18:56-20:10/74	06:54 07:43-08:08/25	07:24	06:58	07:32
	20:57	20:34	19:49	18:59	17:15	16:56
7	05:58 19:08-20:27/79	06:24 18:56-20:09/73	06:55 07:40-08:10/30	07:25	06:59	07:33
	20:57	20:33	19:47	18:57	17:14	16:56
8	05:59 19:07-20:27/80	06:25 18:56-20:08/72	06:56 07:38-08:11/33	07:26	07:01	07:34
	20:57	20:31	19:45	18:55	17:13	16:56
9	06:00 19:07-20:27/80	06:26 18:55-20:07/72	06:57 07:37-08:12/35	07:27	07:02	07:34
	20:56	20:30	19:44	18:54	17:12	16:56
10	06:00 19:07-20:28/81	06:27 18:55-20:06/71	06:58 07:35-08:13/38	07:28	07:03	07:35
	20:56	20:29	19:42	18:52	17:11	16:56
11	06:01 19:06-20:27/81	06:28 18:55-20:03/68	06:59 07:34-08:14/40	07:29	07:04	07:36
	20:56	20:28	19:40	18:51	17:10	16:56
12	06:02 19:06-20:28/82	06:29 18:55-20:02/67	07:00 07:33-08:14/41	07:30	07:05	07:37
	20:55	20:26	19:39	18:49	17:09	16:56
13	06:02 19:06-20:28/82	06:30 18:55-20:02/67	07:01 07:32-08:15/43	07:31	07:06	07:38
	20:55	20:25	19:37	18:47	17:08	16:56
14	06:03 19:06-20:28/82	06:31 18:55-20:01/66	07:02 07:31-08:15/44	07:32	07:08	07:39
	20:54	20:24	19:35	18:46	17:07	16:56
15	06:04 19:05-20:28/83	06:32 18:55-20:00/65	07:03 07:30-08:15/45	07:33	07:09	07:39
	20:54	20:22	19:34	18:44	17:06	16:56
16	06:05 19:04-20:28/84	06:33 18:55-19:59/64	07:04 07:30-08:15/45	07:34	07:10	07:40
	20:53	20:21	19:32	18:43	17:05	16:57
17	06:05 19:04-20:28/84	06:34 18:55-19:57/62	07:05 07:29-08:15/46	07:35	07:11	07:41
	20:52	20:20	19:30	18:41	17:04	16:57
18	06:06 19:04-20:28/84	06:35 18:55-19:56/61	07:06 07:29-08:15/46	07:36	07:12	07:41
	20:52	20:18	19:29	18:40	17:04	16:57
19	06:07 19:03-20:26/83	06:36 18:54-19:54/60	07:07 07:29-08:15/46	07:38	07:13	07:42
	20:51	20:17	19:27	18:38	17:03	16:58
20	06:08 19:03-20:26/83	06:37 18:54-19:52/58	07:08 07:28-08:14/46	07:39	07:15	07:43
	20:50	20:15	19:25	18:37	17:02	16:58
21	06:09 19:03-20:25/82	06:38 18:55-19:51/56	07:09 07:29-08:14/45	07:40	07:16	07:43
	20:50	20:14	19:24	18:35	17:01	16:58
22	06:10 19:02-20:25/83	06:39 18:55-19:50/55	07:10 07:30-08:13/43	07:41	07:17	07:44
	20:49	20:12	19:22	18:34	17:01	16:59
23	06:10 19:02-20:24/82	06:40 18:56-19:48/52	07:11 07:31-08:12/41	07:42	07:18	07:44
	20:48	20:11	19:20	18:33	17:00	16:59
24	06:11 19:02-20:23/81	06:41 18:56-19:47/51	07:12 07:32-08:11/39	07:43	07:19	07:45
	20:47	20:09	19:19	18:31	17:00	17:00
25	06:12 19:01-20:22/81	06:42 18:57-19:45/48	07:13 07:33-08:10/37	06:44	07:20	07:45
	20:46	20:08	19:17	17:30	16:59	17:01
26	06:13 19:01-20:21/80	06:43 18:58-19:44/46	07:14 07:33-08:08/35	06:45	07:21	07:45
	20:45	20:06	19:15	17:28	16:59	17:01
27	06:14 19:00-20:20/80	06:44 18:59-19:43/44	07:15 07:34-08:07/33	06:47	07:22	07:46
	20:44	20:05	19:13	17:27	16:58	17:02
28	06:15 19:00-20:20/80	06:45 19:00-19:41/41	07:16 07:35-08:05/30	06:48	07:24	07:46
	20:44	20:03	19:12	17:26	16:58	17:02
29	06:16 19:00-20:19/79	06:46 19:01-19:40/39	07:17 07:36-08:04/28	06:49	07:25	07:46
	20:43	20:02	19:10	17:24	16:57	17:03
30	06:17 19:00-20:18/78	06:47 19:02-19:38/36	07:18 07:37-08:01/24	06:50	07:26	07:47
	20:42	20:00	19:08	17:23	16:57	17:04
31	06:18 18:59-20:17/78	06:48 19:04-19:37/33		06:51		07:47
	20:41	19:58		17:22		17:05
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	2498	1880	1070	48	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

Calculation: SHADOW\_Worse case WTG: MA08 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (8)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:47 09:00-09:37/37 17:06 15:34-16:21/47	07:34 07:54-08:27/33 17:40 16:19-16:44/25	06:59 07:27-08:33/66 18:13	07:08 19:47	06:23 20:18	05:54 20:47
2	07:47 09:01-09:37/36 17:06 15:34-16:22/48	07:33 07:53-08:27/34 17:41 16:19-16:45/26	06:57 07:27-08:32/65 18:14	07:07 19:48	06:22 20:19	05:54 20:48
3	07:47 09:02-09:37/35 17:07 15:35-16:23/48	07:32 07:52-08:28/36 17:42 16:19-16:46/27	06:56 07:27-08:30/63 18:16	07:05 19:49	06:20 20:20	05:54 20:49
4	07:48 09:03-09:37/34 17:08 15:36-16:24/48	07:31 07:51-08:28/37 17:43 16:19-16:47/28	06:54 07:28-08:30/62 18:17	07:03 19:50	06:19 20:21	05:53 20:50
5	07:48 09:05-09:36/31 17:09 15:37-16:25/48	07:30 07:50-08:28/38 17:45 16:20-16:48/28	06:52 07:29-08:28/59 18:18	07:02 19:51	06:18 20:22	05:53 20:50
6	07:48 09:05-09:35/30 17:10 15:37-16:26/49	07:29 07:49-08:29/40 17:46 16:20-16:49/29	06:51 07:30-08:27/57 18:19	07:00 19:52	06:17 20:24	05:53 20:51
7	07:47 09:07-09:34/27 17:11 15:38-16:27/49	07:28 07:48-08:30/42 17:47 16:20-16:50/30	06:49 07:30-08:26/56 18:20	06:59 19:53	06:16 20:25	05:52 20:52
8	07:47 09:09-09:33/24 17:12 15:39-16:27/48	07:27 07:47-08:31/44 17:48 16:20-16:50/30	06:48 07:32-08:25/53 18:21	06:57 19:54	06:14 20:26	05:52 20:52
9	07:47 09:11-09:32/21 17:13 15:40-16:28/48	07:26 07:45-08:31/46 17:49 16:21-16:52/31	06:46 07:33-08:23/50 18:22	06:55 19:55	06:13 20:27	05:52 20:53
10	07:47 09:13-09:31/18 17:14 15:41-16:28/47	07:25 07:44-08:32/48 17:51 16:21-16:53/32	06:45 07:34-08:20/46 18:23	06:54 19:56	06:12 20:28	05:52 20:53
11	07:47 08:08-08:10/2 15:42-16:27/45 17:15 09:16-09:28/12	07:23 07:43-08:33/50 17:52 16:22-16:54/32	06:43 07:36-08:19/43 18:24	06:52 19:57	06:11 20:29	05:51 20:54
12	07:47 08:08-08:11/3 17:16 15:43-16:28/45	07:22 07:42-08:34/52 17:53 16:23-16:55/32	06:41 07:37-08:16/39 18:26	06:51 19:58	06:10 20:30	05:51 20:54
13	07:46 08:08-08:13/5 17:17 15:45-16:28/43	07:21 07:40-08:34/54 17:54 16:23-16:55/32	06:40 07:39-08:13/34 18:27	06:49 19:59	06:09 20:31	05:51 20:55
14	07:46 08:07-08:14/7 17:18 15:45-16:27/42	07:20 07:39-08:35/56 17:56 16:24-16:57/33	06:38 07:42-08:10/28 18:28	06:47 20:01	06:08 20:32	05:51 20:55
15	07:46 08:07-08:15/8 17:19 15:47-16:28/41	07:18 07:38-08:36/58 17:57 16:26-16:58/32	06:36 07:45-08:06/21 18:29	06:46 20:02	06:07 20:33	05:51 20:56
16	07:45 08:06-08:16/10 17:20 15:48-16:27/39	07:17 07:36-08:35/59 17:58 16:26-16:58/32	06:35 07:52-07:57/5 18:30	06:44 20:03	06:06 20:34	05:51 20:56
17	07:45 08:06-08:18/12 17:22 15:51-16:27/36	07:16 07:35-08:36/61 17:59 16:28-16:59/31	06:33 18:31	06:43 20:04	06:05 20:34	05:51 20:57
18	07:44 08:05-08:18/13 17:23 15:52-16:28/36	07:14 07:34-08:36/62 18:00 16:30-17:00/30	06:31 18:32	06:41 20:05	06:04 20:35	05:51 20:57
19	07:44 08:05-08:20/15 17:24 15:56-16:30/34	07:13 07:32-08:36/64 18:02 16:31-16:59/28	06:30 18:33	06:40 20:06	06:03 20:36	05:51 20:57
20	07:43 08:04-08:21/17 17:25 15:58-16:31/33	07:12 07:31-08:36/65 18:03 16:34-16:57/23	06:28 18:34	06:38 20:07	06:02 20:37	05:51 20:57
21	07:43 08:03-08:21/18 17:26 15:59-16:32/33	07:10 07:29-08:35/66 18:04 16:36-16:53/17	06:27 18:35	06:37 20:08	06:01 20:38	05:52 20:58
22	07:42 08:03-08:23/20 17:27 16:02-16:34/32	07:09 07:28-08:36/68 18:05	06:25 18:36	06:35 20:09	06:01 20:39	05:52 20:58
23	07:41 08:02-08:23/21 16:04-16:20/16 17:29 16:21-16:34/13	07:07 07:27-08:36/69 18:06	06:23 18:37	06:34 20:10	06:00 20:40	05:52 20:58
24	07:41 08:01-08:24/23 16:07-16:17/10 17:30 16:20-16:35/15	07:06 07:26-08:35/69 18:08	06:22 18:38	06:32 20:11	05:59 20:41	05:52 20:58
25	07:40 08:00-08:24/24 17:31 16:20-16:36/16	07:05 07:26-08:35/69 18:09	06:20 18:40	06:31 20:12	05:58 20:42	05:53 20:58
26	07:39 08:00-08:26/26 17:32 16:20-16:38/18	07:03 07:26-08:34/68 18:10	06:18 18:41	06:30 20:13	05:58 20:43	05:53 20:58
27	07:39 07:59-08:26/27 17:33 16:20-16:39/19	07:02 07:27-08:34/67 18:11	06:17 18:42	06:28 20:14	05:57 20:44	05:53 20:58
28	07:38 07:58-08:26/28 17:35 16:20-16:40/20	07:00 07:27-08:33/66 18:12	06:15 18:43	06:27 20:15	05:57 20:44	05:54 20:59
29	07:37 07:57-08:27/30 17:36 16:19-16:41/22		07:13 19:44	06:26 20:16	05:56 20:45	05:54 20:58
30	07:36 07:56-08:27/31 17:37 16:19-16:42/23		07:12 19:45	06:24 20:17	05:55 20:46	05:55 20:58
31	07:35 07:55-08:27/32 17:38 16:19-16:43/24		07:10 19:46		05:55 20:47	
Potential sun hours	298	298	370	398	448	451
Sum of minutes with flicker	1812	2129	747	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

Calculation: SHADOW\_Worse case WTG: MA08 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (8)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 08:17-08:55/38 19:07	06:52 07:14-08:02/48 17:21 15:51-16:22/31	07:27 07:50-07:52/2 15:24-16:09/45 16:57 08:58-09:10/12
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 08:15-08:57/42 19:05	06:54 07:15-08:01/46 17:19 15:50-16:21/31	07:28 08:55-09:13/18 16:56 15:23-16:10/47
3	05:56 20:58	06:21 20:37	06:51 19:54	07:21 08:13-08:58/45 19:03	06:55 07:16-08:00/44 17:18 15:50-16:20/30	07:29 08:54-09:15/21 16:56 15:23-16:11/48
4	05:57 20:58	06:22 20:36	06:52 19:52	07:22 08:11-08:59/48 19:02	06:56 07:18-08:00/42 17:17 15:50-16:20/30	07:30 08:53-09:17/24 16:56 15:23-16:11/48
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 08:09-09:01/52 19:00	06:57 07:19-07:59/40 17:16 15:50-16:19/29	07:31 08:52-09:19/27 16:56 15:23-16:12/49
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 08:08-09:02/54 18:59	06:58 07:20-07:58/38 17:15 15:49-16:18/29	07:32 08:51-09:21/30 16:56 15:23-16:12/49
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 08:06-09:03/57 18:57	06:59 07:21-07:58/37 17:14 15:49-16:16/27	07:33 08:51-09:22/31 16:55 15:23-16:11/48
8	05:59 20:57	06:25 20:32	06:56 19:45	07:26 08:05-09:03/58 18:55	07:01 07:23-07:58/35 17:13 15:50-16:16/26	07:34 08:50-09:24/34 16:55 15:23-16:11/48
9	06:00 20:57	06:26 20:30	06:57 19:44	07:27 08:04-09:04/60 18:54	07:02 07:24-07:58/34 17:11 15:50-16:15/25	07:35 08:50-09:25/35 16:55 15:23-16:11/48
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 08:02-09:04/62 18:52	07:03 07:25-07:58/33 17:10 15:50-16:14/24	07:35 08:50-09:26/36 16:55 15:24-16:11/47
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 08:01-09:05/64 18:51	07:04 07:26-07:58/32 17:09 15:50-16:13/23	07:36 08:50-09:27/37 16:56 15:24-16:11/47
12	06:02 20:55	06:29 20:26	07:00 19:39	07:30 08:00-09:05/65 18:49	07:05 07:28-07:59/31 17:09 15:51-16:13/22	07:37 08:50-09:28/38 16:56 15:24-16:12/48
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 08:00-09:06/66 18:47	07:07 07:29-07:59/30 17:08 15:51-16:13/22	07:38 08:50-09:29/39 16:56 15:24-16:11/47
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 07:59-09:06/67 18:46	07:08 07:30-07:58/28 17:07 15:52-16:12/20	07:39 08:50-09:30/40 16:56 15:24-16:11/47
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 07:59-09:07/68 18:44	07:09 07:31-07:58/27 17:06 15:52-16:11/19	07:39 08:50-09:31/41 16:56 15:25-16:12/47
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 07:58-09:07/69 18:43	07:10 07:33-07:58/25 17:05 15:53-16:11/18	07:40 08:51-09:32/41 16:56 15:26-16:12/46
17	06:05 20:52	06:34 20:20	07:05 19:30	07:35 07:58-09:07/69 18:41	07:11 07:34-07:58/24 17:04 15:54-16:10/16	07:41 08:51-09:32/41 16:57 15:25-16:12/47
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 07:57-09:07/70 18:40	07:12 07:35-07:58/23 15:41-15:51/10 17:03 15:54-16:09/15	07:42 08:51-09:33/42 16:57 15:26-16:12/46
19	06:07 20:51	06:36 20:17	07:07 19:27	07:38 07:58-09:07/69 18:38	07:14 07:36-07:57/21 15:38-15:54/16 17:03 15:55-16:08/13	07:42 08:51-09:33/42 16:57 15:26-16:12/46
20	06:08 20:50	06:37 20:15	07:08 19:25	07:39 07:59-09:06/67 18:37 17:11-17:20/9	07:15 07:38-07:58/20 17:02 15:37-16:09/32	07:43 08:52-09:34/42 16:58 15:27-16:13/46
21	06:09 20:50	06:38 20:14	07:09 19:24	07:40 08:00-09:06/66 18:35 17:06-17:24/18	07:16 07:39-07:57/18 17:01 15:35-16:08/33	07:43 08:53-09:35/42 16:58 15:27-16:13/46
22	06:10 20:49	06:39 20:12	07:10 19:22	07:41 08:02-09:07/65 18:34 17:04-17:28/24	07:17 07:40-07:57/17 17:01 15:34-16:07/33	07:44 08:53-09:35/42 16:59 15:28-16:14/46
23	06:10 20:48	06:40 20:11	07:11 19:20	07:42 08:03-09:06/63 18:32 17:01-17:30/29	07:18 07:41-07:56/15 17:00 15:32-16:06/34	07:44 08:53-09:35/42 16:59 15:28-16:14/46
24	06:11 20:47	06:41 20:09	07:12 19:19	07:43 08:04-09:06/62 18:31 16:59-17:30/31	07:19 07:43-07:56/13 17:00 15:30-16:05/35	07:45 08:54-09:36/42 17:00 15:29-16:15/46
25	06:12 20:46	06:42 20:08	07:13 19:17	06:44 07:05-08:05/60 17:30 15:57-16:29/32	07:20 07:44-07:56/12 16:59 15:29-16:05/36	07:45 08:54-09:36/42 17:00 15:29-16:15/46
26	06:13 20:46	06:43 20:06	07:14 19:15	06:45 07:06-08:05/59 17:28 15:55-16:28/33	07:22 07:45-07:55/10 16:58 15:27-16:06/39	07:46 08:55-09:37/42 17:01 15:29-16:16/47
27	06:14 20:45	06:44 20:05	07:15 19:13	06:47 07:08-08:05/57 17:27 15:55-16:27/32	07:23 07:46-07:55/9 16:58 15:26-16:07/41	07:46 08:56-09:37/41 17:02 15:31-16:17/46
28	06:15 20:44	06:45 20:03	07:16 08:29-08:45/16 19:12	06:48 07:09-08:04/55 17:26 15:54-16:26/32	07:24 07:47-07:54/7 16:58 15:25-16:07/42	07:46 08:56-09:37/41 17:02 15:31-16:17/46
29	06:16 20:43	06:46 20:02	07:17 08:24-08:50/26 19:10	06:49 07:10-08:04/54 17:24 15:53-16:25/32	07:25 07:48-07:53/5 16:57 15:25-16:08/43	07:47 08:57-09:37/40 17:03 15:31-16:18/47
30	06:17 20:42	06:47 20:00	07:18 08:20-08:52/32 19:08	06:50 07:11-08:03/52 17:23 15:52-16:24/32	07:26 07:49-07:52/3 16:57 15:24-16:09/45	07:47 08:57-09:37/40 17:04 15:32-16:19/47
31	06:18 20:41	06:48 19:59		06:51 07:13-08:03/50 17:22 15:52-16:24/32		07:47 08:59-09:37/38 17:05 15:33-16:19/46
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	0	0	74	2169	1656	2578

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

Calculation: SHADOW\_Worse case WTG: MA09 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (9)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:47 08:10-08:44/34   17:06	07:34 07:56-08:28/32   17:40	06:59   18:13	07:08   19:47	06:23   20:18	05:54 06:22-06:49/27   20:47
2	07:47 08:10-08:43/33   17:06	07:33 07:55-08:28/33   17:41	06:57   18:14	07:07   19:48	06:22   20:19	05:54 06:21-06:49/28   20:48
3	07:47 08:10-08:43/33   17:07	07:32 07:55-08:28/33   17:42	06:55   18:15	07:05   19:49	06:20   20:20	05:53 06:22-06:49/27   20:49
4	07:47 08:10-08:42/32   17:08	07:31 07:56-08:28/32   17:43	06:54   18:17	07:03   19:50	06:19   20:21	05:53 06:22-06:50/28   20:50
5	07:47 08:10-08:41/31   17:09	07:30 07:57-08:28/31   17:44	06:52   18:18	07:02   19:51	06:18   20:22	05:53 06:22-06:49/27   20:50
6	07:47 08:09-08:38/29   17:10	07:29 07:58-08:27/29   17:46	06:51   18:19	07:00   19:52	06:17   20:23	05:52 06:22-06:49/27   20:51
7	07:47 08:09-08:39/30   17:11	07:28 07:59-08:27/28   17:47	06:49   18:20	06:58   19:53	06:15   20:24	05:52 06:23-06:50/27   20:52
8	07:47 08:09-08:39/30   17:12	07:27 07:59-08:25/26   17:48	06:48   18:21	06:57   19:54	06:14   20:25	05:52 06:23-06:50/27   20:52
9	07:47 08:09-08:40/31   17:13	07:26 08:00-08:24/24   17:49	06:46   18:22	06:55   19:55	06:13   20:26	05:52 06:24-06:50/26   20:53
10	07:47 08:09-08:40/31   17:14	07:25 08:02-08:23/21   17:51	06:44   18:23	06:54   19:56	06:12   20:28	05:51 06:23-06:49/26   20:53
11	07:47 08:08-08:40/32   17:15	07:23 08:04-08:21/17   17:52	06:43   18:24	06:52   19:57	06:11   20:29	05:51 06:24-06:50/26   20:54
12	07:47 08:08-08:40/32   17:16	07:22 08:07-08:18/11   17:53	06:41   18:26	06:50   19:58	06:10   20:30	05:51 06:24-06:50/26   20:54
13	07:46 08:08-08:41/33   17:17	07:21   17:54	06:40   18:27	06:49   19:59	06:09   20:31	05:51 06:24-06:50/26   20:55
14	07:46 08:07-08:40/33   17:18	07:20   17:56	06:38   18:28	06:47   20:00	06:08 06:31-06:38/7   20:31	05:51 06:25-06:50/25   20:55
15	07:46 08:07-08:40/33   17:19	07:18   17:57	06:36   18:29	06:46   20:01	06:07 06:29-06:41/12   20:32	05:51 06:25-06:50/25   20:56
16	07:45 08:06-08:40/34   17:20	07:17   17:58	06:35   18:30	06:44   20:03	06:06 06:28-06:42/14   20:33	05:51 06:25-06:50/25   20:56
17	07:45 08:06-08:40/34   17:22	07:16   17:59	06:33   18:31	06:43   20:04	06:05 06:27-06:43/16   20:34	05:51 06:25-06:50/25   20:56
18	07:44 08:05-08:39/34   17:23	07:14   18:00	06:31   18:32	06:41   20:05	06:04 06:25-06:44/19   20:35	05:51 06:26-06:50/24   20:57
19	07:44 08:05-08:39/34   17:24	07:13   18:02	06:30   18:33	06:40   20:06	06:03 06:25-06:46/21   20:36	05:51 06:27-06:51/24   20:57
20	07:43 08:04-08:38/34   17:25	07:12   18:03	06:28   18:34	06:38   20:07	06:02 06:24-06:46/22   20:37	05:51 06:27-06:51/24   20:57
21	07:43 08:03-08:36/33   17:26	07:10   18:04	06:26   18:35	06:37   20:08	06:01 06:22-06:46/24   20:38	05:52 06:27-06:51/24   20:58
22	07:42 08:03-08:36/33   17:27	07:09   18:05	06:25   18:36	06:35   20:09	06:01 06:22-06:47/25   20:39	05:52 06:27-06:51/24   20:58
23	07:41 08:02-08:33/31   17:29	07:07   18:06	06:23   18:37	06:34   20:10	06:00 06:22-06:48/26   20:40	05:52 06:27-06:51/24   20:58
24	07:41 08:02-08:32/30   17:30	07:06   18:07	06:21   18:38	06:32   20:11	05:59 06:21-06:48/27   20:41	05:52 06:28-06:52/24   20:58
25	07:40 08:01-08:30/29   17:31	07:05   18:09	06:20   18:39	06:31   20:12	05:58 06:21-06:48/27   20:42	05:53 06:28-06:52/24   20:58
26	07:39 08:01-08:28/27   17:32	07:03   18:10	06:18   18:40	06:30   20:13	05:58 06:21-06:48/27   20:43	05:53 06:27-06:52/25   20:58
27	07:38 08:00-08:27/27   17:33	07:02   18:11	06:16   18:42	06:28   20:14	05:57 06:21-06:48/27   20:43	05:53 06:28-06:53/25   20:58
28	07:38 07:59-08:28/29   17:35	07:00   18:12	06:15   18:43	06:27   20:15	05:56 06:21-06:49/28   20:44	05:54 06:28-06:53/25   20:58
29	07:37 07:58-08:28/30   17:36		07:13   19:44	06:25   20:16	05:56 06:21-06:49/28   20:45	05:54 06:29-06:54/25   20:58
30	07:36 07:57-08:28/31   17:37		07:12   19:45	06:24   20:17	05:55 06:21-06:49/28   20:46	05:54 06:28-06:54/26   20:58
31	07:35 07:56-08:28/32   17:38		07:10   19:46		05:55 06:21-06:49/28   20:47	
Potential sun hours	298	298	370	398	448	451
Sum of minutes with flicker	979	317	0	0	406	766

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

Calculation: SHADOW\_Worse case WTG: MA09 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (9)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:55 06:28-06:54/26 20:58	06:19 20:40 19:57	06:49 19:57 19:07	07:19 19:07 19:07	06:52 07:31-07:53/22 17:20	07:27 07:50-08:22/32 16:56
2	05:55 06:28-06:54/26 20:58	06:20 20:38 19:55	06:50 19:55 19:05	07:20 19:05 19:05	06:53 07:30-07:54/24 17:19	07:28 07:51-08:22/31 16:56
3	05:56 06:28-06:54/26 20:58	06:20 20:37 19:54	06:51 19:54 19:03	07:21 19:03 19:03	06:55 07:28-07:55/27 17:18	07:29 07:52-08:23/31 16:56
4	05:56 06:29-06:55/26 20:58	06:21 20:36 19:52	06:52 19:52 19:02	07:22 19:02 19:02	06:56 07:28-07:57/29 17:17	07:30 07:53-08:23/30 16:56
5	05:57 06:29-06:56/27 20:58	06:22 20:35 19:50	06:53 19:50 19:00	07:23 19:00 19:00	06:57 07:27-07:57/30 17:16	07:31 07:54-08:24/30 16:56
6	05:58 06:29-06:55/26 20:57	06:23 20:34 19:49	06:54 19:49 18:58	07:24 18:58 18:58	06:58 07:26-07:58/32 17:15	07:32 07:55-08:24/29 16:55
7	05:58 06:29-06:56/27 20:57	06:24 20:33 19:47	06:55 19:47 18:57	07:25 18:57 18:57	06:59 07:26-07:58/32 17:14	07:33 07:56-08:27/31 16:55
8	05:59 06:29-06:56/27 20:57	06:25 20:31 19:45	06:56 19:45 18:55	07:26 18:55 18:55	07:01 07:26-07:59/33 17:12	07:34 07:57-08:29/32 16:55
9	05:59 06:29-06:56/27 20:56	06:26 20:30 19:44	06:57 19:44 18:54	07:27 18:54 18:54	07:02 07:26-07:59/33 17:11	07:35 07:58-08:31/33 16:55
10	06:00 06:29-06:57/28 20:56	06:27 20:29 19:42	06:58 19:42 18:52	07:28 18:52 18:52	07:03 07:27-07:59/32 17:10	07:35 07:59-08:32/33 16:55
11	06:01 06:29-06:56/27 20:56	06:28 20:28 19:40	06:59 19:40 18:50	07:29 18:50 18:50	07:04 07:27-07:59/32 17:09	07:36 08:00-08:34/34 16:55
12	06:02 06:29-06:57/28 20:55	06:29 20:26 19:39	07:00 19:39 18:49	07:30 18:49 18:49	07:05 07:29-08:00/31 17:08	07:37 08:01-08:35/34 16:56
13	06:02 06:30-06:57/27 20:55	06:30 20:25 19:37	07:01 19:37 18:47	07:31 18:47 18:47	07:06 07:30-08:00/30 17:08	07:38 08:01-08:35/34 16:56
14	06:03 06:29-06:57/28 20:54	06:31 20:24 19:35	07:02 19:35 18:46	07:32 18:46 18:46	07:08 07:31-08:00/29 17:07	07:39 08:02-08:36/34 16:56
15	06:04 06:30-06:57/27 20:54	06:32 20:22 19:34	07:03 19:34 18:44	07:33 18:44 18:44	07:09 07:32-07:59/27 17:06	07:39 08:03-08:37/34 16:56
16	06:05 06:30-06:58/28 20:53	06:33 20:21 19:32	07:04 19:32 18:43	07:34 18:43 18:43	07:10 07:34-08:01/27 17:05	07:40 08:04-08:38/34 16:56
17	06:05 06:31-06:58/27 20:52	06:34 20:20 19:30	07:05 19:30 18:41	07:35 18:41 18:41	07:11 07:35-08:04/29 17:04	07:41 08:04-08:38/34 16:57
18	06:06 06:31-06:58/27 20:52	06:35 20:18 19:29	07:06 19:29 18:40	07:36 18:40 18:40	07:12 07:36-08:06/30 17:03	07:41 08:05-08:39/34 16:57
19	06:07 06:31-06:57/26 20:51	06:36 20:17 19:27	07:07 19:27 18:38	07:38 18:38 18:38	07:13 07:36-08:07/31 17:03	07:42 08:05-08:39/34 16:57
20	06:08 06:31-06:57/26 20:50	06:37 20:15 19:25	07:08 19:25 18:37	07:39 18:37 18:37	07:15 07:38-08:11/33 17:02	07:43 08:06-08:40/34 16:58
21	06:09 06:32-06:57/25 20:50	06:38 20:14 19:24	07:08 19:24 18:35	07:40 18:35 18:35	07:16 07:39-08:12/33 17:01	07:43 08:06-08:40/34 16:58
22	06:09 06:33-06:57/24 20:49	06:39 20:12 19:22	07:09 19:22 18:34	07:41 18:34 18:34	07:17 07:40-08:14/34 17:01	07:44 08:07-08:41/34 16:59
23	06:10 06:33-06:57/24 20:48	06:40 20:11 19:20	07:10 19:20 18:32	07:42 18:32 18:32	07:18 07:41-08:15/34 17:00	07:44 08:07-08:41/34 16:59
24	06:11 06:34-06:55/21 20:47	06:41 20:09 19:18	07:11 19:18 18:31	07:43 18:31 18:31	07:19 07:42-08:16/34 16:59	07:45 08:08-08:42/34 17:00
25	06:12 06:35-06:55/20 20:46	06:42 20:08 19:17	07:12 19:17 17:30	07:44 17:30 17:30	07:20 07:44-08:18/34 16:59	07:45 08:08-08:42/34 17:00
26	06:13 06:36-06:54/18 20:45	06:43 20:06 19:15	07:13 19:15 17:28	07:45 17:28 17:28	07:21 07:45-08:19/34 16:58	07:45 08:08-08:42/34 17:01
27	06:14 06:38-06:53/15 20:45	06:44 20:05 19:13	07:14 19:13 17:27	07:46 17:27 17:27	07:23 07:46-08:19/33 16:58	07:46 08:09-08:43/34 17:02
28	06:15 06:39-06:52/13 20:44	06:45 20:03 19:12	07:15 19:12 17:26	07:48 17:26 17:26	07:24 07:47-08:20/33 16:58	07:46 08:09-08:43/34 17:02
29	06:16 06:41-06:50/9 20:43	06:46 20:02 19:10	07:16 19:10 17:24	07:49 17:24 17:24	07:25 07:48-08:21/33 16:57	07:46 08:09-08:43/34 17:03
30	06:17 06:43-06:47/4 20:42	06:47 20:00 19:08	07:17 19:08 17:23	07:50 17:23 17:23	07:26 07:49-08:21/32 16:57	07:47 08:09-08:43/34 17:04
31	06:18 20:41 19:58	06:48 19:58 17:22	06:51 17:22 17:22	07:51 17:22 17:22	07:26 07:51-18:18 16:57	07:47 08:10-08:43/33 17:05
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	710	0	0	31	927	1025

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

Calculation: SHADOW\_Worse case WTG: MA10 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (10)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47 17:06	07:34 17:40	06:59 18:13	07:08 19:47	06:23 20:18	05:55 20:47	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	06:52 17:21	07:27 16:57
2	07:47 17:07	07:33 17:41	06:57 18:14	07:07 19:48	06:22 20:19	05:54 20:48	05:56 20:58	06:20 20:39	06:50 19:55	07:20 19:05	06:54 17:19	07:28 16:56
3	07:47 17:07	07:32 17:42	06:56 18:16	07:05 19:49	06:20 20:20	05:54 20:49	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:04	06:55 17:18	07:29 16:56
4	07:48 17:08	07:31 17:43	06:54 18:17	07:03 19:50	06:19 20:21	05:53 20:50	05:57 20:58	06:22 20:36	06:52 19:52	07:22 19:02	06:56 17:17	07:30 16:56
5	07:48 17:09	07:30 17:45	06:52 18:18	07:02 19:51	06:18 20:22	05:53 20:50	05:57 20:58	06:23 20:35	06:53 19:50	07:23 19:00	06:57 17:16	07:31 16:56
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:23	05:53 20:51	05:58 20:57	06:24 20:34	06:54 19:49	07:24 18:59	06:58 17:15	07:32 16:56
7	07:47 17:11	07:28 17:47	06:49 18:20	06:59 19:53	06:16 20:25	05:52 20:52	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	06:59 17:14	07:33 16:56
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	06:14 20:26	05:52 20:52	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55	07:01 17:13	07:34 16:55
9	07:47 17:13	07:26 17:50	06:46 18:22	06:55 19:55	06:13 20:27	05:52 20:53	06:00 20:56	06:26 20:30	06:57 19:44	07:27 18:54	07:02 17:12	07:35 16:55
10	07:47 17:14	07:25 17:51	06:45 18:23	06:54 19:56	06:12 20:28	05:52 20:53	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:03 17:11	07:35 16:56
11	07:47 17:15	07:23 17:52	06:43 18:25	06:52 19:57	06:11 20:29	05:51 20:54	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:51	07:04 17:10	07:36 16:56
12	07:47 17:16	07:22 17:53	06:41 18:26	06:51 19:58	06:10 20:30	05:51 20:54	06:02 20:55	06:29 20:26	07:00 19:39	07:30 18:49	07:05 17:09	07:37 16:56
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	06:09 20:31	05:51 20:55	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	07:06 17:08	07:38 16:56
14	07:46 17:18	07:20 17:56	06:38 18:28	06:47 20:01	06:08 20:32	05:51 20:55	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	07:08 17:07	07:39 16:56
15	07:46 17:19	07:18 17:57	06:36 18:29	06:46 20:02	06:07 20:33	05:51 20:56	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	07:09 17:06	07:39 16:56
16	07:45 17:21	07:17 17:58	06:35 18:30	06:44 20:03	06:06 20:34	05:51 20:56	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	07:10 17:05	07:40 16:57
17	07:45 17:22	07:16 17:59	06:33 18:31	06:43 20:04	06:05 20:34	05:51 20:56	06:05 20:52	06:34 20:20	07:05 19:30	07:35 18:41	07:11 17:04	07:41 16:57
18	07:44 17:23	07:14 18:00	06:32 18:32	06:41 20:05	06:04 20:35	05:51 20:57	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	07:12 17:03	07:41 16:57
19	07:44 17:24	07:13 18:02	06:30 18:33	06:40 20:06	06:03 20:36	05:51 20:57	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	07:14 17:03	07:42 16:58
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	06:02 20:37	05:52 20:57	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	07:15 17:02	07:43 16:58
21	07:43 17:26	07:10 18:04	06:27 18:35	06:37 20:08	06:02 20:38	05:52 20:58	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	07:16 17:01	07:43 16:58
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	06:01 20:39	05:52 20:58	06:10 20:49	06:39 20:12	07:10 19:22	07:41 18:34	07:17 17:01	07:44 16:59
23	07:41 17:29	07:07 18:06	06:23 18:37	06:34 20:10	06:00 20:40	05:52 20:58	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:33	07:18 17:00	07:44 16:59
24	07:41 17:30	07:06 18:08	06:22 18:38	06:33 20:11	05:59 20:41	05:52 20:58	06:11 20:47	06:41 20:09	07:12 19:19	07:43 18:31	07:19 17:00	07:45 17:00
25	07:40 17:31	07:05 18:09	06:20 18:40	06:31 20:12	05:59 20:42	05:53 20:58	06:12 20:46	06:42 20:08	07:13 19:17	06:44 17:30	07:20 16:59	07:45 17:00
26	07:39 17:32	07:03 18:10	06:18 18:41	06:30 20:13	05:58 20:43	05:53 20:58	06:13 20:46	06:43 20:06	07:14 19:15	06:45 17:28	07:21 16:59	07:46 17:01
27	07:38 17:33	07:02 18:11	06:17 18:42	06:28 20:14	05:57 20:43	05:53 20:58	06:14 20:45	06:44 20:05	07:15 19:13	06:47 17:27	07:23 16:58	07:46 17:02
28	07:38 17:35	07:00 18:12	06:15 18:43	06:27 20:15	05:57 20:44	05:54 20:58	06:15 20:44	06:45 20:03	07:16 19:12	06:48 17:26	07:24 16:58	07:46 17:02
29	07:37 17:36		07:13 19:44	06:26 20:16	05:56 20:45	05:54 20:58	06:16 20:43	06:46 20:02	07:17 19:10	06:49 17:24	07:25 16:57	07:47 17:03
30	07:36 17:37		07:12 19:45	06:24 20:17	05:56 20:46	05:55 20:58	06:17 20:42	06:47 20:00	07:18 19:08	06:50 17:23	07:26 16:57	07:47 17:04
31	07:35 17:38		07:10 19:46		05:55 20:47		06:18 20:41	06:48 19:59		06:51 17:22		07:47 17:05
Potential sun hours	298	298	370	398	447	451	458	427	375	346	299	289
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

Calculation: SHADOW\_Worse case WTG: MA11 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (11)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:47 16:11-16:34/23 17:06	07:34 15:48-16:14/26 17:40 16:31-17:00/29	06:59 15:27-17:12/105 18:13	07:08 18:05-18:41/36 19:47	06:23 18:05-18:48/43 20:18	05:54 20:48
2	07:47 16:11-16:35/24 17:07	07:33 15:47-16:15/28 17:41 16:32-17:01/29	06:57 15:27-17:11/104 18:14	07:07 18:03-18:42/39 19:48	06:22 18:07-18:47/40 20:19	05:54 20:48
3	07:48 16:11-16:36/25 17:07	07:32 15:45-16:16/31 17:42 16:32-17:02/30	06:56 15:27-17:10/103 18:16	07:05 18:02-18:42/40 19:49	06:20 18:08-18:45/37 20:20	05:54 20:49
4	07:48 16:11-16:36/25 17:08	07:31 15:44-16:16/32 17:43 16:32-17:04/32	06:54 15:27-17:09/102 18:17	07:03 18:01-18:44/43 19:50	06:19 18:10-18:44/34 20:22	05:53 20:50
5	07:48 16:12-16:37/25 17:09	07:30 15:42-16:17/35 17:12-17:13/1 17:45 16:32-17:05/33	06:53 15:27-17:08/101 18:18	07:02 18:00-18:45/45 19:51	06:18 18:11-18:41/30 20:23	05:53 20:50
6	07:48 16:11-16:37/26 17:10	07:29 15:41-16:19/38 17:09-17:14/5 17:46 16:32-17:06/34	06:51 15:28-17:07/99 18:19	07:00 18:00-18:47/47 19:52	06:17 18:14-18:39/25 20:24	05:53 20:51
7	07:48 16:11-16:38/27 17:11	07:28 15:40-16:20/40 17:08-17:15/7 17:47 16:33-17:06/33	06:49 15:28-17:05/97 18:20	06:59 17:59-18:48/49 19:53	06:16 18:17-18:36/19 20:25	05:52 20:52
8	07:47 16:11-16:39/28 17:12	07:27 15:39-16:21/42 17:07-17:16/9 17:48 16:33-17:06/33	06:48 15:29-17:03/94 18:21	06:57 17:58-18:49/51 19:54	06:14 18:21-18:32/11 20:26	05:52 20:52
9	07:47 16:12-16:40/28 17:13	07:26 15:37-16:22/45 17:50 16:31-17:16/45	06:46 15:29-17:01/92 18:22	06:55 17:58-18:50/52 19:55	06:13 20:27	05:52 20:53
10	07:47 16:12-16:41/29 17:14	07:25 15:36-16:23/47 17:51 16:30-17:17/47	06:45 15:29-16:58/89 18:23	06:54 17:57-18:51/54 19:56	06:12 20:28	05:52 20:53
11	07:47 16:12-16:41/29 17:15	07:23 15:36-16:25/49 17:52 16:29-17:18/49	06:43 15:30-16:56/86 18:25	06:52 17:57-18:53/56 19:57	06:11 20:29	05:51 20:54
12	07:47 16:12-16:43/31 17:16	07:22 15:35-16:26/51 17:53 16:28-17:20/52	06:41 15:31-16:55/84 18:26	06:51 17:57-18:54/57 19:58	06:10 20:30	05:51 20:54
13	07:46 16:13-16:44/31 17:17	07:21 15:33-17:20/107 17:54	06:40 15:31-16:54/83 18:27	06:49 17:56-18:54/58 20:00	06:09 20:31	05:51 20:55
14	07:46 16:13-16:44/31 17:18	07:20 15:33-17:21/108 17:56	06:38 15:32-16:53/81 18:28	06:47 17:56-18:56/60 20:01	06:08 20:32	05:51 20:55
15	07:46 16:13-16:46/33 17:19	07:18 15:32-17:22/110 17:57	06:36 15:33-16:52/79 18:29	06:46 17:56-18:57/61 20:02	06:07 20:33	05:51 20:56
16	07:45 16:13-16:46/33 17:21	07:17 15:31-17:22/111 17:58	06:35 15:33-16:51/78 18:30	06:44 17:56-18:59/63 20:03	06:06 20:34	05:51 20:56
17	07:45 16:14-16:48/34 17:22	07:16 15:31-17:23/112 17:59	06:33 15:35-16:50/75 18:31	06:43 17:56-19:00/64 20:04	06:05 20:35	05:51 20:57
18	07:44 16:14-16:48/34 17:23	07:15 15:31-17:25/114 18:00	06:32 15:36-16:49/73 18:32	06:41 17:57-19:00/63 20:05	06:04 20:36	05:51 20:57
19	07:44 16:15-16:49/34 17:24	07:13 15:29-17:23/114 18:02	06:30 15:37-16:47/70 18:33	06:40 17:56-18:59/63 20:06	06:03 20:36	05:51 20:57
20	07:43 16:15-16:50/35 17:25	07:12 15:29-17:22/113 18:03	06:28 15:39-16:47/68 18:34	06:38 17:57-18:58/61 20:07	06:02 20:37	05:52 20:57
21	07:43 16:15-16:50/35 17:26	07:10 15:29-17:18/109 18:04	06:27 15:40-16:45/65 18:35	06:37 17:58-18:58/60 20:08	06:02 20:38	05:52 20:58
22	07:42 16:17-16:52/35 17:27	07:09 15:28-17:13/105 18:05	06:25 15:41-16:43/62 18:36	06:35 17:58-18:57/59 20:09	06:01 20:39	05:52 20:58
23	07:41 16:17-16:52/35 17:29	07:08 15:28-17:14/106 18:06	06:23 15:43-16:42/59 18:37 17:31-17:34/3	06:34 17:59-18:57/58 20:10	06:00 20:40	05:52 20:58
24	07:41 16:18-16:53/35 17:30	07:06 15:28-17:14/106 18:08	06:22 15:44-16:40/56 18:39 17:23-17:35/12	06:33 17:59-18:55/56 20:11	05:59 20:41	05:52 20:58
25	07:40 16:18-16:54/36 17:31	07:05 15:28-17:14/106 18:09	06:20 15:46-16:37/51 18:40 17:19-17:35/16	06:31 18:00-18:55/55 20:12	05:59 20:42	05:53 20:58
26	07:39 16:20-16:56/36 17:32	07:03 15:27-17:13/106 18:10	06:18 15:49-16:36/47 18:41 17:16-17:36/20	06:30 18:01-18:54/53 20:13	05:58 20:43	05:53 20:58
27	07:39 16:03-16:11/8 17:33 16:21-16:57/36	07:02 15:28-17:13/105 18:11	06:17 15:51-16:33/42 18:42 17:13-17:37/24	06:28 18:01-18:52/51 20:14	05:57 20:44	05:53 20:59
28	07:38 15:58-16:12/14 17:35 16:22-16:57/35	07:00 15:27-17:12/105 18:12	06:15 15:53-16:30/37 18:43 17:11-17:37/26	06:27 18:02-18:52/50 20:15	05:57 20:44	05:54 20:59
29	07:37 15:55-16:13/18 17:36 16:24-16:58/34		07:13 16:57-17:27/30 19:44 18:10-18:38/28	06:26 18:03-18:51/48 20:16	05:56 20:45	05:54 20:59
30	07:36 15:53-16:13/20 17:37 16:25-16:58/33		07:12 17:01-17:22/21 19:45 18:07-18:39/32	06:24 18:04-18:49/45 20:17	05:55 20:46	05:55 20:59
31	07:35 15:50-16:14/24 17:38 16:28-16:59/31		07:10 18:06-18:39/33 19:46		05:55 20:47	
Potential sun hours	298	298	370	398	448	451
Sum of minutes with flicker	1050	2669	2427	1597	239	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

Calculation: SHADOW\_Worse case WTG: MA11 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (11)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:55 20:58	06:19 20:40	06:49 19:57	17:56-18:52/56 19:07	07:19 16:11-17:34/83 19:07	06:52 15:06-15:53/47 17:21 16:00-16:47/47	07:27 15:54-16:23/29 16:57	
2	05:56 20:58	06:20 20:39	06:50 19:55	17:56-18:50/54 19:05	07:20 16:09-17:34/85 19:05	06:54 15:07-15:51/44 17:19 16:01-16:34/33	07:28 15:54-16:23/29 16:56	
3	05:56 20:58	06:21 20:38	06:51 19:54	17:56-18:48/52 19:04	07:21 16:08-17:35/87 19:04	06:55 15:08-15:50/42 17:18 16:02-16:35/33	07:29 15:55-16:23/28 16:56	
4	05:57 20:58	06:22 20:36	06:52 19:52	17:56-18:47/51 19:02	07:22 16:07-17:38/91 19:02	06:56 15:10-15:50/40 17:17 16:03-16:36/33	07:30 15:55-16:23/28 16:56	
5	05:57 20:58	06:23 20:35	06:53 19:50	17:55-18:44/49 19:00	07:23 16:06-17:39/93 19:00	06:57 15:11-15:48/37 17:16 16:02-16:35/33	07:31 15:56-16:23/27 16:56	
6	05:58 20:58	06:23 20:34	06:54 19:49	18:25-18:47/22 19:49	06:54 17:55-18:42/47 18:59	06:58 15:12-15:47/35 17:15 16:02-16:34/32	07:32 15:57-16:23/26 16:56	
7	05:58 20:57	06:24 20:33	06:55 19:47	18:23-18:49/26 19:47	06:55 17:55-18:40/45 18:57	07:25 16:04-17:42/98 18:57	06:59 15:14-15:46/32 17:14 16:02-16:33/31	07:33 15:58-16:23/25 16:56
8	05:59 20:57	06:25 20:32	06:56 19:46	18:20-18:51/31 19:46	06:56 17:55-18:39/44 19:46	07:26 16:03-17:43/100 18:55	07:01 15:16-15:47/31 17:13 16:02-16:33/31	07:34 15:58-16:23/25 16:55
9	06:00 20:57	06:26 20:30	06:57 19:44	18:18-18:53/35 19:44	06:57 17:56-18:37/41 18:54	07:27 16:02-17:43/101 18:54	07:02 15:18-15:46/28 17:12 16:02-16:32/30	07:35 15:59-16:24/25 16:55
10	06:00 20:56	06:27 20:29	06:58 19:42	18:17-18:54/37 19:42	06:58 17:56-18:35/39 18:52	07:28 16:02-17:44/102 18:52	07:03 15:19-15:45/26 17:11 16:02-16:31/29	07:36 16:00-16:24/24 16:55
11	06:01 20:56	06:28 20:28	06:59 19:41	18:15-18:56/41 19:41	06:59 17:57-18:33/36 18:51	07:29 16:01-17:44/103 18:51	07:04 15:21-15:45/24 17:10 15:59-16:30/31	07:36 16:01-16:24/23 16:56
12	06:02 20:55	06:29 20:27	07:00 19:39	18:13-18:57/44 19:39	07:00 17:58-18:31/33 18:49	07:30 16:00-17:45/105 18:49	07:05 15:25-15:45/20 17:09 15:57-16:30/33	07:37 16:02-16:25/23 16:56
13	06:02 20:55	06:30 20:25	07:01 19:37	18:12-18:58/46 19:37	07:01 16:53-17:12/19 19:37	07:31 16:00-17:45/105 18:47	07:07 15:27-15:44/17 17:08 15:55-16:30/35	07:38 16:02-16:25/23 16:56
14	06:03 20:54	06:31 20:24	07:02 19:36	18:11-18:59/48 19:36	07:02 16:48-17:17/29 18:46	07:32 15:59-17:45/106 18:46	07:08 15:31-15:44/13 17:07 15:54-16:29/35	07:39 16:03-16:25/22 16:56
15	06:04 20:54	06:32 20:23	07:03 19:34	18:09-19:00/51 19:34	07:03 16:44-17:19/35 18:44	07:33 16:00-17:46/106 18:44	07:09 15:35-15:43/8 17:06 15:53-16:28/35	07:40 16:04-16:25/21 16:56
16	06:05 20:53	06:33 20:21	07:04 19:32	18:08-19:00/52 19:32	07:04 16:41-17:22/41 18:43	07:34 16:00-17:46/106 18:43	07:10 15:53-16:29/36 17:05	07:40 16:04-16:25/21 16:56
17	06:05 20:53	06:34 20:20	07:05 19:30	18:07-19:01/54 19:30	07:05 16:38-17:24/46 18:41	07:35 15:59-17:46/107 18:41	07:11 15:52-16:28/36 17:04	07:41 16:04-16:24/20 16:57
18	06:06 20:52	06:35 20:18	07:06 19:29	18:06-19:02/56 19:29	07:06 16:35-17:25/50 18:40	07:37 15:59-17:45/106 18:40	07:12 15:51-16:27/36 17:03	07:42 16:05-16:25/20 16:57
19	06:07 20:51	06:36 20:17	07:07 19:27	18:05-19:02/57 19:27	07:07 16:32-17:27/55 18:38	07:38 15:59-17:44/105 18:38	07:14 15:51-16:26/35 17:03	07:42 16:05-16:25/20 16:57
20	06:08 20:50	06:37 20:15	07:08 19:25	18:03-19:02/59 19:25	07:08 16:30-17:28/58 18:37	07:39 15:59-17:43/104 18:37	07:15 15:52-16:27/35 17:02	07:43 16:06-16:26/20 16:58
21	06:09 20:50	06:38 20:14	07:09 19:24	18:02-19:02/60 19:24	07:09 16:28-17:29/61 18:35	07:40 15:59-17:50/111 18:35	07:16 15:51-16:26/35 17:01	07:43 16:07-16:27/20 16:58
22	06:10 20:49	06:39 20:12	07:10 19:22	18:02-19:02/60 19:22	07:10 16:25-17:30/65 18:34	07:41 16:00-17:53/113 18:34	07:17 15:51-16:26/35 17:01	07:44 16:07-16:27/20 16:59
23	06:10 20:48	06:40 20:11	07:11 19:20	18:01-19:02/61 19:20	07:11 16:23-17:31/68 18:33	07:42 16:00-17:54/114 18:33	07:18 15:51-16:25/34 17:00	07:44 16:07-16:27/20 16:59
24	06:11 20:47	06:41 20:09	07:12 19:19	18:00-19:03/63 19:19	07:12 16:21-17:31/70 18:31	07:43 16:00-17:54/114 18:31	07:19 15:51-16:25/34 17:00	07:45 16:08-16:28/20 17:00
25	06:12 20:46	06:42 20:08	07:13 19:17	17:59-19:03/64 19:17	07:13 16:20-17:32/72 17:30	06:44 15:01-16:53/112 17:30	07:20 15:52-16:26/34 16:59	07:45 16:08-16:28/20 17:00
26	06:13 20:46	06:43 20:06	07:14 19:15	17:59-19:02/63 19:15	07:14 16:18-17:33/75 17:28	06:45 15:01-16:51/110 17:28	07:22 15:52-16:25/33 16:59	07:46 16:08-16:28/20 17:01
27	06:14 20:45	06:44 20:05	07:15 19:14	17:58-19:01/63 19:14	07:15 16:16-17:33/77 17:27	06:47 15:02-16:52/110 17:27	07:23 15:52-16:25/33 16:58	07:46 16:09-16:30/21 17:02
28	06:15 20:44	06:45 20:03	07:16 19:12	17:58-18:59/61 19:12	07:16 16:15-17:33/78 17:26	06:48 15:03-16:51/108 17:26	07:24 15:53-16:25/32 16:58	07:46 16:09-16:30/21 17:02
29	06:16 20:43	06:46 20:02	07:17 19:10	17:57-18:57/60 19:10	07:17 16:13-17:34/81 17:24	06:49 15:03-16:50/107 17:24	07:25 15:53-16:24/31 16:57	07:47 16:10-16:32/22 17:03
30	06:17 20:42	06:47 20:00	07:18 19:09	17:57-18:55/58 19:09	07:18 16:12-17:34/82 17:23	06:50 15:04-15:55/51 17:23	07:26 15:53-16:24/31 16:57	07:47 16:10-16:32/22 17:04
31	06:18 20:41	06:48 19:59	07:19 19:07	17:56-18:53/57 19:07	06:51 15:05-15:54/49 17:22	06:51 15:05-15:54/49 17:22	06:51 15:05-15:54/49 17:22	07:47 16:11-16:34/23 17:05
Potential sun hours	458	427	375	346	299	289		
Sum of minutes with flicker	0	1343	1777	3188	1483	708		

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

Calculation: SHADOW\_Worse case WTG: MA12 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (12)  
Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47	07:34	06:59	07:08	06:23	05:55	05:55	06:19	06:49	07:19	06:52	07:27
	17:06	17:40	18:13	19:47	20:18	20:47	20:58	20:40	19:57	19:07	17:21	16:57
2	07:47	07:33	06:57	07:07	06:22	05:54	05:56	06:20	06:50	07:20	06:53	07:28
	17:07	17:41	18:14	19:48	20:19	20:48	20:58	20:39	19:55	19:05	17:19	16:56
3	07:47	07:32	06:56	07:05	06:20	05:54	05:56	06:21	06:51	07:21	06:55	07:29
	17:07	17:42	18:16	19:49	20:20	20:49	20:58	20:37	19:54	19:03	17:18	16:56
4	07:47	07:31	06:54	07:03	06:19	05:53	05:57	06:22	06:52	07:22	06:56	07:30
	17:08	17:43	18:17	19:50	20:21	20:50	20:58	20:36	19:52	19:02	17:17	16:56
5	07:47	07:30	06:52	07:02	06:18	05:53	05:57	06:23	06:53	07:23	06:57	07:31
	17:09	17:45	18:18	19:51	20:22	20:50	20:58	20:35	19:50	19:00	17:16	16:56
6	07:47	07:29	06:51	07:00	06:17	05:53	05:58	06:24	06:54	07:24	06:58	07:32
	17:10	17:46	18:19	19:52	20:23	20:51	20:57	20:34	19:49	18:59	17:15	16:56
7	07:47	07:28	06:49	06:59	06:16	05:52	05:58	06:24	06:55	07:25	06:59	07:33
	17:11	17:47	18:20	19:53	20:24	20:52	20:57	20:33	19:47	18:57	17:14	16:56
8	07:47	07:27	06:48	06:57	06:14	05:52	05:59	06:25	06:56	07:26	07:01	07:34
	17:12	17:48	18:21	19:54	20:26	20:52	20:57	20:32	19:45	18:55	17:13	16:56
9	07:47	07:26	06:46	06:55	06:13	05:52	06:00	06:26	06:57	07:27	07:02	07:35
	17:13	17:50	18:22	19:55	20:27	20:53	20:56	20:30	19:44	18:54	17:12	16:55
10	07:47	07:25	06:45	06:54	06:12	05:52	06:00	06:27	06:58	07:28	07:03	07:35
	17:14	17:51	18:23	19:56	20:28	20:53	20:56	20:29	19:42	18:52	17:11	16:56
11	07:47	07:23	06:43	06:52	06:11	05:51	06:01	06:28	06:59	07:29	07:04	07:36
	17:15	17:52	18:25	19:57	20:29	20:54	20:56	20:28	19:40	18:51	17:10	16:56
12	07:47	07:22	06:41	06:51	06:10	05:51	06:02	06:29	07:00	07:30	07:05	07:37
	17:16	17:53	18:26	19:58	20:30	20:54	20:55	20:26	19:39	18:49	17:09	16:56
13	07:46	07:21	06:40	06:49	06:09	05:51	06:02	06:30	07:01	07:31	07:06	07:38
	17:17	17:54	18:27	19:59	20:31	20:55	20:55	20:25	19:37	18:47	17:08	16:56
14	07:46	07:20	06:38	06:47	06:08	05:51	06:03	06:31	07:02	07:32	07:08	07:39
	17:18	17:56	18:28	20:00	20:32	20:55	20:54	20:24	19:35	18:46	17:07	16:56
15	07:46	07:18	06:36	06:46	06:07	05:51	06:04	06:32	07:03	07:33	07:09	07:39
	17:19	17:57	18:29	20:02	20:33	20:56	20:54	20:22	19:34	18:44	17:06	16:56
16	07:45	07:17	06:35	06:44	06:06	05:51	06:05	06:33	07:04	07:34	07:10	07:40
	17:21	17:58	18:30	20:03	20:33	20:56	20:53	20:21	19:32	18:43	17:05	16:57
17	07:45	07:16	06:33	06:43	06:05	05:51	06:05	06:34	07:05	07:35	07:11	07:41
	17:22	17:59	18:31	20:04	20:34	20:56	20:52	20:20	19:30	18:41	17:04	16:57
18	07:44	07:14	06:31	06:41	06:04	05:51	06:06	06:35	07:06	07:36	07:12	07:41
	17:23	18:00	18:32	20:05	20:35	20:57	20:52	20:18	19:29	18:40	17:03	16:57
19	07:44	07:13	06:30	06:40	06:03	05:51	06:07	06:36	07:07	07:38	07:14	07:42
	17:24	18:02	18:33	20:06	20:36	20:57	20:51	20:17	19:27	18:38	17:03	16:58
20	07:43	07:12	06:28	06:38	06:02	05:52	06:08	06:37	07:08	07:39	07:15	07:43
	17:25	18:03	18:34	20:07	20:37	20:57	20:50	20:15	19:25	18:37	17:02	16:58
21	07:43	07:10	06:27	06:37	06:02	05:52	06:09	06:38	07:09	07:40	07:16	07:43
	17:26	18:04	18:35	20:08	20:38	20:58	20:50	20:14	19:24	18:35	17:01	16:58
22	07:42	07:09	06:25	06:35	06:01	05:52	06:10	06:39	07:10	07:41	07:17	07:44
	17:27	18:05	18:36	20:09	20:39	20:58	20:49	20:12	19:22	18:34	17:01	16:59
23	07:41	07:07	06:23	06:34	06:00	05:52	06:10	06:40	07:11	07:42	07:18	07:44
	17:29	18:06	18:37	20:10	20:40	20:58	20:48	20:11	19:20	18:33	17:00	16:59
24	07:41	07:06	06:22	06:33	05:59	05:52	06:11	06:41	07:12	07:43	07:19	07:45
	17:30	18:08	18:38	20:11	20:41	20:58	20:47	20:09	19:19	18:31	17:00	17:00
25	07:40	07:05	06:20	06:31	05:59	05:53	06:12	06:42	07:13	06:44	07:20	07:45
	17:31	18:09	18:40	20:12	20:42	20:58	20:46	20:08	19:17	17:30	16:59	17:01
26	07:39	07:03	06:18	06:30	05:58	05:53	06:13	06:43	07:14	06:45	07:21	07:46
	17:32	18:10	18:41	20:13	20:43	20:58	20:45	20:06	19:15	17:28	16:59	17:01
27	07:38	07:02	06:17	06:28	05:57	05:53	06:14	06:44	07:15	06:47	07:23	07:46
	17:34	18:11	18:42	20:14	20:43	20:58	20:45	20:05	19:13	17:27	16:58	17:02
28	07:38	07:00	06:15	06:27	05:57	05:54	06:15	06:45	07:16	06:48	07:24	07:46
	17:35	18:12	18:43	20:15	20:44	20:58	20:44	20:03	19:12	17:26	16:58	17:02
29	07:37		07:13	06:26	05:56	05:54	06:16	06:46	07:17	06:49	07:25	07:46
	17:36		19:44	20:16	20:45	20:58	20:43	20:02	19:10	17:24	16:57	17:03
30	07:36		07:12	06:24	05:56	05:55	06:17	06:47	07:18	06:50	07:26	07:47
	17:37		19:45	20:17	20:46	20:58	20:42	20:00	19:08	17:23	16:57	17:04
31	07:35		07:10		05:55		06:18	06:48		06:51		07:47
	17:38		19:46		20:47		20:41	19:59		17:22		17:05
Potential sun hours	298	298	370	398	447	451	458	427	375	346	299	289
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

Project:

WF\_Monti\_Alà

Licensed user:

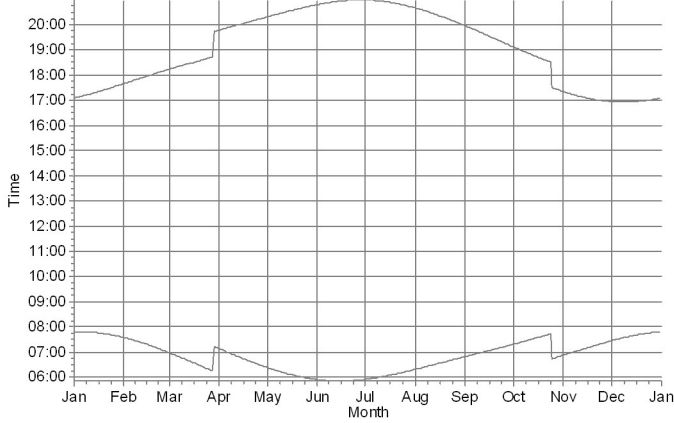
Ge.co.Dor srl  
Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
09/05/2023 16:01/3.6.361

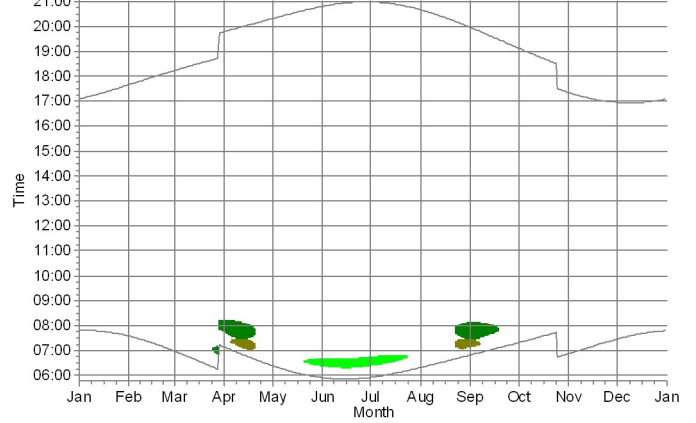
## SHADOW - Calendar per WTG, graphical

Calculation: SHADOW\_Worse case

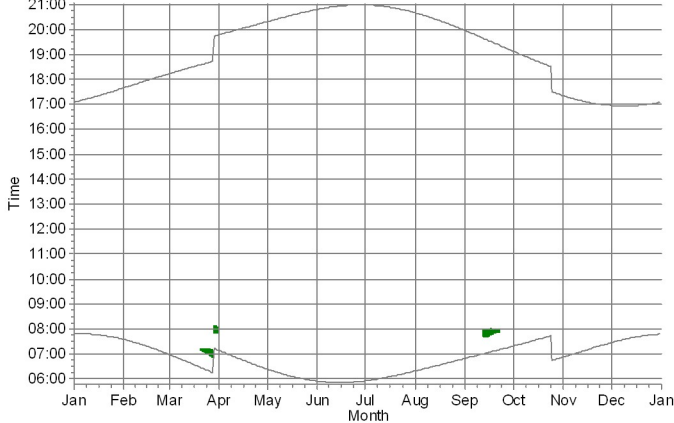
MA01: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (1)



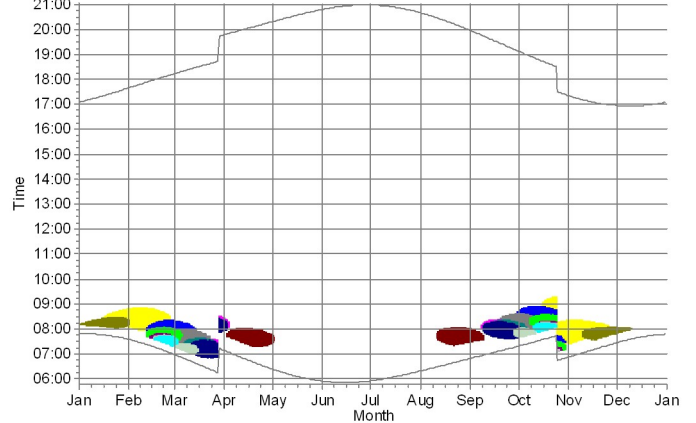
MA02: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (2)



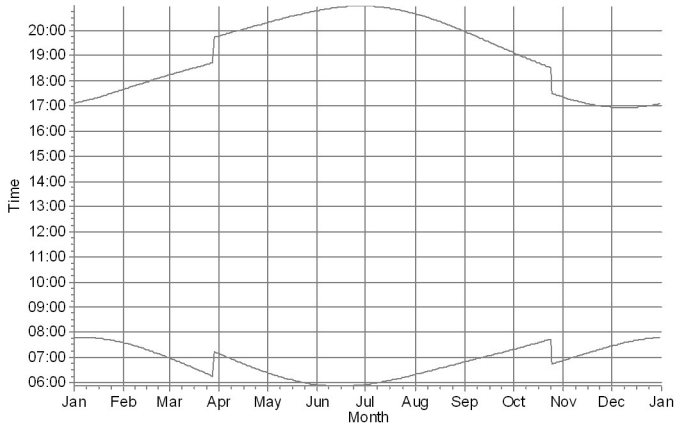
MA03: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (3)



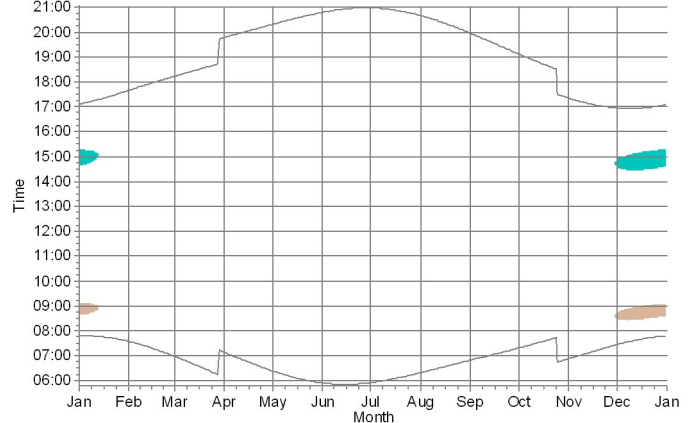
MA04: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (4)




MA05: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (5)



MA06: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (6)



Shadow receptors

- |  |   |   |
|--|---|---|
|  R06: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (1) |  R19: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (7)  |  R39: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (13) |
|  R10: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (2) |  R24: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (8)  |  R43: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (14) |
|  R12: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (3) |  R28: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (9)  |  R62: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (23) |
|  R13: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (4) |  R30: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (10) |  R74: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (22) |
|  R16: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (5) |  R36: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (11) |   |
|  R18: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (6) |  R37: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (12) |   |

Project:

WF\_Monti\_Alà

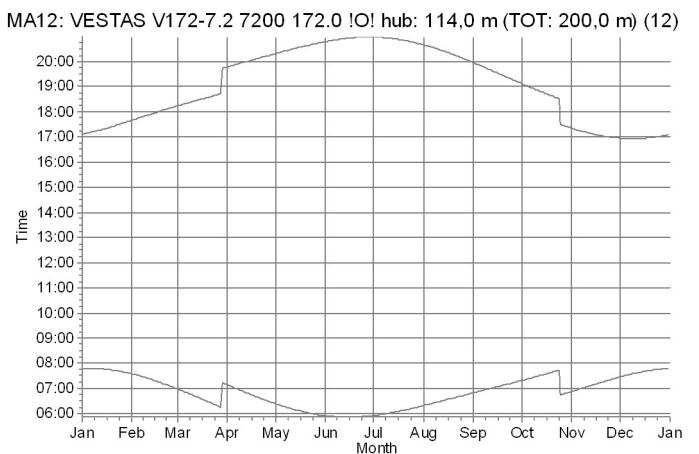
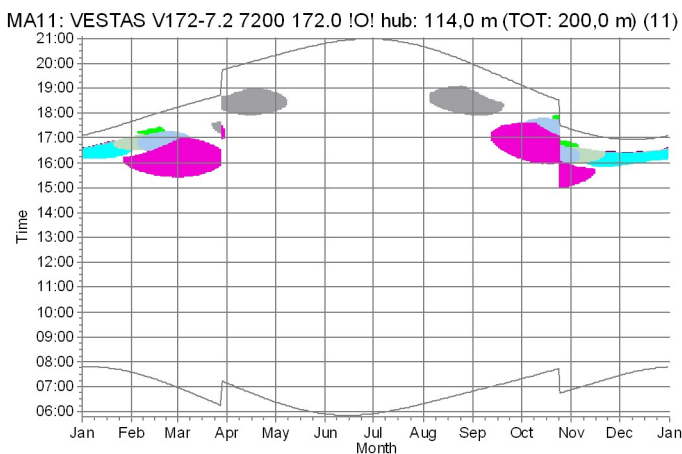
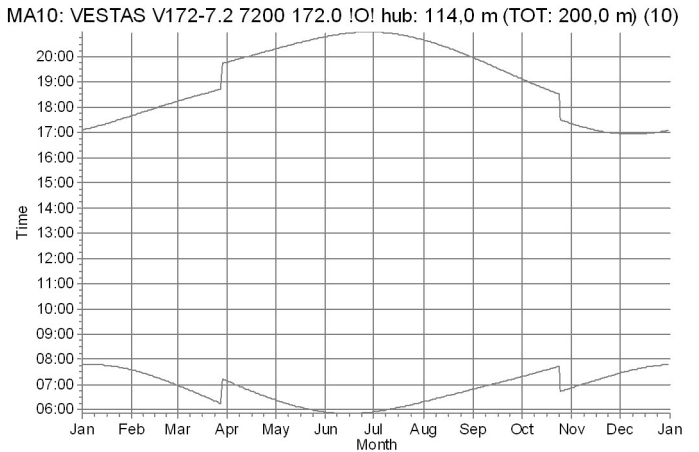
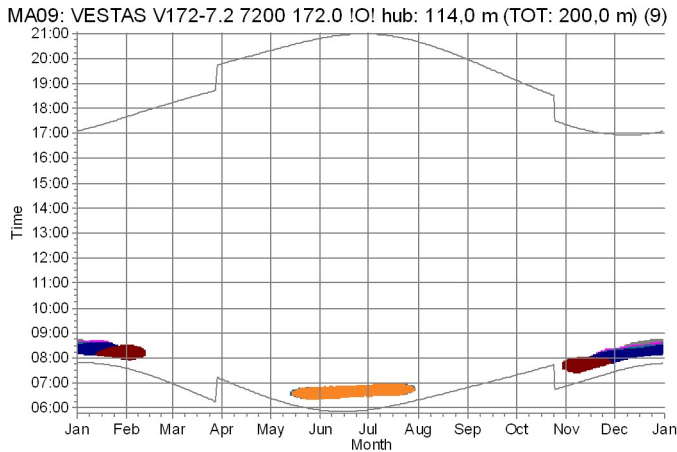
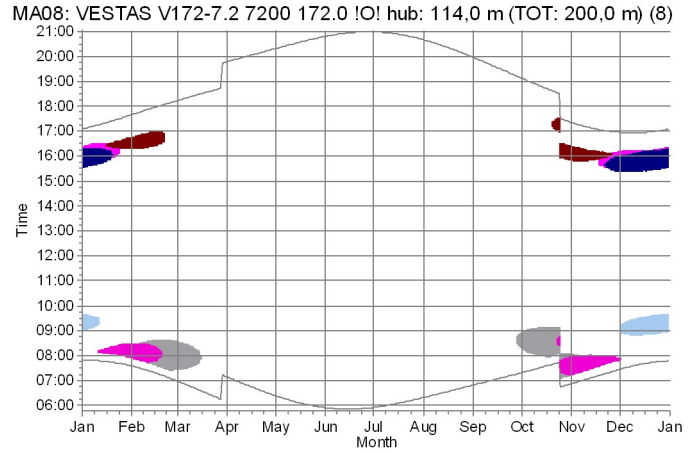
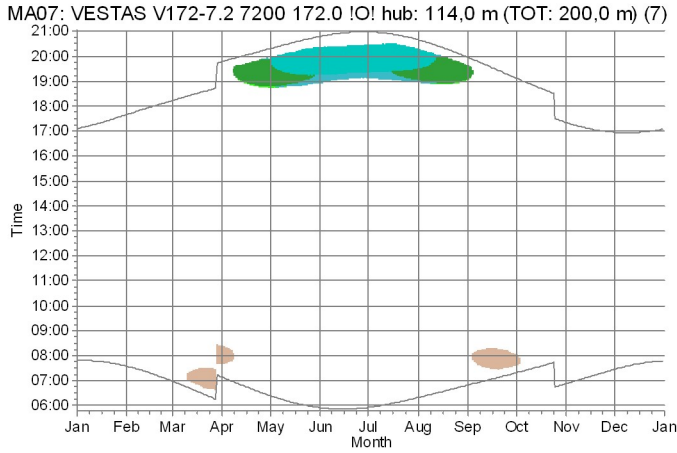
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Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)



Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
09/05/2023 16:01/3.6.361

## SHADOW - Calendar per WTG, graphical

Calculation: SHADOW\_Worse case

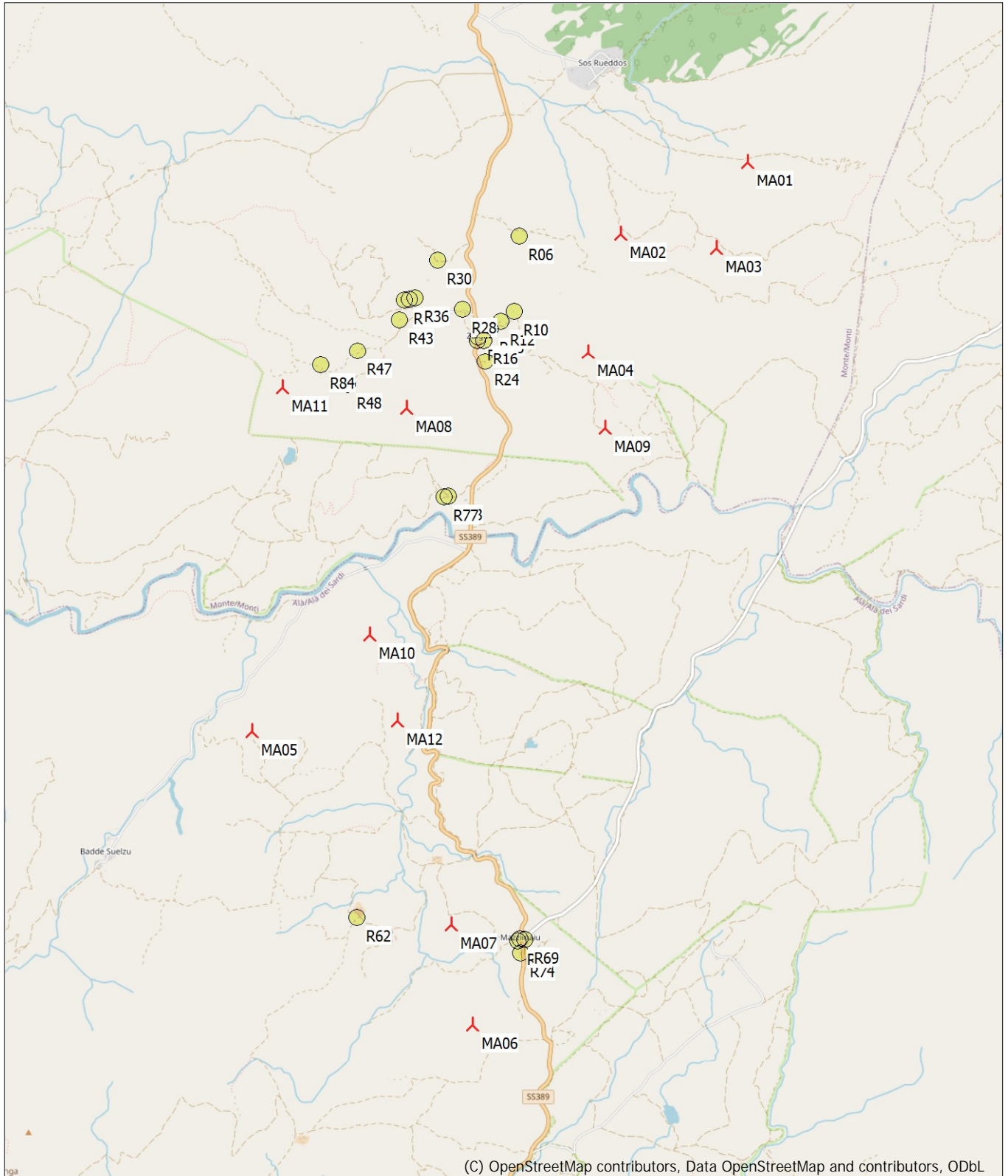


Shadow receptors

- |  |   |   |
|--|---|---|
|  R10: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (2) |  R36: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (11) |  R68: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (18) |
|  R12: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (3) |  R37: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (12) |  R69: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (19) |
|  R13: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (4) |  R39: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (13) |  R74: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (22) |
|  R16: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (5) |  R43: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (14) |  R77: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (20) |
|  R18: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (6) |  R47: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (15) |  R78: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (21) |
|  R19: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (7) |  R48: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (16) |  R84: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (24) |
|  R24: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (8) |  R62: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (17) |   |
|  R28: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (9) |  R67: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (17) |   |

## SHADOW - Map

Calculation: SHADOW\_Worse case



0 500 1000 1500 2000 m

Map: EMD OpenStreetMap , Print scale 1:50.000, Map center Geo WGS84 East: 9,368939° E North: 40,736746° N

New WTG

Shadow receptor

Flicker map level: Elevation Grid Data Object: WF\_Monti\_Alà\_EMDGrid\_3.wpg (12)

**9. ALLEGATO 2: SHADOW – ELABORAZIONE MEDIANTE IL SOFTWARE WINDPRO 3.5 –  
EXPECTED VALUES**

---

## SHADOW - Main Result

Calculation: SHADOW\_Real case\_Map

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

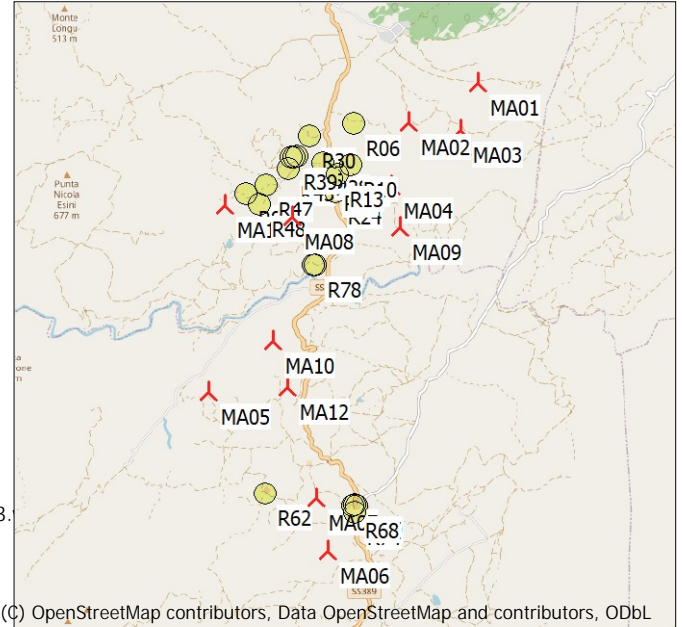
Minimum sun height over horizon for influence 3 °  
Day step for calculation 1 days  
Time step for calculation 1 minutes

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

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\_Monti\_Alà\_EMDGrid\_3.  
Obstacles used in calculation  
Receptor grid resolution: 1,0 m  
Topographic shadow included in calculation

All coordinates are in  
Geo [deg]-WGS84



### WTGs

	Longitude	Latitude	Z	Row data/Description	WTG type			Shadow data				
					Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM [RPM]
MA01	9,395286° E	40,771558° N	563,8	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA02	9,381813° E	40,765752° N	551,9	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA03	9,391917° E	40,764585° N	628,0	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA04	9,378330° E	40,756211° N	564,3	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA05	9,342591° E	40,725601° N	569,6	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA06	9,366032° E	40,701933° N	688,0	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA07	9,363786° E	40,709972° N	615,5	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA08	9,358958° E	40,751660° N	539,0	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA09	9,380075° E	40,750116° N	526,3	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA10	9,355130° E	40,733383° N	552,1	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA11	9,345837° E	40,753400° N	618,9	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0
MA12	9,358070° E	40,726477° N	601,3	VESTAS V172-7.2 7200...	Yes	VESTAS	V172-7.2-7.200	7.200	172,0	114,0	1.788	0,0

### 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]
R06	9,370988° E	40,765617° N	524,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R10	9,370465° E	40,759529° N	551,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R12	9,369005° E	40,758707° N	535,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R13	9,367872° E	40,758093° N	531,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R16	9,367245° E	40,757228° N	527,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R18	9,366624° E	40,757464° N	532,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R19	9,366542° E	40,757205° N	530,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R24	9,367378° E	40,755460° N	517,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R28	9,365011° E	40,759681° N	542,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R30	9,362368° E	40,763631° N	551,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R36	9,359950° E	40,760609° N	556,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R37	9,359316° E	40,760543° N	558,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R39	9,358800° E	40,760482° N	558,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R43	9,358290° E	40,758830° N	550,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R47	9,353853° E	40,756309° N	554,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R48	9,352701° E	40,753572° N	562,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

## SHADOW - Main Result

Calculation: SHADOW\_Real case\_Map

...continued from previous page

No.	Longitude	Latitude	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
R62	9,353731° E	40,710574° N	611,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R67	9,371122° E	40,708849° N	615,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R68	9,370843° E	40,708693° N	614,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R69	9,371634° E	40,708802° N	617,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R74	9,371141° E	40,707737° N	617,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R77	9,363047° E	40,744515° N	470,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R78	9,363421° E	40,744563° N	470,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R84	9,349890° E	40,755193° N	579,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0

## Calculation Results

Shadow receptor

Shadow, expected values

No. Shadow hours

No.	Shadow hours per year [h/year]
R06	9:18
R10	13:50
R12	12:16
R13	16:28
R16	26:24
R18	20:50
R19	23:58
R24	24:22
R28	13:58
R30	6:31
R36	8:53
R37	10:11
R39	10:44
R43	8:28
R47	19:20
R48	45:51
R62	15:05
R67	34:32
R68	45:14
R69	28:00
R74	38:54
R77	12:17
R78	12:28
R84	48:50

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

No.	Name	Expected [h/year]
MA01	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (1)	0:00
MA02	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (2)	18:16
MA03	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (3)	1:19
MA04	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (4)	50:48
MA05	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (5)	0:00
MA06	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (6)	9:17
MA07	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (7)	73:12
MA08	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (8)	48:37
MA09	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (9)	25:43
MA10	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (10)	0:00
MA11	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (11)	88:08
MA12	VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (12)	0:00

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

Calculation: SHADOW\_Real case\_MapShadow receptor: R06 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (1)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June	July	August	September	October	November	December			
1	07:47	07:34	06:59	07:08	07:45 (MA02)	06:23	05:54	05:55	06:19	06:49	07:27 (MA02)	07:19	06:52	07:27	
	17:06	17:40	18:13	19:47	26 08:11 (MA02)	20:18	20:47	20:58	20:40	19:57	40 08:07 (MA02)	19:07	17:20	16:56	
2	07:47	07:33	06:57	07:07	07:43 (MA02)	06:22	05:54	05:55	06:20	06:50	07:26 (MA02)	07:20	06:54	07:28	
	17:06	17:41	18:14	19:48	28 08:11 (MA02)	20:19	20:48	20:58	20:39	19:55	41 08:07 (MA02)	19:05	17:19	16:56	
3	07:47	07:32	06:56	07:05	07:40 (MA02)	06:20	05:53	05:56	06:20	06:51	40 07:27 (MA02)	07:21	06:55	07:29	
	17:07	17:42	18:16	19:49	30 08:10 (MA02)	20:20	20:49	20:58	20:37	19:54	40 08:07 (MA02)	19:03	17:18	16:56	
4	07:48	07:31	06:54	07:03	07:39 (MA02)	06:19	05:53	05:56	06:21	06:52	07:28 (MA02)	07:22	06:56	07:30	
	17:08	17:43	18:17	19:50	32 08:11 (MA02)	20:21	20:50	20:58	20:36	19:52	38 08:06 (MA02)	19:02	17:17	16:56	
5	07:48	07:30	06:52	07:02	07:37 (MA02)	06:18	05:53	05:57	06:22	06:53	07:29 (MA02)	07:23	06:57	07:31	
	17:09	17:44	18:18	19:51	33 08:10 (MA02)	20:22	20:50	20:58	20:35	19:50	37 08:06 (MA02)	19:00	17:16	16:56	
6	07:48	07:29	06:51	07:00	07:34 (MA02)	06:17	05:52	05:58	06:23	06:54	07:30 (MA02)	07:24	06:58	07:32	
	17:10	17:46	18:19	19:52	36 08:10 (MA02)	20:23	20:51	20:57	20:34	19:49	36 08:06 (MA02)	18:59	17:15	16:55	
7	07:47	07:28	06:49	06:58	07:33 (MA02)	06:15	05:52	05:58	06:24	06:55	07:32 (MA02)	07:25	06:59	07:33	
	17:11	17:47	18:20	19:53	37 08:10 (MA02)	20:25	20:52	20:57	20:33	19:47	34 08:06 (MA02)	18:57	17:14	16:55	
8	07:47	07:27	06:48	06:57	07:31 (MA02)	06:14	05:52	05:59	06:25	06:56	07:33 (MA02)	07:26	07:01	07:34	
	17:12	17:48	18:21	19:54	38 08:09 (MA02)	20:26	20:52	20:57	20:32	19:45	32 08:05 (MA02)	18:55	17:12	16:55	
9	07:47	07:26	06:46	06:55	07:29 (MA02)	06:13	05:52	05:59	06:26	06:57	07:34 (MA02)	07:27	07:02	07:35	
	17:13	17:49	18:22	19:55	40 08:09 (MA02)	20:27	20:53	20:56	20:30	19:44	31 08:05 (MA02)	18:54	17:11	16:55	
10	07:47	07:25	06:44	06:54	07:27 (MA02)	06:12	05:51	06:00	06:27	06:58	07:36 (MA02)	07:28	07:03	07:35	
	17:14	17:51	18:23	19:56	41 08:08 (MA02)	20:28	20:53	20:56	20:29	19:42	28 08:04 (MA02)	18:52	17:10	16:55	
11	07:47	07:23	06:43	06:52	07:28 (MA02)	06:11	05:51	06:01	06:28	06:59	07:37 (MA02)	07:29	07:04	07:36	
	17:15	17:52	18:24	19:57	40 08:08 (MA02)	20:29	20:54	20:56	20:28	19:40	26 08:03 (MA02)	18:50	17:09	16:55	
12	07:47	07:22	06:41	06:50	07:28 (MA02)	06:10	05:51	06:01	06:29	07:00	07:39 (MA02)	07:30	07:05	07:37	
	17:16	17:53	18:26	19:58	38 08:06 (MA02)	20:30	20:54	20:55	20:26	19:39	23 08:02 (MA02)	18:49	17:08	16:56	
13	07:46	07:21	06:40	06:49	07:28 (MA02)	06:09	05:51	06:02	06:30	07:01	07:40 (MA02)	07:31	07:07	07:38	
	17:17	17:54	18:27	19:59	37 08:05 (MA02)	20:31	20:55	20:55	20:25	19:37	21 08:01 (MA02)	18:47	17:08	16:56	
14	07:46	07:20	06:38	06:47	07:29 (MA02)	06:08	05:51	06:03	06:31	07:02	07:41 (MA02)	07:32	07:08	07:39	
	17:18	17:56	18:28	20:00	35 08:04 (MA02)	20:32	20:55	20:54	20:24	19:35	19 08:00 (MA02)	18:46	17:07	16:56	
15	07:46	07:18	06:36	06:46	07:29 (MA02)	06:07	05:51	06:04	06:32	07:03	07:42 (MA02)	07:33	07:09	07:39	
	17:19	17:57	18:29	20:02	33 08:02 (MA02)	20:33	20:56	20:54	20:22	19:34	17 07:59 (MA02)	18:44	17:06	16:56	
16	07:45	07:17	06:35	06:44	07:31 (MA02)	06:06	05:51	06:04	06:33	07:04	07:44 (MA02)	07:34	07:10	07:40	
	17:20	17:58	18:30	20:03	30 08:01 (MA02)	20:34	20:56	20:53	20:21	19:32	14 07:58 (MA03)	18:43	17:05	16:56	
17	07:45	07:16	06:33	06:43	07:31 (MA02)	06:05	05:51	06:05	06:34	07:05	07:45 (MA03)	07:35	07:11	07:41	
	17:22	17:59	18:31	20:04	28 07:59 (MA02)	20:34	20:57	20:52	20:20	19:30	14 07:59 (MA03)	18:41	17:04	16:57	
18	07:44	07:14	06:31	06:41	07:33 (MA02)	06:04	05:51	06:06	06:35	07:06	07:47 (MA03)	07:36	07:12	07:41	
	17:23	18:00	18:32	20:05	24 07:57 (MA02)	20:35	20:57	20:52	20:18	19:29	11 07:58 (MA03)	18:40	17:03	16:57	
19	07:44	07:13	06:30	06:40	07:35 (MA02)	06:03	05:51	06:07	06:36	07:07	07:49 (MA03)	07:38	07:14	07:42	
	17:24	18:02	18:33	20:06	19 07:54 (MA02)	20:36	20:57	20:51	20:17	19:27	9 07:58 (MA03)	18:38	17:03	16:57	
20	07:43	07:12	06:28	06:38	07:39 (MA02)	06:02	05:51	06:08	06:37	07:08	07:50 (MA03)	07:39	07:15	07:43	
	17:25	18:03	18:34	20:07	12 07:51 (MA02)	20:37	20:57	20:50	20:15	19:25	8 07:58 (MA03)	18:37	17:02	16:58	
21	07:43	07:10	06:26	06:37	07:09 (MA03)	06:37	06:01	05:52	06:09	06:38	07:09	07:52 (MA03)	07:40	07:16	07:43
	17:26	18:04	18:35	1 07:10 (MA03)	20:08	20:38	20:58	20:50	20:14	19:24	5 07:57 (MA03)	18:35	17:01	16:58	
22	07:42	07:09	06:25	06:35	07:06 (MA03)	06:35	06:01	05:52	06:09	06:39	07:10	07:53 (MA03)	07:41	07:17	07:44
	17:27	18:05	18:36	4 07:10 (MA03)	20:09	20:39	20:58	20:49	20:12	19:22	3 07:56 (MA03)	18:34	17:01	16:59	
23	07:41	07:07	06:23	06:34	07:04 (MA03)	06:34	06:00	05:52	06:10	06:40	07:11	07:42	07:18	07:44	
	17:29	18:06	18:37	7 07:11 (MA03)	20:10	20:40	20:58	20:48	20:11	13 07:55 (MA02)	07:11	07:42	07:18	07:44	
24	07:41	07:06	06:21	06:32	07:02 (MA03)	06:32	05:59	05:52	06:11	06:41	07:38 (MA02)	07:12	07:43	07:19	07:45
	17:30	18:07	18:38	9 07:11 (MA03)	20:11	20:41	20:58	20:47	20:09	20 07:58 (MA02)	07:18	07:43	07:19	07:45	
25	07:40	07:05	06:20	06:31	06:59 (MA03)	06:31	05:58	05:53	06:12	06:42	07:36 (MA02)	07:12	06:44	07:20	07:45
	17:31	18:09	18:39	11 07:10 (MA03)	20:12	20:42	20:58	20:46	20:08	24 08:00 (MA02)	07:17	07:42	07:18	07:44	
26	07:39	07:03	06:18	06:29	06:58 (MA03)	06:30	05:58	05:53	06:13	06:43	07:34 (MA02)	07:13	06:45	07:22	07:46
	17:32	18:10	18:41	12 07:10 (MA03)	20:13	20:43	20:58	20:46	20:06	28 08:02 (MA02)	07:15	07:40	07:16	07:42	
27	07:38	07:02	06:17	06:28	06:55 (MA03)	06:28	05:57	05:53	06:14	06:44	07:32 (MA02)	07:14	06:47	07:23	07:46
	17:33	18:11	18:42	14 07:09 (MA03)	20:14	20:44	20:58	20:45	20:05	31 08:03 (MA02)	07:13	07:38	07:14	07:40	
28	07:38	07:00	06:15	06:26	06:53 (MA03)	06:27	05:56	05:54	06:15	06:45	07:31 (MA02)	07:16	06:48	07:24	07:46
	17:35	18:12	18:43	15 07:08 (MA03)	20:15	20:44	20:58	20:44	20:03	33 08:04 (MA02)	07:12	07:37	07:13	07:39	
29	07:37	07:13	06:25	06:35	07:51 (MA03)	06:25	05:56	05:54	06:16	06:46	07:30 (MA02)	07:17	06:49	07:25	07:47
	17:36	18:14	18:45	19 08:10 (MA02)	20:16	20:45	20:58	20:43	20:02	35 08:05 (MA02)	07:18	07:43	07:19	07:45	
30	07:36	07:12	06:24	06:34	07:49 (MA02)	06:24	05:55	05:54	06:17	06:47	07:28 (MA02)	07:18	06:50	07:26	07:47
	17:37	18:15	18:46	21 08:10 (MA02)	20:17	20:46	20:58	20:42	20:00	38 08:06 (MA02)	07:19	07:44	07:20	07:46	
31	07:35	07:10	06:22	06:32	07:47 (MA02)	06:24	05:55	05:54	06:18	06:48	07:27 (MA02)	07:17	06:51	07:47	07:47
	17:38	18:16	18:47	23 08:10 (MA02)	20:18	20:47	20:41	20:41	19:59	39 08:06 (MA02)	07:18	07:43	07:19	07:46	
Potential sun hours	298	298	370	398	448	451	458	427	375	527	346	299	289		
Total, worst case			136	637						261					
Sun reduction			0,47	0,51						0,72					
Oper. time red.			0,89	0,89						0,89					
Wind dir. red.			0,68	0,69						0,69					
Total reduction			0,29	0,31						0,39					
Total, real			39	198						207					

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)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		



## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R10 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June		
1	07:47	07:34	08:05 (MA04)	06:59	07:08	06:23	05:54	
	17:06	17:40	42 08:47 (MA04)	18:13	19:47	20:18	20:47	
2	07:47	07:33	08:04 (MA04)	06:57	07:07	06:22	05:54	
	17:06	17:41	44 08:48 (MA04)	18:14	19:48	20:19	20:48	
3	07:47	07:32	08:02 (MA04)	06:56	07:05	06:20	05:53	
	17:07	17:42	46 08:48 (MA04)	18:16	19:49	20:20	20:49	
4	07:48	07:31	08:01 (MA04)	06:54	07:03	06:19	05:53	
	17:08	17:43	48 08:49 (MA04)	18:17	19:50	20:21	20:50	
5	07:48	07:30	08:00 (MA04)	06:52	07:02	06:18	05:53	
	17:09	17:44	49 08:49 (MA04)	18:18	19:51	20:22	20:50	
6	07:48	07:29	07:59 (MA04)	06:51	07:00	06:17	05:52	
	17:10	17:46	51 08:50 (MA04)	18:19	19:52	20:23	20:51	
7	07:47	07:28	07:58 (MA04)	06:49	06:58	06:15	05:52	
	17:11	17:47	52 08:50 (MA04)	18:20	19:53	20:25	20:52	
8	07:47	07:27	07:56 (MA04)	06:48	06:57	06:14	05:52	
	17:12	17:48	53 08:49 (MA04)	18:21	19:54	20:26	20:52	
9	07:47	07:26	07:56 (MA04)	06:46	06:55	06:13	05:52	
	17:13	17:49	53 08:49 (MA04)	18:22	19:55	20:27	20:53	
10	07:47	07:25	07:57 (MA04)	06:44	06:54	06:12	05:51	
	17:14	17:51	52 08:49 (MA04)	18:23	19:56	20:28	20:53	
11	07:47	07:23	07:57 (MA04)	06:43	06:52	06:11	05:51	
	17:15	17:52	52 08:49 (MA04)	18:24	19:57	20:29	20:54	
12	07:47	07:22	07:58 (MA04)	06:41	06:50	06:10	05:51	
	17:16	17:53	51 08:49 (MA04)	18:26	19:58	20:30	20:54	
13	07:46	07:21	07:57 (MA04)	06:40	06:49	06:09	05:51	
	17:17	17:54	51 08:48 (MA04)	18:27	19:59	20:31	20:55	
14	07:46	08:16 (MA04)	07:20	07:58 (MA04)	06:38	06:47	06:08	05:51
	17:18	3 08:19 (MA04)	17:56	50 08:48 (MA04)	18:28	20:00	20:32	20:55
15	07:46	08:16 (MA04)	07:18	07:59 (MA04)	06:36	06:46	06:07	05:51
	17:19	9 08:25 (MA04)	17:57	49 08:48 (MA04)	18:29	20:02	20:33	20:56
16	07:45	08:15 (MA04)	07:17	07:59 (MA04)	06:35	06:44	06:06	05:51
	17:20	12 08:27 (MA04)	17:58	48 08:47 (MA04)	18:30	20:03	20:34	20:56
17	07:45	08:15 (MA04)	07:16	08:00 (MA04)	06:33	06:43	06:05	05:51
	17:22	15 08:30 (MA04)	17:59	46 08:46 (MA04)	18:31	20:04	20:34	20:56
18	07:44	08:14 (MA04)	07:14	08:01 (MA04)	06:31	06:41	06:04	05:51
	17:23	17 08:31 (MA04)	18:00	45 08:46 (MA04)	18:32	20:05	20:35	20:57
19	07:44	08:14 (MA04)	07:13	08:01 (MA04)	06:30	06:40	06:03	05:51
	17:24	20 08:34 (MA04)	18:02	43 08:44 (MA04)	18:33	20:06	20:36	20:57
20	07:43	08:14 (MA04)	07:12	08:02 (MA04)	06:28	06:38	06:02	05:51
	17:25	21 08:35 (MA04)	18:03	41 08:43 (MA04)	18:34	20:07	20:37	20:57
21	07:43	08:13 (MA04)	07:10	08:03 (MA04)	06:26	06:37	06:01	05:52
	17:26	23 08:36 (MA04)	18:04	38 08:41 (MA04)	18:35	20:08	20:38	20:58
22	07:42	08:13 (MA04)	07:09	08:05 (MA04)	06:25	06:35	06:01	05:52
	17:27	25 08:38 (MA04)	18:05	35 08:40 (MA04)	18:36	20:09	20:39	20:58
23	07:41	08:12 (MA04)	07:07	08:07 (MA04)	06:23	06:34	06:00	05:52
	17:29	27 08:39 (MA04)	18:06	31 08:38 (MA04)	18:37	20:10	20:40	20:58
24	07:41	08:11 (MA04)	07:06	08:08 (MA04)	06:21	06:32	05:59	05:52
	17:30	29 08:40 (MA04)	18:07	28 08:36 (MA04)	18:38	20:11	20:41	20:58
25	07:40	08:11 (MA04)	07:05	08:11 (MA04)	06:20	06:31	05:58	05:53
	17:31	30 08:41 (MA04)	18:09	22 08:33 (MA04)	18:39	20:12	20:42	20:58
26	07:39	08:11 (MA04)	07:03	08:15 (MA04)	06:18	06:30	05:58	05:53
	17:32	32 08:43 (MA04)	18:10	13 08:28 (MA04)	18:41	20:13	20:43	20:58
27	07:38	08:10 (MA04)	07:02		06:17	06:28	05:57	05:53
	17:33	34 08:44 (MA04)	18:11		18:42	20:14	20:43	20:58
28	07:38	08:09 (MA04)	07:00		06:15	06:27	05:56	05:54
	17:35	36 08:45 (MA04)	18:12		18:43	20:15	20:44	20:58
29	07:37	08:08 (MA04)			07:13	06:26	05:56	05:54
	17:36	37 08:45 (MA04)			19:44	20:16	20:45	20:58
30	07:36	08:07 (MA04)			07:12	06:24	05:55	05:54
	17:37	39 08:46 (MA04)			19:45	20:17	20:46	20:58
31	07:35	08:06 (MA04)			07:10		05:55	
	17:38	41 08:47 (MA04)			19:46		20:47	
Potential sun hours	298	298		370	398	448	451	
Total, worst case	450		1133					
Sun reduction	0,40		0,43					
Oper. time red.	0,89		0,89					
Wind dir. red.	0,61		0,61					
Total reduction	0,22		0,24					
Total, real	98		266					

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R10 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December	
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	06:52 17:20	07:27 (MA04) 08:19 (MA04)	07:27 16:56
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05	06:54 17:19	07:26 (MA04) 08:19 (MA04)	07:28 16:56
3	05:56 20:58	06:20 20:37	06:51 19:54	07:21 19:03	06:55 17:18	07:26 (MA04) 08:19 (MA04)	07:29 16:56
4	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02	06:56 17:17	07:28 (MA04) 08:20 (MA04)	07:30 16:56
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00	06:57 17:16	07:29 (MA04) 08:19 (MA04)	07:31 16:56
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59	06:58 17:15	07:30 (MA04) 08:19 (MA04)	07:32 16:55
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	06:59 17:14	07:31 (MA04) 08:19 (MA04)	07:33 16:55
8	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55	07:01 17:12	07:33 (MA04) 08:19 (MA04)	07:34 16:55
9	05:59 20:56	06:26 20:30	06:57 19:44	07:27 18:54	07:02 17:11	07:35 (MA04) 08:19 (MA04)	07:35 16:55
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:03 17:10	07:36 (MA04) 08:18 (MA04)	07:35 16:55
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:50	07:04 17:09	07:37 (MA04) 08:18 (MA04)	07:36 16:55
12	06:02 20:55	06:29 20:26	07:00 19:39	07:30 18:49	07:05 17:08	07:39 (MA04) 08:18 (MA04)	07:37 16:56
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	07:06 17:08	07:40 (MA04) 08:17 (MA04)	07:38 16:56
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	07:08 17:07	07:41 (MA04) 08:17 (MA04)	07:39 16:56
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	08:52 (MA04) 08:55 (MA04)	07:09 17:06	07:42 (MA04) 16:56
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	08:45 (MA04) 09:03 (MA04)	07:10 17:05	07:44 (MA04) 16:56
17	06:05 20:52	06:34 20:20	07:05 19:30	07:35 18:41	08:42 (MA04) 09:06 (MA04)	07:11 17:04	07:45 (MA04) 16:57
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	08:39 (MA04) 09:08 (MA04)	07:12 17:03	07:45 (MA04) 16:57
19	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	08:37 (MA04) 09:10 (MA04)	07:14 17:03	07:46 (MA04) 16:57
20	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	08:35 (MA04) 09:11 (MA04)	07:15 17:02	07:48 (MA04) 16:58
21	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	08:33 (MA04) 09:12 (MA04)	07:16 17:01	07:49 (MA04) 16:58
22	06:09 20:49	06:39 20:12	07:10 19:22	07:41 18:34	08:33 (MA04) 09:14 (MA04)	07:17 17:01	07:50 (MA04) 16:59
23	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:32	08:31 (MA04) 09:15 (MA04)	07:18 17:00	07:50 (MA04) 16:59
24	06:11 20:47	06:41 20:09	07:12 19:18	07:43 18:31	08:30 (MA04) 09:16 (MA04)	07:19 16:59	07:51 (MA04) 17:00
25	06:12 20:46	06:42 20:08	07:13 19:17	07:44 17:30	08:29 (MA04) 09:16 (MA04)	07:20 16:59	07:53 (MA04) 17:00
26	06:13 20:46	06:43 20:06	07:13 19:15	07:45 17:28	08:28 (MA04) 09:16 (MA04)	07:21 16:58	07:54 (MA04) 17:01
27	06:14 20:45	06:44 20:05	07:15 19:13	07:47 17:27	08:28 (MA04) 09:18 (MA04)	07:23 16:58	07:55 (MA04) 17:02
28	06:15 20:44	06:45 20:03	07:16 19:12	07:48 17:26	08:27 (MA04) 09:18 (MA04)	07:24 16:58	07:56 (MA04) 17:02
29	06:16 20:43	06:46 20:02	07:17 19:10	07:49 17:24	08:27 (MA04) 09:18 (MA04)	07:25 16:57	07:57 (MA04) 17:03
30	06:17 20:42	06:47 20:00	07:18 19:08	07:50 17:23	08:26 (MA04) 09:18 (MA04)	07:26 16:57	07:58 (MA04) 17:04
31	06:18 20:41	06:48 19:58	07:19 19:06	07:51 17:22	08:26 (MA04) 09:19 (MA04)	07:27 16:57	07:59 (MA04) 17:05
Potential sun hours	458	427	375	346	299	289	
Total, worst case				664	942	76	
Sun reduction				0,56	0,48	0,42	
Oper. time red.				0,89	0,89	0,89	
Wind dir. red.				0,61	0,61	0,70	
Total reduction				0,30	0,26	0,26	
Total, real				201	246	20	

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)
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### SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R12 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June
1	07:47	15:54 (MA08) 07:34	06:59	07:37 (MA04) 07:08	06:23	05:54
	17:06	22 16:16 (MA08) 17:40	18:13	42 08:19 (MA04) 19:47	20:18	20:47
2	07:47	15:55 (MA08) 07:33	06:57	07:35 (MA04) 07:07	06:22	05:54
	17:06	20 16:15 (MA08) 17:41	18:14	43 08:18 (MA04) 19:48	20:19	20:48
3	07:47	15:56 (MA08) 07:32	06:56	07:33 (MA04) 07:05	06:20	05:53
	17:07	19 16:15 (MA08) 17:42	18:16	44 08:17 (MA04) 19:49	20:20	20:49
4	07:48	15:57 (MA08) 07:31	06:54	07:32 (MA04) 07:03	06:19	05:53
	17:08	18 16:15 (MA08) 17:43	18:17	45 08:17 (MA04) 19:50	20:21	20:50
5	07:48	15:59 (MA08) 07:30	06:52	07:32 (MA04) 07:02	06:18	05:53
	17:09	15 16:14 (MA08) 17:44	18:18	44 08:16 (MA04) 19:51	20:22	20:50
6	07:48	15:59 (MA08) 07:29	06:51	07:33 (MA04) 07:00	06:17	05:52
	17:10	14 16:13 (MA08) 17:46	18:19	43 08:16 (MA04) 19:52	20:23	20:51
7	07:47	16:02 (MA08) 07:28	06:49	07:33 (MA04) 06:58	06:15	05:52
	17:11	10 16:12 (MA08) 17:47	18:20	41 08:14 (MA04) 19:53	20:25	20:52
8	07:47	16:05 (MA08) 07:27	06:48	07:33 (MA04) 06:57	06:14	05:52
	17:12	5 16:10 (MA08) 17:48	18:21	40 08:13 (MA04) 19:54	20:26	20:52
9	07:47	07:26	06:46	07:35 (MA04) 06:55	06:13	05:52
	17:13	17:49	18:22	37 08:12 (MA04) 19:55	20:27	20:53
10	07:47	07:25	06:44	07:35 (MA04) 06:54	06:12	05:51
	17:14	17:51	18:23	35 08:10 (MA04) 19:56	20:28	20:53
11	07:47	07:23	06:43	07:37 (MA04) 06:52	06:11	05:51
	17:15	17:52	18:24	32 08:09 (MA04) 19:57	20:29	20:54
12	07:47	07:22	06:41	07:39 (MA04) 06:50	06:10	05:51
	17:16	17:53	4 08:02 (MA04) 18:26	27 08:06 (MA04) 19:58	20:30	20:54
13	07:46	07:21	06:40	07:40 (MA04) 06:49	06:09	05:51
	17:17	17:54	9 08:06 (MA04) 18:27	23 08:03 (MA04) 19:59	20:31	20:55
14	07:46	07:20	06:38	07:44 (MA04) 06:47	06:08	05:51
	17:18	17:56	13 08:09 (MA04) 18:28	16 08:00 (MA04) 20:00	20:32	20:55
15	07:46	07:18	06:36	06:46	06:07	05:51
	17:19	17:57	16 08:11 (MA04) 18:29	20:02	20:33	20:56
16	07:45	07:17	06:35	06:44	06:06	05:51
	17:20	17:58	19 08:12 (MA04) 18:30	20:03	20:34	20:56
17	07:45	07:16	06:33	06:43	06:05	05:51
	17:22	17:59	22 08:14 (MA04) 18:31	20:04	20:34	20:57
18	07:44	07:14	06:31	06:41	06:04	05:51
	17:23	18:00	25 08:16 (MA04) 18:32	20:05	20:35	20:57
19	07:44	07:13	06:30	06:40	06:03	05:51
	17:24	18:02	26 08:16 (MA04) 18:33	20:06	20:36	20:57
20	07:43	07:12	06:28	06:38	06:02	05:51
	17:25	18:03	28 08:17 (MA04) 18:34	20:07	20:37	20:57
21	07:43	07:10	06:26	06:37	06:01	05:52
	17:26	18:04	30 08:17 (MA04) 18:35	20:08	20:38	20:58
22	07:42	07:09	06:25	06:35	06:01	05:52
	17:27	18:05	32 08:18 (MA04) 18:36	20:09	20:39	20:58
23	07:41	07:07	06:23	06:34	06:00	05:52
	17:29	18:06	34 08:19 (MA04) 18:37	20:10	20:40	20:58
24	07:41	07:06	06:22	06:32	05:59	05:52
	17:30	18:07	36 08:19 (MA04) 18:38	20:11	20:41	20:58
25	07:40	07:05	06:20	06:31	05:58	05:53
	17:31	18:09	37 08:19 (MA04) 18:39	20:12	20:42	20:58
26	07:39	07:03	06:18	06:30	05:58	05:53
	17:32	18:10	39 08:19 (MA04) 18:41	20:13	20:43	20:58
27	07:38	07:02	06:17	06:28	05:57	05:53
	17:33	18:11	40 08:19 (MA04) 18:42	20:14	20:43	20:58
28	07:38	07:00	06:15	06:27	05:56	05:54
	17:35	18:12	41 08:19 (MA04) 18:43	20:15	20:44	20:58
29	07:37		07:13	06:26	05:56	05:54
	17:36		19:44	20:16	20:45	20:58
30	07:36		07:12	06:24	05:55	05:54
	17:37		19:45	20:17	20:46	20:58
31	07:35		07:10		05:55	
	17:38		19:46		20:47	
Potential sun hours	298	298	370	398	448	451
Total, worst case	123	451	512			
Sun reduction	0,40	0,43	0,47			
Oper. time red.	0,89	0,89	0,89			
Wind dir. red.	0,70	0,61	0,61			
Total reduction	0,25	0,24	0,26			
Total, real	31	108	133			

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

Calculation: SHADOW\_Real case\_MapShadow receptor: R12 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December	
1	05:55	06:19	06:49	07:19	08:18 (MA04)	06:52	07:27
	20:58	20:40	19:57	19:07	26 08:44 (MA04)	17:21	16:56
2	05:55	06:20	06:50	07:20	29 08:17 (MA04)	06:54	07:28
	20:58	20:39	19:55	19:05	29 08:46 (MA04)	17:19	16:56
3	05:56	06:20	06:51	07:21	33 08:15 (MA04)	06:55	07:29
	20:58	20:37	19:54	19:03	33 08:48 (MA04)	17:18	16:56
4	05:56	06:21	06:52	07:22	36 08:13 (MA04)	06:56	07:30
	20:58	20:36	19:52	19:02	36 08:49 (MA04)	17:17	16:56
5	05:57	06:22	06:53	07:23	39 08:11 (MA04)	06:57	07:31
	20:58	20:35	19:50	19:00	39 08:50 (MA04)	17:16	16:56
6	05:58	06:23	06:54	07:24	40 08:10 (MA04)	06:58	07:32
	20:57	20:34	19:49	18:59	40 08:50 (MA04)	17:15	16:55
7	05:58	06:24	06:55	07:25	42 08:09 (MA04)	06:59	07:33
	20:57	20:33	19:47	18:57	42 08:51 (MA04)	17:14	16:55
8	05:59	06:25	06:56	07:26	43 08:08 (MA04)	07:01	07:34
	20:57	20:32	19:45	18:55	43 08:51 (MA04)	17:12	16:55
9	05:59	06:26	06:57	07:27	45 08:07 (MA04)	07:02	07:35
	20:56	20:30	19:44	18:54	45 08:52 (MA04)	17:11	16:55
10	06:00	06:27	06:58	07:28	45 08:07 (MA04)	07:03	07:35
	20:56	20:29	19:42	18:52	45 08:52 (MA04)	17:10	16:55
11	06:01	06:28	06:59	07:29	44 08:08 (MA04)	07:04	07:36
	20:56	20:28	19:40	18:50	44 08:52 (MA04)	17:09	16:55
12	06:02	06:29	07:00	07:30	43 08:09 (MA04)	07:05	07:37
	20:55	20:26	19:39	18:49	43 08:52 (MA04)	17:08	16:56
13	06:02	06:30	07:01	07:31	42 08:10 (MA04)	07:06	07:38
	20:55	20:25	19:37	18:47	42 08:52 (MA04)	17:08	16:56
14	06:03	06:31	07:02	07:32	40 08:11 (MA04)	07:08	07:39
	20:54	20:24	19:35	18:46	40 08:51 (MA04)	17:07	16:56
15	06:04	06:32	07:03	07:33	40 08:11 (MA04)	07:09	07:39
	20:54	20:22	19:34	18:44	40 08:51 (MA04)	17:06	16:56
16	06:05	06:33	07:04	07:34	38 08:13 (MA04)	07:10	07:40
	20:53	20:21	19:32	18:43	38 08:51 (MA04)	17:05	16:56
17	06:05	06:34	07:05	07:35	37 08:14 (MA04)	07:11	07:41
	20:52	20:20	19:30	18:41	37 08:51 (MA04)	17:04	16:57
18	06:06	06:35	07:06	07:36	35 08:15 (MA04)	07:12	07:41
	20:52	20:18	19:29	18:40	35 08:50 (MA04)	17:03	16:57
19	06:07	06:36	07:07	07:38	33 08:16 (MA04)	07:14	07:42
	20:51	20:17	19:27	18:38	33 08:49 (MA04)	17:03	16:57
20	06:08	06:37	07:08	07:39	32 08:17 (MA04)	07:15	07:43
	20:50	20:15	19:25	18:37	32 08:49 (MA04)	17:02	16:58
21	06:09	06:38	07:09	07:40	30 08:18 (MA04)	07:16	07:43
	20:50	20:14	19:24	18:35	30 08:48 (MA04)	17:01	16:58
22	06:09	06:39	07:10	07:41	27 08:20 (MA04)	07:17	07:44
	20:49	20:12	19:22	18:34	27 08:47 (MA04)	17:01	16:59
23	06:10	06:40	07:11	07:42	25 08:21 (MA04)	07:18	07:44
	20:48	20:11	19:20	18:32	25 08:46 (MA04)	17:00	16:59
24	06:11	06:41	07:12	07:43	24 08:21 (MA04)	07:19	07:45
	20:47	20:09	19:18	18:31	24 08:45 (MA04)	16:59	17:00
25	06:12	06:42	07:13	06:44	21 07:22 (MA04)	07:20	07:45
	20:46	20:08	19:17	17:30	21 07:43 (MA04)	16:59	17:00
26	06:13	06:43	07:14	06:45	18 07:23 (MA04)	07:22	07:46
	20:46	20:06	19:15	17:28	18 07:41 (MA04)	16:58	17:01
27	06:14	06:44	07:15	06:47	15 07:25 (MA04)	07:23	07:46
	20:45	20:05	19:13	17:27	15 07:40 (MA04)	16:58	17:02
28	06:15	06:45	07:16	06:48	12 07:26 (MA04)	07:24	07:46
	20:44	20:03	19:12	17:26	12 07:38 (MA04)	16:58	17:02
29	06:16	06:46	07:17	06:49	8 07:27 (MA04)	07:25	07:47
	20:43	20:02	19:10	17:24	8 07:35 (MA04)	16:57	17:03
30	06:17	06:47	07:18	06:50	3 07:27 (MA04)	07:26	07:47
	20:42	20:00	19:08	17:23	3 07:30 (MA04)	16:57	17:04
31	06:18	06:48		06:51			07:47
	20:41	19:59		17:22			17:05
Potential sun hours	458	427	375	346	299	289	23
Total, worst case			32	945		623	
Sun reduction			0,64	0,56		0,42	
Oper. time red.			0,89	0,89		0,89	
Wind dir. red.			0,61	0,61		0,70	
Total reduction			0,35	0,31		0,26	
Total, real			11	290		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

Calculation: SHADOW\_Real case\_MapShadow receptor: R13 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June		
1	07:47	08:28 (MA09)	07:34	06:59	07:23 (MA04)	07:08	06:23	05:54
	17:06	16:14 (MA08)	17:40	18:13	07:54 (MA04)	19:47	20:18	20:47
2	07:47	08:29 (MA09)	07:33	06:57	07:22 (MA04)	07:07	06:22	05:54
	17:06	16:14 (MA08)	17:41	18:14	07:55 (MA04)	19:48	20:19	20:48
3	07:47	08:30 (MA09)	07:32	06:56	07:20 (MA04)	07:05	06:20	05:54
	17:07	16:14 (MA08)	17:42	18:16	07:55 (MA04)	19:49	20:20	20:49
4	07:48	08:32 (MA09)	07:31	06:54	07:19 (MA04)	07:03	06:19	05:53
	17:08	16:14 (MA08)	17:43	18:17	07:56 (MA04)	19:50	20:21	20:50
5	07:48	08:34 (MA09)	07:30	06:52	07:17 (MA04)	07:02	06:18	05:53
	17:09	16:14 (MA08)	17:44	18:18	07:56 (MA04)	19:51	20:22	20:50
6	07:48	15:49 (MA08)	07:29	06:51	07:17 (MA04)	07:00	06:17	05:52
	17:10	16:13 (MA08)	17:46	18:19	07:57 (MA04)	19:52	20:23	20:51
7	07:47	15:50 (MA08)	07:28	06:49	07:15 (MA04)	06:58	06:15	05:52
	17:11	16:13 (MA08)	17:47	18:20	07:57 (MA04)	19:53	20:25	20:52
8	07:47	15:51 (MA08)	07:27	06:48	07:14 (MA04)	06:57	06:14	05:52
	17:12	16:13 (MA08)	17:48	18:21	07:57 (MA04)	19:54	20:26	20:52
9	07:47	15:53 (MA08)	07:26	06:46	07:14 (MA04)	06:55	06:13	05:52
	17:13	16:12 (MA08)	17:49	18:22	07:57 (MA04)	19:55	20:27	20:53
10	07:47	15:55 (MA08)	07:25	06:45	07:14 (MA04)	06:54	06:12	05:52
	17:14	16:12 (MA08)	17:51	18:23	07:57 (MA04)	19:56	20:28	20:53
11	07:47	15:57 (MA08)	07:23	06:43	07:14 (MA04)	06:52	06:11	05:51
	17:15	16:10 (MA08)	17:52	18:24	07:57 (MA04)	19:57	20:29	20:54
12	07:47	16:00 (MA08)	07:22	06:41	07:14 (MA04)	06:50	06:10	05:51
	17:16	16:08 (MA08)	17:53	18:26	07:56 (MA04)	19:58	20:30	20:54
13	07:46		07:21	06:40	07:13 (MA04)	06:49	06:09	05:51
	17:17		17:54	18:27	07:55 (MA04)	19:59	20:31	20:55
14	07:46		07:20	06:38	07:14 (MA04)	06:47	06:08	05:51
	17:18		17:56	18:28	07:55 (MA04)	20:00	20:32	20:55
15	07:46		07:18	06:36	07:14 (MA04)	06:46	06:07	05:51
	17:19		17:57	18:29	07:54 (MA04)	20:02	20:33	20:56
16	07:45		07:17	06:35	07:14 (MA04)	06:44	06:06	05:51
	17:20		17:58	18:30	07:53 (MA04)	20:03	20:34	20:56
17	07:45		07:16	06:33	07:15 (MA04)	06:43	06:05	05:51
	17:22		17:59	18:31	07:52 (MA04)	20:04	20:34	20:57
18	07:44		07:14	06:31	07:15 (MA04)	06:41	06:04	05:51
	17:23		18:00	18:32	07:51 (MA04)	20:05	20:35	20:57
19	07:44		07:13	06:30	07:16 (MA04)	06:40	06:03	05:51
	17:24		18:02	18:33	07:49 (MA04)	20:06	20:36	20:57
20	07:43		07:12	06:28	07:17 (MA04)	06:38	06:02	05:51
	17:25		18:03	18:34	07:48 (MA04)	20:07	20:37	20:57
21	07:43		07:10	06:26	07:19 (MA04)	06:37	06:01	05:52
	17:26		18:04	18:35	07:45 (MA04)	20:08	20:38	20:58
22	07:42		07:09	06:25	07:20 (MA04)	06:35	06:01	05:52
	17:27		18:05	18:36	07:42 (MA04)	20:09	20:39	20:58
23	07:41		07:07	06:23	07:23 (MA04)	06:34	06:00	05:52
	17:29		18:06	18:37	07:40 (MA04)	20:10	20:40	20:58
24	07:41		07:06	06:22	07:29 (MA04)	06:32	05:59	05:52
	17:30		18:07	18:38	07:33 (MA04)	20:11	20:41	20:58
25	07:40		07:05	06:20		06:31	05:58	05:53
	17:31		18:09	18:39		20:12	20:42	20:58
26	07:39		07:03	06:18		06:30	05:58	05:53
	17:32		18:10	18:41		20:13	20:43	20:58
27	07:38		07:02	06:17		06:28	05:57	05:53
	17:33		18:11	18:42		20:14	20:43	20:58
28	07:38		07:00	06:15		06:27	05:57	05:54
	17:35		18:12	18:43		20:15	20:44	20:58
29	07:37			07:13		06:26	05:56	05:54
	17:36			19:44		20:16	20:45	20:58
30	07:36			07:12		06:24	05:55	05:54
	17:37			19:45		20:17	20:46	20:58
31	07:35			07:10			05:55	
	17:38			19:46			20:47	
Potential sun hours	298	298	370		398	448	451	
Total, worst case	325		86	839				
Sun reduction	0,40		0,43	0,47				
Oper. time red.	0,89		0,89	0,89				
Wind dir. red.	0,68		0,64	0,64				
Total reduction	0,25		0,25	0,27				
Total, real	80	22	228					

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)
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### SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R13 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	July	August	September	October	November	December		
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	07:52 (MA04) 19:07	06:52 17:21	07:27 16:56	15:39 (MA08) 15:52 (MA08)
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05	07:53 (MA04) 08:36 (MA04)	06:54 17:19	07:28 16:56	15:37 (MA08) 15:54 (MA08)
3	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:03	07:52 (MA04) 08:35 (MA04)	06:55 17:18	07:29 16:56	15:36 (MA08) 15:55 (MA08)
4	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02	07:52 (MA04) 08:35 (MA04)	06:56 17:17	07:30 16:56	15:36 (MA08) 15:57 (MA08)
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00	07:52 (MA04) 08:34 (MA04)	06:57 17:16	07:31 16:56	15:35 (MA08) 15:58 (MA08)
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59	07:52 (MA04) 08:34 (MA04)	06:58 17:15	07:32 16:55	15:35 (MA08) 15:59 (MA08)
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	07:52 (MA04) 08:33 (MA04)	06:59 17:14	07:33 16:55	08:20 (MA09) 16:00 (MA08)
8	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55	07:53 (MA04) 08:32 (MA04)	07:01 17:12	07:34 16:55	08:19 (MA09) 16:01 (MA08)
9	05:59 20:56	06:26 20:30	06:57 19:44	07:27 18:54	07:53 (MA04) 08:31 (MA04)	07:02 17:11	07:35 16:55	08:18 (MA09) 16:02 (MA08)
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:54 (MA04) 08:30 (MA04)	07:03 17:10	07:35 16:55	08:18 (MA09) 16:03 (MA08)
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:50	07:55 (MA04) 08:29 (MA04)	07:04 17:09	07:36 16:55	08:18 (MA09) 16:04 (MA08)
12	06:02 20:55	06:29 20:26	07:00 19:39	07:30 18:49	07:55 (MA04) 08:27 (MA04)	07:05 17:08	07:37 16:56	08:18 (MA09) 16:05 (MA08)
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	07:56 (MA04) 08:26 (MA04)	07:06 17:08	07:38 16:56	08:17 (MA09) 16:05 (MA08)
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	07:57 (MA04) 08:24 (MA04)	07:08 17:07	07:39 16:56	08:17 (MA09) 16:06 (MA08)
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	07:58 (MA04) 08:21 (MA04)	07:09 17:06	07:39 16:56	08:18 (MA09) 16:07 (MA08)
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	08:01 (MA04) 08:19 (MA04)	07:10 17:05	07:40 16:56	08:18 (MA09) 16:08 (MA08)
17	06:05 20:52	06:34 20:20	07:05 19:30	07:35 18:41	08:06 (MA04) 08:14 (MA04)	07:11 17:04	07:41 16:57	08:18 (MA09) 16:08 (MA08)
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	07:36 17:03	07:12 17:03	07:41 16:57	08:19 (MA09) 16:09 (MA08)
19	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	07:14 17:03	07:14 17:03	07:42 16:57	08:18 (MA09) 16:09 (MA08)
20	06:08 20:50	06:37 20:15	07:08 19:25	08:11 (MA04) 08:25 (MA04)	07:39 18:37	07:15 17:02	07:43 16:58	08:19 (MA09) 16:10 (MA08)
21	06:09 20:50	06:38 20:14	07:09 19:24	08:07 (MA04) 08:28 (MA04)	07:40 18:35	07:16 17:01	07:43 16:58	08:19 (MA09) 16:10 (MA08)
22	06:09 20:49	06:39 20:12	07:10 19:22	08:04 (MA04) 08:30 (MA04)	07:41 18:34	07:17 17:01	07:44 16:59	08:20 (MA09) 16:11 (MA08)
23	06:10 20:48	06:40 20:11	07:11 19:20	08:01 (MA04) 08:31 (MA04)	07:42 18:32	07:18 17:00	07:44 16:59	08:20 (MA09) 16:11 (MA08)
24	06:11 20:47	06:41 20:09	07:12 19:18	08:00 (MA04) 08:32 (MA04)	07:43 18:31	07:19 16:59	07:45 17:00	08:21 (MA09) 16:12 (MA08)
25	06:12 20:46	06:42 20:08	07:13 19:17	07:58 (MA04) 08:33 (MA04)	06:44 17:30	07:20 16:59	07:45 17:00	08:21 (MA09) 16:12 (MA08)
26	06:13 20:46	06:43 20:06	07:14 19:15	07:57 (MA04) 08:33 (MA04)	06:45 17:28	07:22 16:58	07:46 17:01	08:22 (MA09) 16:12 (MA08)
27	06:14 20:45	06:44 20:05	07:15 19:13	07:55 (MA04) 08:34 (MA04)	06:47 17:27	07:23 16:58	07:46 17:02	08:23 (MA09) 16:13 (MA08)
28	06:15 20:44	06:45 20:03	07:16 19:12	07:54 (MA04) 08:34 (MA04)	06:48 17:26	07:24 16:58	07:46 17:02	08:24 (MA09) 16:13 (MA08)
29	06:16 20:43	06:46 20:02	07:17 19:10	07:54 (MA04) 08:35 (MA04)	06:49 17:24	07:25 16:57	07:47 17:03	08:24 (MA09) 16:13 (MA08)
30	06:17 20:42	06:47 20:00	07:18 19:08	07:53 (MA04) 08:35 (MA04)	06:50 17:23	07:26 16:57	15:41 (MA08) 15:49 (MA08)	08:25 (MA09) 16:13 (MA08)
31	06:18 20:41	06:48 19:59		06:51 17:22			07:47 17:05	08:26 (MA09) 16:13 (MA08)
Potential sun hours	458	427	375	346	299		289	
Total, worst case			356	582		8		1351
Sun reduction			0,64	0,56		0,48		0,42
Oper. time red.			0,89	0,89		0,89		0,89
Wind dir. red.			0,64	0,64		0,70		0,67
Total reduction			0,37	0,32		0,30		0,25
Total, real			132	187		2		337

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

Calculation: SHADOW\_Real case\_MapShadow receptor: R16 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)  
Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

### Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	January		February		March		April		May		June	
1	07:47	08:12 (MA09)	07:34	06:59	07:08	07:58 (MA04)	06:23	05:54				
	17:06	64 16:21 (MA08)	17:40	18:13	19:47	08:25 (MA04)	20:18	20:47				
2	07:47	08:12 (MA09)	07:33	06:57	07:07	07:59 (MA04)	06:22	05:54				
	17:06	66 16:22 (MA08)	17:41	18:14	19:48	08:22 (MA04)	20:19	20:48				
3	07:47	08:12 (MA09)	07:32	06:56	07:05	08:01 (MA04)	06:20	05:54				
	17:07	66 16:23 (MA08)	17:42	18:16	19:49	08:19 (MA04)	20:20	20:49				
4	07:48	08:12 (MA09)	07:31	06:54	07:03	08:05 (MA04)	06:19	05:53				
	17:08	67 16:24 (MA08)	17:43	18:17	19:50	08:16 (MA04)	20:21	20:50				
5	07:48	08:12 (MA09)	07:30	06:52	07:02		06:18	05:53				
	17:09	68 16:25 (MA08)	17:44	18:18	19:51		20:22	20:50				
6	07:48	08:11 (MA09)	07:29	06:51	07:00		06:17	05:52				
	17:10	69 16:26 (MA08)	17:46	18:19	19:52		20:23	20:51				
7	07:47	08:11 (MA09)	07:28	06:49	06:58		06:15	05:52				
	17:11	70 16:27 (MA08)	17:47	18:20	19:53		20:25	20:52				
8	07:47	08:11 (MA09)	07:27	06:48	06:57		06:14	05:52				
	17:12	70 16:27 (MA08)	17:48	18:21	19:54		20:26	20:52				
9	07:47	08:12 (MA09)	07:26	06:46	06:55		06:13	05:52				
	17:13	70 16:28 (MA08)	17:49	18:22	19:55		20:27	20:53				
10	07:47	08:12 (MA09)	07:25	06:45	07:10 (MA04)	06:54	06:12	05:52				
	17:14	69 16:28 (MA08)	17:51	18:23	16 07:26 (MA04)	19:56	20:28	20:53				
11	07:47	08:11 (MA09)	07:23	06:43	07:07 (MA04)	06:52	06:11	05:51				
	17:15	68 16:27 (MA08)	17:52	18:24	22 07:29 (MA04)	19:57	20:29	20:54				
12	07:47	08:11 (MA09)	07:22	06:41	07:05 (MA04)	06:51	06:10	05:51				
	17:16	68 16:28 (MA08)	17:53	18:26	26 07:31 (MA04)	19:58	20:30	20:54				
13	07:46	08:12 (MA09)	07:21	06:40	07:02 (MA04)	06:49	06:09	05:51				
	17:17	67 16:28 (MA08)	17:54	18:27	30 07:32 (MA04)	19:59	20:31	20:55				
14	07:46	08:12 (MA09)	07:20	06:38	07:01 (MA04)	06:47	06:08	05:51				
	17:18	65 16:27 (MA08)	17:56	18:28	33 07:34 (MA04)	20:00	20:32	20:55				
15	07:46	08:13 (MA09)	07:18	06:36	06:59 (MA04)	06:46	06:07	05:51				
	17:19	63 16:28 (MA08)	17:57	18:29	35 07:34 (MA04)	20:02	20:33	20:56				
16	07:45	08:13 (MA09)	07:17	06:35	06:58 (MA04)	06:44	06:06	05:51				
	17:20	62 16:27 (MA08)	17:58	18:30	36 07:34 (MA04)	20:03	20:34	20:56				
17	07:45	08:15 (MA09)	07:16	06:33	06:57 (MA04)	06:43	06:05	05:51				
	17:22	58 16:27 (MA08)	17:59	18:31	39 07:36 (MA04)	20:04	20:34	20:57				
18	07:44	08:15 (MA09)	07:14	06:31	06:56 (MA04)	06:41	06:04	05:51				
	17:23	55 16:26 (MA08)	18:00	18:32	40 07:36 (MA04)	20:05	20:35	20:57				
19	07:44	08:17 (MA09)	07:13	06:30	06:55 (MA04)	06:40	06:03	05:51				
	17:24	51 16:26 (MA08)	18:02	18:33	40 07:35 (MA04)	20:06	20:36	20:57				
20	07:43	08:18 (MA09)	07:12	06:28	06:55 (MA04)	06:38	06:02	05:51				
	17:25	47 16:25 (MA08)	18:03	18:34	41 07:36 (MA04)	20:07	20:37	20:57				
21	07:43	08:19 (MA09)	07:10	06:26	06:54 (MA04)	06:37	06:01	05:52				
	17:26	41 16:23 (MA08)	18:04	18:35	42 07:36 (MA04)	20:08	20:38	20:58				
22	07:42	08:22 (MA09)	07:09	06:25	06:54 (MA04)	06:35	06:01	05:52				
	17:27	35 16:23 (MA08)	18:05	18:36	41 07:35 (MA04)	20:09	20:39	20:58				
23	07:41	08:25 (MA09)	07:07	06:23	06:54 (MA04)	06:34	06:00	05:52				
	17:29	24 16:20 (MA08)	18:06	18:37	41 07:35 (MA04)	20:10	20:40	20:58				
24	07:41	16:07 (MA08)	07:06	06:22	06:53 (MA04)	06:32	05:59	05:52				
	17:30	10 16:17 (MA08)	18:07	18:38	41 07:34 (MA04)	20:11	20:41	20:58				
25	07:40		07:05	06:20	06:53 (MA04)	06:31	05:58	05:53				
	17:31		18:09	18:39	40 07:33 (MA04)	20:12	20:42	20:58				
26	07:39		07:03	06:18	06:54 (MA04)	06:30	05:58	05:53				
	17:32		18:10	18:41	39 07:33 (MA04)	20:13	20:43	20:58				
27	07:38		07:02	06:17	06:54 (MA04)	06:28	05:57	05:53				
	17:33		18:11	18:42	38 07:32 (MA04)	20:14	20:43	20:58				
28	07:38		07:00	06:15	06:54 (MA04)	06:27	05:57	05:54				
	17:35		18:12	18:43	37 07:31 (MA04)	20:15	20:44	20:58				
29	07:37		07:13	07:13	07:55 (MA04)	06:26	05:56	05:54				
	17:36		19:44	35 08:30 (MA04)	20:16	20:45	20:58					
30	07:36		07:12	07:12	07:55 (MA04)	06:24	05:55	05:54				
	17:37		19:45	33 08:28 (MA04)	20:17	20:46	20:58					
31	07:35		07:10	07:10	07:56 (MA04)		05:55					
	17:38		19:46	30 08:26 (MA04)		20:47						
Potential sun hours	298		298	370		398	448	451				
Total, worst case	1393			775		79						
Sun reduction	0,40			0,47		0,51						
Oper. time red.	0,89			0,89		0,89						
Wind dir. red.	0,67			0,67		0,67						
Total reduction	0,24			0,28		0,30						
Total, real	333			218		24						

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R16 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December
1	05:55	06:19	06:49	07:19	07:42 (MA04)	07:27
	20:58	20:40	19:57	19:07	08:10 (MA04)	16:56
2	05:55	06:20	06:50	07:20	07:45 (MA04)	07:28
	20:58	20:39	19:55	19:05	08:09 (MA04)	16:56
3	05:56	06:21	06:51	07:21	07:47 (MA04)	07:29
	20:58	20:37	19:54	19:03	08:06 (MA04)	16:56
4	05:56	06:21	06:52	07:22	07:51 (MA04)	07:30
	20:58	20:36	19:52	19:02	08:01 (MA04)	16:56
5	05:57	06:22	06:53	07:23	06:57	07:31
	20:58	20:35	19:50	19:00	17:16	16:56
6	05:58	06:23	06:54	07:24	06:58	07:32
	20:57	20:34	19:49	18:59	17:15	16:56
7	05:58	06:24	06:55	07:25	06:59	07:33
	20:57	20:33	19:47	18:57	17:14	16:55
8	05:59	06:25	06:56	07:26	07:01	07:34
	20:57	20:32	19:45	18:55	17:12	16:55
9	05:59	06:26	06:57	07:27	07:02	07:35
	20:56	20:30	19:44	18:54	17:11	16:55
10	06:00	06:27	06:58	07:28	07:03	07:35
	20:56	20:29	19:42	18:52	17:10	16:55
11	06:01	06:28	06:59	07:29	07:04	07:36
	20:56	20:28	19:40	18:50	17:09	16:55
12	06:02	06:29	07:00	07:30	07:05	07:37
	20:55	20:26	19:39	18:49	17:08	16:56
13	06:02	06:30	07:01	07:31	07:07	07:38
	20:55	20:25	19:37	18:47	17:08	16:56
14	06:03	06:31	07:02	07:32	07:08	07:39
	20:54	20:24	19:35	18:46	17:07	16:56
15	06:04	06:32	07:03	07:33	07:09	07:39
	20:54	20:22	19:34	18:44	17:06	16:56
16	06:05	06:33	07:04	07:34	07:10	07:40
	20:53	20:21	19:32	18:43	17:05	16:56
17	06:05	06:34	07:05	07:35	07:11	07:41
	20:52	20:20	19:30	18:41	17:04	16:57
18	06:06	06:35	07:06	07:36	07:12	07:41
	20:52	20:18	19:29	18:40	17:03	16:57
19	06:07	06:36	07:07	07:38	07:14	07:42
	20:51	20:17	19:27	18:38	17:03	16:57
20	06:08	06:37	07:08	07:39	07:15	07:43
	20:50	20:15	19:25	18:37	17:02	16:58
21	06:09	06:38	07:09	07:40	07:16	07:43
	20:50	20:14	19:24	18:35	17:01	16:58
22	06:09	06:39	07:10	07:41	07:17	07:44
	20:49	20:12	19:22	18:34	17:01	16:59
23	06:10	06:40	07:11	07:42	07:18	07:44
	20:48	20:11	19:20	18:32	17:00	16:59
24	06:11	06:41	07:12	07:43	07:19	07:45
	20:47	20:09	19:18	18:31	16:59	17:00
25	06:12	06:42	07:13	07:44	07:20	07:45
	20:46	20:08	19:17	18:30	16:59	17:00
26	06:13	06:43	07:14	07:45	07:22	07:46
	20:46	20:06	19:15	18:28	16:58	17:01
27	06:14	06:44	07:15	07:46	07:23	07:46
	20:45	20:05	19:13	18:27	16:58	17:02
28	06:15	06:45	07:16	07:47	07:24	07:46
	20:44	20:03	19:12	18:26	16:58	17:02
29	06:16	06:46	07:17	07:48	07:25	07:47
	20:43	20:02	19:10	18:24	16:57	17:03
30	06:17	06:47	07:18	07:49	07:26	07:47
	20:42	20:00	19:08	18:23	16:57	17:04
31	06:18	06:48		06:51		07:47
	20:41	19:59		17:22		17:05
Potential sun hours	458	427	375	346	299	289
Total, worst case			792	81	644	1999
Sun reduction			0,64	0,56	0,48	0,42
Oper. time red.			0,89	0,89	0,89	0,89
Wind dir. red.			0,67	0,67	0,67	0,67
Total reduction			0,38	0,33	0,29	0,25
Total, real			304	27	184	494

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

Calculation: SHADOW\_Real case\_MapShadow receptor: R18 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (6)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June
1	07:47 17:06	08:10 (MA09) 16:10 (MA08)	07:34 17:40	06:59 18:13	07:08 19:47	06:23 20:18
2	07:47 17:06	08:10 (MA09) 16:11 (MA08)	07:33 17:41	06:57 18:14	07:07 19:48	06:22 20:19
3	07:47 17:07	08:10 (MA09) 16:11 (MA08)	07:32 17:42	06:56 18:16	07:05 19:49	06:20 20:20
4	07:48 17:08	08:10 (MA09) 16:11 (MA08)	07:31 17:43	06:54 18:17	07:03 19:50	06:19 20:21
5	07:48 17:09	08:10 (MA09) 16:11 (MA08)	07:30 17:44	06:52 18:18	07:02 19:51	06:18 20:22
6	07:48 17:10	08:09 (MA09) 16:10 (MA08)	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:23
7	07:47 17:11	08:09 (MA09) 16:10 (MA08)	07:28 17:47	06:49 18:20	07:13 (MA04) 19:53	06:15 20:25
8	07:47 17:12	08:09 (MA09) 16:10 (MA08)	07:27 17:48	06:48 18:21	07:09 (MA04) 19:54	06:14 20:26
9	07:47 17:13	08:09 (MA09) 16:09 (MA08)	07:26 17:49	06:46 18:22	07:07 (MA04) 19:55	06:13 20:27
10	07:47 17:14	08:09 (MA09) 16:09 (MA08)	07:25 17:51	06:45 18:23	07:05 (MA04) 19:56	06:12 20:28
11	07:47 17:15	08:08 (MA09) 16:08 (MA08)	07:23 17:52	06:43 18:24	07:04 (MA04) 19:57	06:11 20:29
12	07:47 17:16	08:09 (MA09) 16:07 (MA08)	07:22 17:53	06:41 18:26	07:02 (MA04) 19:58	06:10 20:30
13	07:46 17:17	08:10 (MA09) 16:06 (MA08)	07:21 17:54	06:40 18:27	07:00 (MA04) 19:59	06:09 20:31
14	07:46 17:18	08:10 (MA09) 16:04 (MA08)	07:20 17:56	06:38 18:28	07:00 (MA04) 20:00	06:08 20:32
15	07:46 17:19	08:11 (MA09) 16:00 (MA08)	07:18 17:57	06:36 18:29	06:59 (MA04) 20:02	06:07 20:33
16	07:45 17:20	08:12 (MA09) 08:36 (MA09)	07:17 17:58	06:35 18:30	06:58 (MA04) 20:03	06:06 20:34
17	07:45 17:22	08:13 (MA09) 08:37 (MA09)	07:16 17:59	06:33 18:31	06:58 (MA04) 20:04	06:05 20:34
18	07:44 17:23	08:14 (MA09) 08:36 (MA09)	07:14 18:00	06:31 18:32	06:57 (MA04) 20:05	06:04 20:35
19	07:44 17:24	08:16 (MA09) 08:36 (MA09)	07:13 18:02	06:30 18:33	06:56 (MA04) 20:06	06:03 20:36
20	07:43 17:25	08:17 (MA09) 08:34 (MA09)	07:12 18:03	06:28 18:34	06:57 (MA04) 20:07	06:02 20:37
21	07:43 17:26	08:18 (MA09) 08:33 (MA09)	07:10 18:04	06:26 18:35	06:56 (MA04) 20:08	06:01 20:38
22	07:42 17:27	08:22 (MA09) 08:32 (MA09)	07:09 18:05	06:25 18:36	06:56 (MA04) 20:09	06:01 20:39
23	07:41 17:29		07:07 18:06	06:23 18:37	06:57 (MA04) 20:10	06:00 20:40
24	07:41 17:30		07:06 18:07	06:22 18:38	06:57 (MA04) 20:11	05:59 20:41
25	07:40 17:31		07:05 18:09	06:20 18:39	06:57 (MA04) 20:12	05:58 20:42
26	07:39 17:32		07:03 18:10	06:18 18:41	06:58 (MA04) 20:13	05:58 20:43
27	07:38 17:33		07:02 18:11	06:17 18:42	06:59 (MA04) 20:14	05:57 20:44
28	07:38 17:35		07:00 18:12	06:15 18:43	07:00 (MA04) 20:15	06:27 20:44
29	07:37 17:36		07:13 19:44	07:13 19:44	08:02 (MA04) 20:16	06:26 20:45
30	07:36 17:37		07:12 19:45	07:12 19:45	08:04 (MA04) 20:17	06:24 20:46
31	07:35 17:38		07:10 19:46	07:10 19:46	08:07 (MA04) 20:17	06:24 20:47
Potential sun hours	298	298	370	398	448	451
Total, worst case	923		769			
Sun reduction	0,40		0,47			
Oper. time red.	0,89		0,89			
Wind dir. red.	0,65		0,67			
Total reduction	0,23		0,28			
Total, real	215		215			

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)
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### SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R18 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (6)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

#### Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	July	August	September	October	November	December			
1	05:55	06:19	06:49	07:19	07:40 (MA04)	06:52	07:27	07:50 (MA09)	
	20:58	20:40	19:57	19:07	08:14 (MA04)	17:21	16:56	15:50 (MA08)	
2	05:55	06:20	06:50	07:20	07:42 (MA04)	06:54	07:28	07:51 (MA09)	
	20:58	20:39	19:55	19:05	08:13 (MA04)	17:19	16:56	15:51 (MA08)	
3	05:56	06:21	06:51	07:21	07:43 (MA04)	06:55	07:29	07:52 (MA09)	
	20:58	20:37	19:54	19:03	08:12 (MA04)	17:18	16:56	15:52 (MA08)	
4	05:56	06:21	06:52	07:22	07:44 (MA04)	06:56	07:30	07:53 (MA09)	
	20:58	20:36	19:52	19:02	08:10 (MA04)	17:17	16:56	15:54 (MA08)	
5	05:57	06:22	06:53	07:23	07:46 (MA04)	06:57	07:31	07:54 (MA09)	
	20:58	20:35	19:53	19:00	08:07 (MA04)	17:16	16:56	15:55 (MA08)	
6	05:58	06:23	06:54	07:24	07:48 (MA04)	06:58	07:32	07:55 (MA09)	
	20:57	20:34	19:49	18:59	08:04 (MA04)	17:15	16:56	15:56 (MA08)	
7	05:58	06:24	06:55	07:25	07:53 (MA04)	06:59	07:33	07:56 (MA09)	
	20:57	20:33	19:47	18:57	07:59 (MA04)	17:14	16:55	15:57 (MA08)	
8	05:59	06:25	06:56	07:26	07:59 (MA04)	07:01	07:34	07:57 (MA09)	
	20:57	20:32	19:45	18:55		17:12	16:55	15:58 (MA08)	
9	05:59	06:26	06:57	07:27	07:02	07:02	07:35	07:58 (MA09)	
	20:56	20:30	19:44	18:54		17:11	16:55	15:59 (MA08)	
10	06:00	06:27	06:58	07:28	07:03	07:03	07:35	07:59 (MA09)	
	20:56	20:29	19:42	18:52		17:10	16:55	16:00 (MA08)	
11	06:01	06:28	06:59	07:29	07:04	07:04	07:36	08:00 (MA09)	
	20:56	20:28	19:40	18:50		17:09	16:55	16:00 (MA08)	
12	06:02	06:29	07:00	08:00 (MA04)	07:30	07:05	07:37	08:01 (MA09)	
	20:55	20:26	19:39	08:07 (MA04)	18:49	17:08	16:56	16:01 (MA08)	
13	06:02	06:30	07:01	07:56 (MA04)	07:31	07:07	07:38	08:01 (MA09)	
	20:55	20:25	19:37	08:12 (MA04)	18:47	17:08	16:56	16:01 (MA08)	
14	06:03	06:31	07:02	07:53 (MA04)	07:32	07:08	07:39	08:02 (MA09)	
	20:54	20:24	19:35	08:14 (MA04)	18:46	17:07	16:56	16:02 (MA08)	
15	06:04	06:32	07:03	07:50 (MA04)	07:33	07:09	07:39	08:03 (MA09)	
	20:54	20:22	19:34	08:16 (MA04)	18:44	17:06	16:56	16:03 (MA08)	
16	06:05	06:33	07:04	07:48 (MA04)	07:34	07:10	07:40	08:04 (MA09)	
	20:53	20:21	19:32	08:17 (MA04)	18:43	17:05	16:56	16:04 (MA08)	
17	06:05	06:34	07:05	07:47 (MA04)	07:35	07:11	07:41	08:04 (MA09)	
	20:52	20:20	19:30	08:18 (MA04)	18:41	17:04	16:57	16:04 (MA08)	
18	06:06	06:35	07:06	07:46 (MA04)	07:36	07:12	07:41	08:05 (MA09)	
	20:52	20:18	19:29	08:19 (MA04)	18:40	17:03	16:57	16:05 (MA08)	
19	06:07	06:36	07:07	07:44 (MA04)	07:38	07:14	07:42	08:05 (MA09)	
	20:51	20:17	19:27	08:19 (MA04)	18:38	17:03	16:57	16:05 (MA08)	
20	06:08	06:37	07:08	07:43 (MA04)	07:39	07:15	07:43	08:06 (MA09)	
	20:50	20:15	19:25	08:20 (MA04)	18:37	17:02	10 08:07 (MA09)	16:58	16:06 (MA08)
21	06:09	06:38	07:09	07:43 (MA04)	07:40	07:16	07:43	08:06 (MA09)	
	20:50	20:14	19:24	08:20 (MA04)	18:35	17:01	14 08:09 (MA09)	16:58	16:06 (MA08)
22	06:09	06:39	07:10	07:42 (MA04)	07:41	07:17	07:43	08:07 (MA09)	
	20:49	20:12	19:22	08:20 (MA04)	18:34	17:01	17 08:10 (MA09)	16:59	16:07 (MA08)
23	06:10	06:40	07:11	07:41 (MA04)	07:42	07:18	07:44	08:07 (MA09)	
	20:48	20:11	19:20	08:20 (MA04)	18:32	17:00	20 08:12 (MA09)	16:59	16:07 (MA08)
24	06:11	06:41	07:12	07:40 (MA04)	07:43	07:19	07:45	08:08 (MA09)	
	20:47	20:09	19:19	08:19 (MA04)	18:31	16:59	22 08:13 (MA09)	17:00	16:08 (MA08)
25	06:12	06:42	07:13	07:39 (MA04)	06:44	07:20	07:45	08:08 (MA09)	
	20:46	20:08	19:17	08:19 (MA04)	17:30	16:59	24 08:15 (MA09)	17:00	16:08 (MA08)
26	06:13	06:43	07:14	07:39 (MA04)	06:45	07:22	07:46	08:08 (MA09)	
	20:46	20:06	19:15	08:18 (MA04)	17:28	16:58	24 08:15 (MA09)	17:01	16:08 (MA08)
27	06:14	06:44	07:15	07:39 (MA04)	06:47	07:23	07:46	08:09 (MA09)	
	20:45	20:05	19:13	08:18 (MA04)	17:27	16:58	27 15:38 (MA08)	17:02	16:09 (MA08)
28	06:15	06:45	07:16	07:39 (MA04)	06:48	07:24	07:46	08:09 (MA09)	
	20:44	20:03	19:12	08:17 (MA04)	17:26	16:58	39 15:44 (MA08)	17:02	16:09 (MA08)
29	06:16	06:46	07:17	07:39 (MA04)	06:49	07:25	07:47	08:09 (MA09)	
	20:43	20:02	19:10	08:16 (MA04)	17:24	16:57	44 15:46 (MA08)	17:03	16:09 (MA08)
30	06:17	06:47	07:18	07:40 (MA04)	06:50	07:26	07:47	08:09 (MA09)	
	20:42	20:00	19:08	08:15 (MA04)	17:23	16:57	48 15:48 (MA08)	17:04	16:09 (MA08)
31	06:18	06:48		06:51			07:47	08:10 (MA09)	
	20:41	19:59		17:22			17:05	16:10 (MA08)	
Potential sun hours	458	427	375	346	299		289		
Total, worst case			616	163		289		1843	
Sun reduction			0,64	0,56				0,42	
Oper. time red.			0,89	0,89		0,89		0,89	
Wind dir. red.			0,67	0,67		0,63		0,66	
Total reduction			0,38	0,33		0,27		0,25	
Total, real			235	54		78		454	

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

Calculation: SHADOW\_Real case\_MapShadow receptor: R19 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (7)  
Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

### Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	January		February		March		April		May		June	
1	07:47	08:10 (MA09)	07:34	06:59	07:08		07:56 (MA04)	06:23	05:54			
	17:06	63 16:16 (MA08)	17:40	18:13	19:47	24	08:20 (MA04)	20:18	20:47			
2	07:47	08:10 (MA09)	07:33	06:57	07:07		07:58 (MA04)	06:22	05:54			
	17:06	64 16:17 (MA08)	17:41	18:14	19:48	19	08:17 (MA04)	20:19	20:48			
3	07:47	08:10 (MA09)	07:32	06:56	07:05		08:00 (MA04)	06:20	05:54			
	17:07	64 16:17 (MA08)	17:42	18:16	19:49	13	08:13 (MA04)	20:20	20:49			
4	07:48	08:10 (MA09)	07:31	06:54	07:03			06:19	05:53			
	17:08	63 16:17 (MA08)	17:43	18:17	19:50			20:21	20:50			
5	07:48	08:10 (MA09)	07:30	06:52	07:02			06:18	05:53			
	17:09	63 16:17 (MA08)	17:44	18:18	19:51			20:22	20:50			
6	07:48	08:09 (MA09)	07:29	06:51	07:00			06:17	05:52			
	17:10	62 16:16 (MA08)	17:46	18:19	19:52			20:23	20:51			
7	07:47	08:09 (MA09)	07:28	06:49	06:58			06:15	05:52			
	17:11	62 16:16 (MA08)	17:47	18:20	19:53			20:25	20:52			
8	07:47	08:09 (MA09)	07:27	06:48	06:57			06:14	05:52			
	17:12	62 16:17 (MA08)	17:48	18:21	19:54			20:26	20:52			
9	07:47	08:09 (MA09)	07:26	06:46	06:55			06:13	05:52			
	17:13	62 16:17 (MA08)	17:49	18:22	19:55			20:27	20:53			
10	07:47	08:09 (MA09)	07:25	06:45	07:10 (MA04)	06:54		06:12	05:52			
	17:14	62 16:17 (MA08)	17:51	18:23	9 07:19 (MA04)	19:56		20:28	20:53			
11	07:47	08:08 (MA09)	07:23	06:43	07:06 (MA04)	06:52		06:11	05:51			
	17:15	60 16:16 (MA08)	17:52	18:24	17 07:23 (MA04)	19:57		20:29	20:54			
12	07:47	08:08 (MA09)	07:22	06:41	07:03 (MA04)	06:51		06:10	05:51			
	17:16	60 16:16 (MA08)	17:53	18:26	23 07:26 (MA04)	19:58		20:30	20:54			
13	07:46	08:08 (MA09)	07:21	06:40	07:00 (MA04)	06:49		06:09	05:51			
	17:17	58 16:16 (MA08)	17:54	18:27	27 07:27 (MA04)	19:59		20:31	20:55			
14	07:46	08:07 (MA09)	07:20	06:38	06:59 (MA04)	06:47		06:08	05:51			
	17:18	58 16:15 (MA08)	17:56	18:28	30 07:29 (MA04)	20:00		20:32	20:55			
15	07:46	08:07 (MA09)	07:18	06:36	06:57 (MA04)	06:46		06:07	05:51			
	17:19	57 16:15 (MA08)	17:57	18:29	32 07:29 (MA04)	20:02		20:33	20:56			
16	07:45	08:06 (MA09)	07:17	06:35	06:56 (MA04)	06:44		06:06	05:51			
	17:20	54 16:13 (MA08)	17:58	18:30	34 07:30 (MA04)	20:03		20:34	20:56			
17	07:45	08:08 (MA09)	07:16	06:33	06:55 (MA04)	06:43		06:05	05:51			
	17:22	50 16:13 (MA08)	17:59	18:31	36 07:31 (MA04)	20:04		20:34	20:57			
18	07:44	08:08 (MA09)	07:14	06:31	06:54 (MA04)	06:41		06:04	05:51			
	17:23	46 16:11 (MA08)	18:00	18:32	37 07:31 (MA04)	20:05		20:35	20:57			
19	07:44	08:09 (MA09)	07:13	06:30	06:53 (MA04)	06:40		06:03	05:51			
	17:24	40 16:09 (MA08)	18:02	18:33	38 07:31 (MA04)	20:06		20:36	20:57			
20	07:43	08:10 (MA09)	07:12	06:28	06:53 (MA04)	06:38		06:02	05:51			
	17:25	28 16:04 (MA08)	18:03	18:34	38 07:31 (MA04)	20:07		20:37	20:57			
21	07:43	08:11 (MA09)	07:10	06:26	06:52 (MA04)	06:37		06:01	05:52			
	17:26	23 08:34 (MA09)	18:04	18:35	39 07:31 (MA04)	20:08		20:38	20:58			
22	07:42	08:13 (MA09)	07:09	06:25	06:51 (MA04)	06:35		06:01	05:52			
	17:27	21 08:34 (MA09)	18:05	18:36	39 07:30 (MA04)	20:09		20:39	20:58			
23	07:41	08:14 (MA09)	07:07	06:23	06:52 (MA04)	06:34		06:00	05:52			
	17:29	19 08:33 (MA09)	18:06	18:37	39 07:31 (MA04)	20:10		20:40	20:58			
24	07:41	08:15 (MA09)	07:06	06:22	06:51 (MA04)	06:32		05:59	05:52			
	17:30	17 08:32 (MA09)	18:07	18:38	39 07:30 (MA04)	20:11		20:41	20:58			
25	07:40	08:17 (MA09)	07:05	06:20	06:51 (MA04)	06:31		05:58	05:53			
	17:31	13 08:30 (MA09)	18:09	18:39	38 07:29 (MA04)	20:12		20:42	20:58			
26	07:39	08:21 (MA09)	07:03	06:18	06:52 (MA04)	06:30		05:58	05:53			
	17:32	7 08:28 (MA09)	18:10	18:41	37 07:29 (MA04)	20:13		20:43	20:58			
27	07:38		07:02	06:17	06:52 (MA04)	06:28		05:57	05:53			
	17:33		18:11	18:42	35 07:27 (MA04)	20:14		20:44	20:58			
28	07:38		07:00	06:15	06:52 (MA04)	06:27		05:57	05:54			
	17:35		18:12	18:43	34 07:26 (MA04)	20:15		20:44	20:58			
29	07:37			07:13	07:53 (MA04)	06:26		05:56	05:54			
	17:36			19:44	32 08:25 (MA04)	20:16		20:45	20:58			
30	07:36			07:12	07:53 (MA04)	06:24		05:55	05:54			
	17:37			19:45	30 08:23 (MA04)	20:17		20:46	20:58			
31	07:35			07:10	07:54 (MA04)			05:55				
	17:38			19:46	27 08:21 (MA04)			20:47				
Potential sun hours	298		298	370		398		448		451		
Total, worst case	1238			710		56						
Sun reduction	0,40			0,47		0,51						
Oper. time red.	0,89			0,89		0,89						
Wind dir. red.	0,66			0,67		0,67						
Total reduction	0,24			0,28		0,30						
Total, real	292			200		17						

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R19 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (7)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

## Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December
1	05:55	06:19	06:49	07:19	07:41 (MA04)	07:27
	20:58	20:40	19:57	19:07	08:05 (MA04)	16:56
2	05:55	06:20	06:50	07:20	07:44 (MA04)	07:28
	20:58	20:39	19:55	19:05	08:03 (MA04)	16:56
3	05:56	06:21	06:51	07:21	07:47 (MA04)	07:29
	20:58	20:37	19:54	19:03	08:00 (MA04)	16:56
4	05:56	06:21	06:52	07:22	07:22	07:30
	20:58	20:36	19:52	19:02	17:17	16:56
5	05:57	06:22	06:53	07:23	06:57	07:31
	20:58	20:35	19:53	19:00	17:16	16:56
6	05:58	06:23	06:54	07:24	06:58	07:32
	20:57	20:34	19:49	18:59	17:15	16:56
7	05:58	06:24	06:55	07:25	06:59	07:33
	20:57	20:33	19:47	18:57	17:14	16:55
8	05:59	06:25	06:56	07:26	07:01	07:34
	20:57	20:32	19:45	18:55	17:12	16:55
9	05:59	06:26	06:57	07:27	07:02	07:35
	20:56	20:30	19:44	18:54	17:11	16:55
10	06:00	06:27	06:58	07:28	07:03	07:35
	20:56	20:29	19:42	18:52	17:10	16:55
11	06:01	06:28	06:59	07:29	07:04	07:36
	20:56	20:28	19:40	18:50	17:09	16:55
12	06:02	06:29	07:00	07:30	07:05	07:37
	20:55	20:26	19:39	18:49	17:08	16:56
13	06:02	06:30	07:01	07:31	07:07	07:38
	20:55	20:25	19:37	18:47	17:08	16:56
14	06:03	06:31	07:02	07:32	07:08	07:39
	20:54	20:24	19:35	18:46	17:07	16:56
15	06:04	06:32	07:03	07:33	07:09	07:39
	20:54	20:22	19:34	18:44	17:06	16:56
16	06:05	06:33	07:04	07:34	07:10	07:40
	20:53	20:21	19:32	18:43	17:05	16:56
17	06:05	06:34	07:05	07:35	07:11	07:41
	20:52	20:20	19:30	18:41	17:04	16:57
18	06:06	06:35	07:06	07:36	07:12	07:41
	20:52	20:18	19:29	18:40	17:03	16:57
19	06:07	06:36	07:07	07:37	07:14	07:42
	20:51	20:17	19:27	18:38	17:03	16:57
20	06:08	06:37	07:08	07:38	07:15	07:43
	20:50	20:15	19:25	18:37	17:02	16:58
21	06:09	06:38	07:09	07:39	07:16	07:43
	20:50	20:14	19:24	18:35	17:01	16:58
22	06:09	06:39	07:10	07:40	07:17	07:44
	20:49	20:12	19:22	18:34	17:01	16:59
23	06:10	06:40	07:11	07:41	07:18	07:44
	20:48	20:11	19:20	18:32	17:00	16:59
24	06:11	06:41	07:12	07:42	07:19	07:45
	20:47	20:09	19:19	18:31	16:59	17:00
25	06:12	06:42	07:13	07:43	07:20	07:45
	20:46	20:08	19:17	18:30	16:59	17:00
26	06:13	06:43	07:14	07:44	07:22	07:46
	20:46	20:06	19:15	18:28	16:58	17:01
27	06:14	06:44	07:15	07:45	07:23	07:46
	20:45	20:05	19:13	18:27	16:58	17:02
28	06:15	06:45	07:16	07:46	07:24	07:46
	20:44	20:03	19:12	18:26	16:58	17:02
29	06:16	06:46	07:17	07:47	07:25	07:47
	20:43	20:02	19:10	18:24	16:57	17:03
30	06:17	06:47	07:18	07:48	07:26	07:47
	20:42	20:00	19:08	18:23	16:57	17:04
31	06:18	06:48		06:51		07:47
	20:41	19:59		17:22		17:05
Potential sun hours	458	427	375	346	299	289
Total, worst case			718	56	548	1936
Sun reduction			0,64	0,56		0,42
Oper. time red.			0,89	0,89		0,89
Wind dir. red.			0,67	0,67		0,67
Total reduction			0,38	0,33		0,25
Total, real			276	19	152	482

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R24 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June
1	07:47	07:34	07:56 (MA09)	06:59	07:08	06:23
	17:06	17:40	16:44 (MA08)	18:13	19:47	20:18
2	07:47	07:33	07:55 (MA09)	06:57	07:07	06:22
	17:06	17:41	16:45 (MA08)	18:14	19:48	20:19
3	07:47	07:32	07:55 (MA09)	06:56	07:05	07:41 (MA04)
	17:07	17:42	16:46 (MA08)	18:16	19:49	20:20
4	07:48	07:31	07:56 (MA09)	06:54	07:03	07:40 (MA04)
	17:08	17:43	16:47 (MA08)	18:17	19:50	20:21
5	07:48	07:30	07:57 (MA09)	06:52	07:02	07:38 (MA04)
	17:09	17:44	16:48 (MA08)	18:18	19:51	20:22
6	07:48	07:29	07:58 (MA09)	06:51	07:00	07:37 (MA04)
	17:10	17:46	16:49 (MA08)	18:19	19:52	20:23
7	07:47	07:28	07:59 (MA09)	06:49	06:58	07:36 (MA04)
	17:11	17:47	16:50 (MA08)	18:20	19:53	20:25
8	07:47	07:27	07:59 (MA09)	06:48	06:57	07:34 (MA04)
	17:12	17:48	16:50 (MA08)	18:21	19:54	20:26
9	07:47	07:26	08:00 (MA09)	06:46	06:55	07:33 (MA04)
	17:13	17:49	16:52 (MA08)	18:22	19:55	20:27
10	07:47	07:25	08:02 (MA09)	06:45	06:54	07:31 (MA04)
	17:14	17:51	16:53 (MA08)	18:23	19:56	20:28
11	07:47	07:23	08:04 (MA09)	06:43	06:52	07:30 (MA04)
	17:15	17:52	16:54 (MA08)	18:24	19:57	20:29
12	07:47	07:22	08:07 (MA09)	06:41	06:51	07:28 (MA04)
	17:16	17:53	16:55 (MA08)	18:26	19:58	20:30
13	07:46	08:08 (MA09)	07:21	16:23 (MA08)	06:40	06:49
	17:17	08:09 (MA09)	17:54	16:55 (MA08)	18:27	19:59
14	07:46	08:07 (MA09)	07:20	16:24 (MA08)	06:38	06:47
	17:18	08:12 (MA09)	17:56	16:57 (MA08)	18:28	20:00
15	07:46	08:07 (MA09)	07:18	16:26 (MA08)	06:36	06:46
	17:19	08:15 (MA09)	17:57	16:58 (MA08)	18:29	20:02
16	07:45	08:06 (MA09)	07:17	16:26 (MA08)	06:35	06:44
	17:20	16:26 (MA08)	17:58	16:58 (MA08)	18:30	20:03
17	07:45	08:06 (MA09)	07:16	16:28 (MA08)	06:33	06:43
	17:22	16:27 (MA08)	17:59	16:59 (MA08)	18:31	20:04
18	07:44	08:05 (MA09)	07:14	16:30 (MA08)	06:31	06:41
	17:23	16:28 (MA08)	18:00	17:00 (MA08)	18:32	20:05
19	07:44	08:05 (MA09)	07:13	16:31 (MA08)	06:30	06:40
	17:24	16:30 (MA08)	18:02	16:59 (MA08)	18:33	20:06
20	07:43	08:04 (MA09)	07:12	16:34 (MA08)	06:28	06:38
	17:25	16:31 (MA08)	18:03	16:57 (MA08)	18:34	20:07
21	07:43	08:03 (MA09)	07:10	16:36 (MA08)	06:26	06:37
	17:26	16:32 (MA08)	18:04	16:53 (MA08)	18:35	20:08
22	07:42	08:03 (MA09)	07:09		06:25	06:35
	17:27	16:34 (MA08)	18:05		18:36	20:09
23	07:41	08:02 (MA09)	07:07		06:23	06:34
	17:29	16:34 (MA08)	18:06		18:37	20:10
24	07:41	08:02 (MA09)	07:06		06:22	06:32
	17:30	16:35 (MA08)	18:07		18:38	20:11
25	07:40	08:01 (MA09)	07:05		06:20	06:31
	17:31	16:36 (MA08)	18:09		18:39	20:12
26	07:39	08:01 (MA09)	07:03		06:18	06:30
	17:32	16:38 (MA08)	18:10		18:41	20:13
27	07:38	08:00 (MA09)	07:02		06:17	06:28
	17:33	16:39 (MA08)	18:11		18:42	20:14
28	07:38	07:59 (MA09)	07:00		06:15	06:27
	17:35	16:40 (MA08)	18:12		18:43	20:15
29	07:37	07:58 (MA09)			07:13	06:26
	17:36	16:41 (MA08)			19:44	20:16
30	07:36	07:57 (MA09)			07:12	06:24
	17:37	16:42 (MA08)			19:45	20:17
31	07:35	07:56 (MA09)			07:10	
	17:38	16:43 (MA08)			19:46	20:47
Potential sun hours	298	298	370	398	448	451
Total, worst case	586	925			838	24
Sun reduction	0,40	0,43			0,51	0,58
Oper. time red.	0,89	0,89			0,89	0,89
Wind dir. red.	0,64	0,66			0,69	0,69
Total reduction	0,23	0,26			0,31	0,36
Total, real	134	237	261		9	

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R24 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December		
1	05:55 20:58	06:19 20:40	06:49 19:57	07:29 (MA04) 19:57	07:19 19:07	06:52 17:21	07:31 (MA09) 53 16:22 (MA08)	07:27 16:56
2	05:55 20:58	06:20 20:39	06:50 19:55	07:30 (MA04) 28 07:58 (MA04)	07:20 19:05	06:54 17:19	07:30 (MA09) 55 16:21 (MA08)	07:28 16:56
3	05:56 20:58	06:21 20:37	06:51 19:54	07:31 (MA04) 26 07:57 (MA04)	07:21 19:03	06:55 17:18	07:28 (MA09) 57 16:20 (MA08)	07:29 16:56
4	05:56 20:58	06:21 20:36	06:52 19:52	07:31 (MA04) 24 07:55 (MA04)	07:22 19:02	06:56 17:17	07:28 (MA09) 59 16:20 (MA08)	07:30 16:56
5	05:57 20:58	06:22 20:35	06:53 19:50	07:32 (MA04) 21 07:53 (MA04)	07:23 19:00	06:57 17:16	07:27 (MA09) 59 16:19 (MA08)	07:31 16:56
6	05:58 20:57	06:23 20:34	06:54 19:49	07:32 (MA04) 20 07:52 (MA04)	07:24 18:59	06:58 17:15	07:26 (MA09) 61 16:18 (MA08)	07:32 16:56
7	05:58 20:57	06:24 20:33	06:55 19:47	07:33 (MA04) 17 07:50 (MA04)	07:25 18:57	06:59 17:14	07:26 (MA09) 59 16:16 (MA08)	07:33 16:55
8	05:59 20:57	06:25 20:32	06:56 19:45	07:34 (MA04) 13 07:47 (MA04)	07:26 18:55	07:01 17:12	07:26 (MA09) 59 16:16 (MA08)	07:34 16:55
9	05:59 20:56	06:26 20:30	06:57 19:44	07:35 (MA04) 9 07:44 (MA04)	07:27 18:54	07:02 17:11	07:26 (MA09) 58 16:15 (MA08)	07:35 16:55
10	06:00 20:56	06:27 20:29	06:58 19:42	07:35 (MA04) 07:44 (MA04)	07:27 18:52	07:03 17:10	07:27 (MA09) 56 16:14 (MA08)	07:35 16:55
11	06:01 20:56	06:28 20:28	06:59 19:40	07:38 (MA04) 07:49 (MA04)	07:29 18:50	07:04 17:09	07:27 (MA09) 55 16:13 (MA08)	07:36 16:55
12	06:02 20:55	06:29 20:26	07:00 19:39	07:35 (MA04) 17 07:52 (MA04)	07:30 18:49	07:05 17:08	07:29 (MA09) 53 16:13 (MA08)	07:37 16:56
13	06:02 20:55	06:30 20:25	07:01 19:37	07:32 (MA04) 22 07:54 (MA04)	07:31 18:47	07:06 17:08	07:30 (MA09) 52 16:13 (MA08)	07:38 16:56
14	06:03 20:54	06:31 20:24	07:02 19:35	07:30 (MA04) 26 07:56 (MA04)	07:32 18:46	07:08 17:07	07:31 (MA09) 49 16:12 (MA08)	07:39 16:56
15	06:04 20:54	06:32 20:22	07:03 19:34	07:29 (MA04) 29 07:58 (MA04)	07:33 18:44	07:09 17:06	07:32 (MA09) 46 16:11 (MA08)	07:39 16:56
16	06:05 20:53	06:33 20:21	07:04 19:32	07:28 (MA04) 31 07:59 (MA04)	07:34 18:43	07:10 17:05	07:34 (MA09) 44 16:11 (MA08)	07:40 16:56
17	06:05 20:52	06:34 20:20	07:05 19:30	07:26 (MA04) 34 08:00 (MA04)	07:35 18:41	07:11 17:04	07:35 (MA09) 40 16:10 (MA08)	07:41 16:57
18	06:06 20:52	06:35 20:18	07:06 19:29	07:24 (MA04) 35 07:59 (MA04)	07:36 18:40	07:12 17:03	07:36 (MA09) 38 16:09 (MA08)	07:41 16:57
19	06:07 20:51	06:36 20:17	07:07 19:27	07:23 (MA04) 37 08:00 (MA04)	07:38 18:38	07:14 17:03	07:36 (MA09) 35 16:08 (MA08)	07:42 16:57
20	06:08 20:50	06:37 20:15	07:08 19:25	07:22 (MA04) 39 08:01 (MA04)	07:39 18:37	07:15 17:02	07:38 (MA09) 33 16:09 (MA08)	07:43 16:58
21	06:09 20:50	06:38 20:14	07:09 19:24	07:22 (MA04) 39 08:01 (MA04)	07:40 18:35	07:16 17:01	07:39 (MA09) 30 16:08 (MA08)	07:43 16:58
22	06:09 20:49	06:39 20:12	07:10 19:22	07:21 (MA04) 41 08:02 (MA04)	07:41 18:34	07:17 17:01	07:40 (MA09) 27 16:07 (MA08)	07:44 16:59
23	06:10 20:48	06:40 20:11	07:11 19:20	07:22 (MA04) 40 08:02 (MA04)	07:42 18:32	07:18 17:00	07:41 (MA09) 23 16:06 (MA08)	07:44 16:59
24	06:11 20:47	06:41 20:09	07:12 19:18	07:23 (MA04) 39 08:02 (MA04)	07:43 18:31	07:19 16:59	07:42 (MA09) 19 16:05 (MA08)	07:45 17:00
25	06:12 20:46	06:42 20:08	07:13 19:17	07:24 (MA04) 38 08:02 (MA04)	07:44 17:30	07:20 16:59	07:44 (MA09) 15 16:05 (MA08)	07:45 17:00
26	06:13 20:46	06:43 20:06	07:14 19:15	07:24 (MA04) 38 08:02 (MA04)	07:45 16:45	07:22 16:58	07:45 (MA09) 11 16:05 (MA08)	07:46 17:01
27	06:14 20:45	06:44 20:05	07:15 19:13	07:25 (MA04) 37 08:02 (MA04)	07:46 17:27	07:23 16:58	07:46 (MA09) 8 07:54 (MA09)	07:46 17:02
28	06:15 20:44	06:45 20:03	07:16 19:12	07:26 (MA04) 35 08:01 (MA04)	07:47 17:26	07:24 16:58	07:47 (MA09) 5 07:52 (MA09)	07:46 17:02
29	06:16 20:43	06:46 20:02	07:17 19:10	07:27 (MA04) 34 08:01 (MA04)	07:49 17:24	07:25 16:57	07:48 (MA09) 1 07:49 (MA09)	07:47 17:03
30	06:17 20:42	06:47 20:00	07:18 19:08	07:28 (MA04) 32 08:00 (MA04)	07:50 17:23	07:26 16:57	07:49 (MA09) 16:57	07:47 17:04
31	06:18 20:41	06:48 19:59	07:19 19:07	07:28 (MA04) 32 08:00 (MA04)	07:51 17:22	07:27 16:56	07:50 (MA09) 17:05	07:47 17:05
Potential sun hours	458	427	375	346	299	289		
Total, worst case		686	188	367	1160			
Sun reduction		0,72	0,64	0,56	0,48			
Oper. time red.		0,89	0,89	0,89	0,89			
Wind dir. red.		0,69	0,69	0,69	0,64			
Total reduction		0,44	0,39	0,34	0,28			
Total, real		303	74	125	320			

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R28 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June	
1	07:47	07:34	06:59	07:31 (MA04)	07:08	06:23	06:24 (MA02)
	17:06	17:40	18:13	07:59 (MA04)	19:47	20:18	20:47 14 06:38 (MA02)
2	07:47	07:33	06:57	07:31 (MA04)	07:07	06:22	06:22 (MA02)
	17:06	17:41	18:14	07:57 (MA04)	19:48	20:19	20:48 16 06:38 (MA02)
3	07:47	07:32	06:56	07:32 (MA04)	07:05	06:20	06:22 (MA02)
	17:07	17:42	18:16	07:55 (MA04)	19:49	20:20	20:49 16 06:38 (MA02)
4	07:48	07:31	06:54	07:34 (MA04)	07:03	06:19	06:22 (MA02)
	17:08	17:43	18:17	07:54 (MA04)	19:50	20:21	20:50 17 06:39 (MA02)
5	07:48	07:30	17:12 (MA11)	06:52	07:36 (MA04)	07:02	06:18 06:21 (MA02)
	17:09	17:44	17:13 (MA11)	18:18	07:50 (MA04)	19:51	20:22 17 06:38 (MA02)
6	07:48	07:29	17:09 (MA11)	06:51	07:43 (MA04)	07:00	06:17 06:21 (MA02)
	17:10	17:46	17:14 (MA11)	18:19	07:45 (MA04)	19:52	20:24 17 06:38 (MA02)
7	07:47	07:28	17:08 (MA11)	06:49	06:58	06:15	06:21 (MA02)
	17:11	17:47	17:15 (MA11)	18:20	19:53	20:25	20:52 18 06:39 (MA02)
8	07:47	07:27	17:07 (MA11)	06:48	06:57	06:14	06:21 (MA02)
	17:12	17:48	17:16 (MA11)	18:21	19:54	20:26	20:52 18 06:39 (MA02)
9	07:47	07:26	17:05 (MA11)	06:46	06:55	06:13	06:20 (MA02)
	17:13	17:49	17:16 (MA11)	18:22	19:55	20:27	20:53 18 06:38 (MA02)
10	07:47	07:25	17:04 (MA11)	06:45	06:54	06:12	06:20 (MA02)
	17:14	17:51	17:17 (MA11)	18:23	19:56	20:28	20:53 18 06:38 (MA02)
11	07:47	07:23	17:04 (MA11)	06:43	06:52	06:11	06:20 (MA02)
	17:15	17:52	17:18 (MA11)	18:24	19:57	20:29	20:54 19 06:39 (MA02)
12	07:47	07:22	07:42 (MA04)	06:41	06:51	06:10	06:20 (MA02)
	17:16	17:53	17:20 (MA11)	18:26	19:58	20:30	20:54 19 06:39 (MA02)
13	07:46	07:21	07:40 (MA04)	06:40	06:49	06:09	06:19 (MA02)
	17:17	17:54	17:20 (MA11)	18:27	19:59	20:31	20:55 20 06:39 (MA02)
14	07:46	07:20	07:39 (MA04)	06:38	06:47	06:08	06:19 (MA02)
	17:18	17:56	17:21 (MA11)	18:28	20:01	20:32	20:55 20 06:39 (MA02)
15	07:46	07:18	07:38 (MA04)	06:36	06:46	06:07	06:19 (MA02)
	17:19	17:57	17:22 (MA11)	18:29	20:02	20:33	20:56 20 06:39 (MA02)
16	07:45	07:17	07:36 (MA04)	06:35	06:44	06:06	06:19 (MA02)
	17:20	17:58	17:22 (MA11)	18:30	20:03	20:34	20:56 20 06:39 (MA02)
17	07:45	07:16	07:35 (MA04)	06:33	06:43	06:05	06:19 (MA02)
	17:22	17:59	17:23 (MA11)	18:31	20:04	20:34	20:57 20 06:39 (MA02)
18	07:44	07:14	07:34 (MA04)	06:31	06:41	06:04	06:19 (MA02)
	17:23	18:00	17:25 (MA11)	18:32	20:05	20:35	20:57 20 06:39 (MA02)
19	07:44	07:13	07:32 (MA04)	06:30	06:40	06:03	06:20 (MA02)
	17:24	18:02	17:23 (MA11)	18:33	20:06	20:36	20:57 20 06:40 (MA02)
20	07:43	07:12	07:31 (MA04)	06:28	06:38	06:02	06:20 (MA02)
	17:25	18:03	17:22 (MA11)	18:34	20:07	20:37	20:57 20 06:40 (MA02)
21	07:43	07:10	07:29 (MA04)	06:26	06:37	06:01	06:20 (MA02)
	17:26	18:04	17:18 (MA11)	18:35	20:08	20:38	1 06:34 (MA02) 20:58 20 06:40 (MA02)
22	07:42	07:09	07:29 (MA04)	06:25	06:35	06:01	06:32 (MA02) 06:20 (MA02)
	17:27	18:05	08:02 (MA04)	18:36	20:09	20:39	3 06:35 (MA02) 20:58 20 06:40 (MA02)
23	07:41	07:07	07:29 (MA04)	06:23	06:34	06:00	06:31 (MA02) 06:20 (MA02)
	17:29	18:06	08:03 (MA04)	18:37	20:10	20:40	5 06:36 (MA02) 20:58 20 06:40 (MA02)
24	07:41	07:06	07:29 (MA04)	06:22	06:32	05:59	06:29 (MA02) 06:21 (MA02)
	17:30	18:07	08:02 (MA04)	18:38	20:11	20:41	7 06:36 (MA02) 20:58 20 06:41 (MA02)
25	07:40	07:05	07:29 (MA04)	06:20	06:31	05:58	06:27 (MA02) 06:21 (MA02)
	17:31	18:09	08:02 (MA04)	18:40	20:12	20:42	9 06:36 (MA02) 20:58 20 06:41 (MA02)
26	07:39	07:03	07:29 (MA04)	06:18	06:30	05:58	06:27 (MA02) 06:21 (MA02)
	17:32	18:10	08:01 (MA04)	18:41	20:13	20:43	10 06:37 (MA02) 20:58 20 06:41 (MA02)
27	07:39	07:02	07:30 (MA04)	06:17	06:28	05:57	06:26 (MA02) 06:22 (MA02)
	17:33	18:11	08:01 (MA04)	18:42	20:14	20:44	11 06:37 (MA02) 20:58 20 06:42 (MA02)
28	07:38	07:00	07:30 (MA04)	06:15	06:27	05:57	06:26 (MA02) 06:22 (MA02)
	17:35	18:12	08:00 (MA04)	18:43	20:15	20:44	12 06:38 (MA02) 20:59 20 06:42 (MA02)
29	07:37			07:13	06:26	05:56	06:25 (MA02) 06:22 (MA02)
	17:36			19:44	20:16	20:45	12 06:37 (MA02) 20:58 20 06:42 (MA02)
30	07:36			07:12	06:24	05:55	06:25 (MA02) 06:24 (MA02)
	17:37			19:45	20:17	20:46	13 06:38 (MA02) 20:58 19 06:43 (MA02)
31	07:35			07:10	06:23	05:55	06:24 (MA02)
	17:38			19:46	20:17	20:47	14 06:38 (MA02)
Potential sun hours	298	298	370	398	448		451
Total, worst case		677	113		97		566
Sun reduction		0,43	0,47		0,58		0,67
Oper. time red.		0,89	0,89		0,89		0,89
Wind dir. red.		0,64	0,62		0,68		0,68
Total reduction		0,24	0,26		0,35		0,40
Total, real		166	29		34		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

Calculation: SHADOW\_Real case\_MapShadow receptor: R28 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December
1	05:55	06:24 (MA02)	06:19	06:49	07:19	06:52
	20:58	19 06:43 (MA02)	20:40	19:57	19:07	17:21
2	05:55	06:25 (MA02)	06:20	06:50	07:20	06:54
	20:58	19 06:44 (MA02)	20:39	19:55	19:05	17:19
3	05:56	06:25 (MA02)	06:21	06:51	07:21	06:55
	20:58	18 06:43 (MA02)	20:37	19:54	19:03	17:18
4	05:56	06:26 (MA02)	06:21	06:52	07:22	06:56
	20:58	18 06:44 (MA02)	20:36	19:52	19:02	17:17
5	05:57	06:26 (MA02)	06:22	06:53	07:23	06:57
	20:58	18 06:44 (MA02)	20:35	19:50	19:00	17:16
6	05:58	06:27 (MA02)	06:23	06:54	07:24	06:58
	20:57	18 06:45 (MA02)	20:34	19:49	18:59	17:15
7	05:58	06:28 (MA02)	06:24	06:55	07:25	06:59
	20:57	17 06:45 (MA02)	20:33	19:47	18:57	17:14
8	05:59	06:28 (MA02)	06:25	06:56	07:26	08:14 (MA04)
	20:57	17 06:45 (MA02)	20:32	19:45	18:55	10 08:24 (MA04)
9	05:59	06:29 (MA02)	06:26	06:57	07:27	08:10 (MA04)
	20:57	16 06:45 (MA02)	20:30	19:44	18:54	17 08:27 (MA04)
10	06:00	06:30 (MA02)	06:27	06:58	07:28	08:08 (MA04)
	20:56	16 06:46 (MA02)	20:29	19:42	18:52	21 08:29 (MA04)
11	06:01	06:30 (MA02)	06:28	06:59	07:29	08:06 (MA04)
	20:56	15 06:45 (MA02)	20:28	19:40	18:50	24 08:30 (MA04)
12	06:02	06:32 (MA02)	06:29	07:00	07:30	08:04 (MA04)
	20:55	14 06:46 (MA02)	20:26	19:39	18:49	27 08:31 (MA04)
13	06:02	06:33 (MA02)	06:30	07:01	07:31	08:03 (MA04)
	20:55	13 06:46 (MA02)	20:25	19:37	18:47	29 08:32 (MA04)
14	06:03	06:33 (MA02)	06:31	07:02	07:32	08:02 (MA04)
	20:54	13 06:46 (MA02)	20:24	19:35	18:46	30 08:32 (MA04)
15	06:04	06:34 (MA02)	06:32	07:03	07:33	08:02 (MA04)
	20:54	12 06:46 (MA02)	20:22	19:34	18:44	32 08:34 (MA04)
16	06:05	06:35 (MA02)	06:33	07:04	07:34	08:01 (MA04)
	20:53	11 06:46 (MA02)	20:21	19:32	18:43	33 08:34 (MA04)
17	06:05	06:36 (MA02)	06:34	07:05	07:35	08:01 (MA04)
	20:52	10 06:46 (MA02)	20:20	19:30	18:41	33 08:34 (MA04)
18	06:06	06:36 (MA02)	06:35	07:06	07:36	08:00 (MA04)
	20:52	9 06:45 (MA02)	20:18	19:29	18:40	34 08:34 (MA04)
19	06:07	06:38 (MA02)	06:36	07:07	07:38	08:00 (MA04)
	20:51	7 06:45 (MA02)	20:17	19:27	18:38	33 08:33 (MA04)
20	06:08	06:39 (MA02)	06:37	07:08	07:39	08:00 (MA04)
	20:50	6 06:45 (MA02)	20:15	19:25	18:37	33 08:33 (MA04)
21	06:09	06:41 (MA02)	06:38	07:09	07:40	08:00 (MA04)
	20:50	4 06:45 (MA02)	20:14	19:24	18:35	42 17:50 (MA11)
22	06:09	06:43 (MA02)	06:39	07:10	07:41	08:02 (MA04)
	20:49	2 06:45 (MA02)	20:12	19:22	18:34	45 17:53 (MA11)
23	06:10	06:44 (MA02)	06:40	07:11	07:42	08:03 (MA04)
	20:48	1 06:45 (MA02)	20:11	19:20	18:32	46 17:54 (MA11)
24	06:11		06:41	07:12	07:43	08:04 (MA04)
	20:47		20:09	19:19	18:31	46 17:54 (MA11)
25	06:12		06:42	07:13	06:44	07:05 (MA04)
	20:46		20:08	19:17	17:30	44 16:53 (MA11)
26	06:13		06:43	07:14	06:45	07:06 (MA04)
	20:46		20:06	19:15	17:28	40 16:51 (MA11)
27	06:14		06:44	07:15	06:47	07:08 (MA04)
	20:45		20:05	19:13	17:27	38 16:52 (MA11)
28	06:15		06:45	07:16	06:48	07:09 (MA04)
	20:44		20:03	19:12	17:26	35 16:51 (MA11)
29	06:16		06:46	07:17	06:49	07:10 (MA04)
	20:43		20:02	19:10	17:24	31 16:50 (MA11)
30	06:17		06:47	07:18	06:50	07:11 (MA04)
	20:42		20:00	19:08	17:23	24 16:48 (MA11)
31	06:18		06:48		06:51	16:34 (MA11)
	20:41		19:59		17:22	14 16:48 (MA11)
Potential sun hours	458	427	375	346	299	289
Total, worst case	293			761		41
Sun reduction	0,75			0,56		0,48
Oper. time red.	0,89			0,89		0,89
Wind dir. red.	0,68			0,63		0,67
Total reduction	0,45			0,31		0,29
Total, real	133			237		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	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R30 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June
1	07:47 17:06	07:34 17:40	08:11 (MA04) 08:21 (MA04)	06:59 18:13	07:08 19:47	06:23 20:18
2	07:47 17:06	08:10 (MA04) 07:33		06:57 18:14	07:07 19:48	06:22 20:19
3	07:48 17:07	08:10 (MA04) 07:32		06:56 18:16	07:05 19:49	06:20 20:20
4	07:48 17:08	08:10 (MA04) 07:31		06:54 18:17	07:03 19:50	06:19 20:21
5	07:48 17:09	08:10 (MA04) 07:30		06:52 18:18	07:02 19:51	06:18 20:22
6	07:48 17:10	08:09 (MA04) 07:29		06:51 18:19	07:00 19:52	06:17 20:24
7	07:47 17:11	08:09 (MA04) 07:28		06:49 18:20	06:58 19:53	06:15 20:25
8	07:47 17:12	08:17 (MA04) 07:47		06:48 18:21	06:57 19:54	06:14 20:26
9	07:47 17:13	08:09 (MA04) 07:26		06:46 18:22	06:55 19:55	06:13 20:27
10	07:47 17:14	08:09 (MA04) 07:25		06:45 18:23	06:54 19:56	06:12 20:28
11	07:47 17:15	08:20 (MA04) 07:51		06:43 18:24	06:52 19:57	06:11 20:29
12	07:47 17:16	08:08 (MA04) 07:22		06:41 18:26	06:51 19:58	06:10 20:30
13	07:46 17:17	08:22 (MA04) 07:53		06:40 18:27	06:49 19:59	06:09 20:31
14	07:46 17:18	08:08 (MA04) 07:20		06:38 18:28	06:47 20:01	06:08 20:32
15	07:46 17:19	08:23 (MA04) 07:56		06:36 18:29	06:46 20:02	06:07 20:33
16	07:45 17:20	08:07 (MA04) 07:17		06:35 18:30	06:44 20:03	06:06 20:34
17	07:45 17:22	08:24 (MA04) 07:16		06:33 18:31	06:43 20:04	06:05 20:35
18	07:44 17:23	08:25 (MA04) 07:14		06:31 18:32	06:41 20:05	06:04 20:35
19	07:44 17:24	08:05 (MA04) 07:13		06:30 18:33	06:40 20:06	06:03 20:36
20	07:43 17:25	08:26 (MA04) 18:02		06:28 18:34	06:38 20:07	06:02 20:37
21	07:43 17:26	08:04 (MA04) 07:12		06:27 18:35	06:37 20:08	06:01 20:38
22	07:42 17:27	08:03 (MA04) 07:09		06:25 18:36	06:35 20:09	06:01 20:39
23	07:41 17:29	08:27 (MA04) 18:05		06:23 18:37	06:34 20:10	06:00 20:40
24	07:41 17:30	08:02 (MA04) 07:07		06:22 18:38	06:32 20:11	05:59 20:41
25	07:40 17:31	08:27 (MA04) 18:06		06:20 18:39	06:31 20:12	05:58 20:42
26	07:39 17:32	08:01 (MA04) 07:06		06:18 18:41	06:30 20:13	05:58 20:43
27	07:39 17:33	08:27 (MA04) 18:07		06:17 18:42	06:28 20:14	05:57 20:44
28	07:38 17:35	08:03 (MA04) 07:03		06:15 18:43	06:27 20:15	05:57 20:44
29	07:37 17:36	08:04 (MA04) 07:00		06:13 18:44	06:26 20:16	05:56 20:45
30	07:36 17:37	08:25 (MA04) 18:09		06:11 18:45	06:24 20:17	05:55 20:46
31	07:35 17:38	08:07 (MA04) 07:02		06:10 18:46	06:23 20:18	05:55 20:47
Potential sun hours	298	298	370	398	448	451
Total, worst case	476	10			219	
Sun reduction	0,40	0,43			0,51	
Oper. time red.	0,89	0,89			0,89	
Wind dir. red.	0,61	0,61			0,69	
Total reduction	0,22	0,23			0,31	
Total, real	103	2			68	

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R30 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December	
1	05:55 20:58	06:19 20:40	06:49 19:57	07:10 (MA02) 19:07	07:19 17:21	06:52 16:56	07:27 12 08:02 (MA04)
2	05:55 20:58	06:20 20:39	06:50 19:55	07:11 (MA02) 19:05	07:20 17:19	06:54 16:56	07:28 11 08:02 (MA04)
3	05:56 20:58	06:21 20:37	06:51 19:54	07:12 (MA02) 19:03	07:21 17:18	06:55 16:56	07:29 10 08:02 (MA04)
4	05:56 20:58	06:21 20:36	06:52 19:52	07:12 (MA02) 19:02	07:22 17:17	06:56 16:56	07:30 9 08:02 (MA04)
5	05:57 20:58	06:22 20:35	06:53 19:50	07:13 (MA02) 19:00	07:23 17:16	06:57 16:56	07:31 8 08:02 (MA04)
6	05:58 20:57	06:23 20:34	06:54 19:49	07:14 (MA02) 18:59	07:24 17:15	06:58 16:56	07:32 6 08:01 (MA04)
7	05:58 20:57	06:24 20:33	06:55 19:47	07:15 (MA02) 18:57	07:25 17:14	06:59 16:55	07:33 5 08:01 (MA04)
8	05:59 20:57	06:25 20:32	06:56 19:45	07:16 (MA02) 18:55	18:57 17:13	07:01 16:55	07:34 4 08:01 (MA04)
9	05:59 20:57	06:26 20:30	06:57 19:44	07:17 18:54	07:02 17:11	07:02 16:55	07:35 3 08:01 (MA04)
10	06:00 20:56	06:27 20:29	06:58 19:42	07:18 18:52	07:03 17:10	07:03 16:55	07:36 1 08:00 (MA04)
11	06:01 20:56	06:28 20:28	06:59 19:40	07:19 18:51	07:04 17:09	07:39 (MA04) 16:55	07:36 16:55
12	06:02 20:55	06:29 20:26	07:00 19:39	07:20 18:49	07:05 17:08	07:38 (MA04) 16:56	07:37 16:56
13	06:02 20:55	06:30 20:25	07:01 19:37	07:21 18:47	07:07 17:08	07:37 (MA04) 16:56	07:38 16:56
14	06:03 20:54	06:31 20:24	07:02 19:35	07:22 18:46	07:08 17:07	07:36 (MA04) 16:56	07:39 16:56
15	06:04 20:54	06:32 20:22	07:03 19:34	07:23 18:44	07:09 17:06	07:35 (MA04) 16:56	07:39 16:56
16	06:05 20:53	06:33 20:21	07:04 19:32	07:24 18:43	07:10 17:05	07:36 (MA04) 16:56	07:40 16:56
17	06:05 20:53	06:34 20:20	07:05 19:30	07:25 18:41	07:11 17:04	07:35 (MA04) 16:57	07:41 16:57
18	06:06 20:52	06:35 20:18	07:06 19:29	07:26 18:40	07:12 17:03	07:35 (MA04) 16:57	07:42 16:57
19	06:07 20:51	06:36 20:17	07:07 19:27	07:27 18:38	07:14 17:03	07:36 (MA04) 16:57	07:42 16:57
20	06:08 20:50	06:37 20:15	07:08 19:25	07:28 18:37	07:15 17:02	07:38 (MA04) 16:58	07:43 16:58
21	06:09 20:50	06:38 20:14	07:09 19:24	07:29 18:35	07:16 17:01	07:39 (MA04) 16:58	07:43 16:58
22	06:09 20:49	06:39 20:12	07:10 19:22	07:30 18:34	07:17 17:01	07:40 (MA04) 16:59	07:44 16:59
23	06:10 20:48	06:40 20:11	07:11 19:20	07:31 18:32	07:18 17:00	07:41 (MA04) 16:59	07:44 16:59
24	06:11 20:47	06:41 20:09	07:12 19:19	07:32 18:31	07:19 16:59	07:42 (MA04) 17:00	07:45 17:00
25	06:12 20:46	06:42 20:08	07:13 19:17	07:33 17:30	07:20 16:59	07:44 (MA04) 17:00	07:45 17:00
26	06:13 20:46	06:43 20:06	07:14 19:15	07:34 17:28	07:22 16:58	07:45 (MA04) 17:01	07:46 17:01
27	06:14 20:45	06:44 20:05	07:15 19:13	07:35 17:27	07:23 16:58	07:46 (MA04) 17:02	07:46 17:02
28	06:15 20:44	06:45 20:03	07:16 19:12	07:36 17:26	07:24 16:58	07:47 (MA04) 17:02	07:46 17:02
29	06:16 20:43	06:46 20:02	07:17 19:10	07:37 17:24	07:25 16:57	07:48 (MA04) 17:03	07:47 17:03
30	06:17 20:42	06:47 20:00	07:18 19:08	07:38 17:23	07:26 16:57	07:49 (MA04) 17:04	07:47 17:04
31	06:18 20:41	06:48 19:59	07:19 19:07	07:39 17:22	07:27 16:56	08:00 (MA04) 17:05	07:48 17:05
Potential sun hours	458	427	375	346	299	289	
Total, worst case		156	64		419		69
Sun reduction		0,72	0,64		0,48		0,42
Oper. time red.		0,89	0,89		0,89		0,89
Wind dir. red.		0,69	0,69		0,61		0,61
Total reduction		0,44	0,39		0,26		0,22
Total, real		69	25		109		15

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

Calculation: SHADOW\_Real case\_MapShadow receptor: R36 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (11)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

#### Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	January	February	March	April	May	June
1	07:47 17:06	16:24 (MA11) 16:34 (MA11)	07:34 17:40	16:32 (MA11) 16:48 (MA11)	06:59 18:13	07:29 (MA04) 18:11
2	07:47 17:06	16:24 (MA11) 16:35 (MA11)	07:33 17:41	16:34 (MA11) 16:46 (MA11)	06:57 18:14	07:07 19:48
3	07:48 17:07	16:23 (MA11) 16:36 (MA11)	07:32 17:42	16:38 (MA11) 16:43 (MA11)	06:56 18:16	07:05 19:49
4	07:48 17:08	16:23 (MA11) 16:36 (MA11)	07:31 17:43	16:38 (MA11) 16:43 (MA11)	06:54 18:17	07:03 19:50
5	07:48 17:09	16:23 (MA11) 16:37 (MA11)	07:30 17:45	16:38 (MA11) 16:43 (MA11)	06:52 18:18	07:02 19:51
6	07:48 17:10	16:22 (MA11) 16:37 (MA11)	07:29 17:46	16:38 (MA11) 16:43 (MA11)	06:51 18:19	07:00 19:52
7	07:47 17:11	16:22 (MA11) 16:38 (MA11)	07:28 17:47	16:38 (MA11) 16:43 (MA11)	06:49 18:20	06:59 19:53
8	07:47 17:12	16:22 (MA11) 16:39 (MA11)	07:27 17:48	16:38 (MA11) 16:43 (MA11)	06:48 18:21	06:57 19:54
9	07:47 17:13	16:22 (MA11) 16:40 (MA11)	07:26 17:49	16:38 (MA11) 16:43 (MA11)	06:46 18:22	06:55 19:55
10	07:47 17:14	16:22 (MA11) 16:41 (MA11)	07:25 17:51	16:38 (MA11) 16:43 (MA11)	06:45 18:23	06:54 19:56
11	07:47 17:15	16:21 (MA11) 16:41 (MA11)	07:23 17:52	16:38 (MA11) 16:43 (MA11)	06:43 18:24	06:52 19:57
12	07:47 17:16	16:22 (MA11) 16:43 (MA11)	07:22 17:53	16:38 (MA11) 16:43 (MA11)	06:41 18:26	06:51 19:58
13	07:46 17:17	16:22 (MA11) 16:44 (MA11)	07:21 17:54	16:38 (MA11) 16:43 (MA11)	06:40 18:27	06:49 19:59
14	07:46 17:18	16:22 (MA11) 16:44 (MA11)	07:20 17:56	07:39 (MA04) 07:41 (MA04)	06:38 18:28	06:47 20:01
15	07:46 17:19	16:22 (MA11) 16:46 (MA11)	07:18 17:57	07:38 (MA04) 07:43 (MA04)	06:36 18:29	06:46 20:02
16	07:45 17:20	16:22 (MA11) 16:46 (MA11)	07:17 17:58	07:36 (MA04) 07:44 (MA04)	06:35 18:30	06:44 20:03
17	07:45 17:22	16:22 (MA11) 16:48 (MA11)	07:16 17:59	07:35 (MA04) 07:46 (MA04)	06:33 18:31	06:43 20:04
18	07:44 17:23	16:22 (MA11) 16:48 (MA11)	07:14 18:00	07:34 (MA04) 07:47 (MA04)	06:31 18:32	06:41 20:05
19	07:44 17:24	16:23 (MA11) 16:49 (MA11)	07:13 18:02	07:32 (MA04) 07:47 (MA04)	06:30 18:33	06:40 20:06
20	07:43 17:25	16:23 (MA11) 16:50 (MA11)	07:12 18:03	07:31 (MA04) 07:47 (MA04)	06:28 18:34	06:38 20:07
21	07:43 17:26	16:23 (MA11) 16:50 (MA11)	07:10 18:04	07:29 (MA04) 07:47 (MA04)	06:27 18:35	06:37 20:08
22	07:42 17:27	16:24 (MA11) 16:52 (MA11)	07:09 18:05	07:28 (MA04) 07:47 (MA04)	06:25 18:36	06:35 20:09
23	07:41 17:29	16:24 (MA11) 16:52 (MA11)	07:07 18:06	07:27 (MA04) 07:48 (MA04)	06:23 18:37	06:34 20:10
24	07:41 17:30	16:24 (MA11) 16:52 (MA11)	07:06 18:07	07:25 (MA04) 07:47 (MA04)	06:22 18:38	06:32 20:11
25	07:40 17:31	16:24 (MA11) 16:52 (MA11)	07:05 18:09	07:24 (MA04) 07:46 (MA04)	06:20 18:40	06:31 20:12
26	07:39 17:32	16:26 (MA11) 16:53 (MA11)	07:03 18:10	07:24 (MA04) 07:45 (MA04)	06:18 18:41	06:30 20:13
27	07:39 17:33	16:26 (MA11) 16:52 (MA11)	07:02 18:11	07:25 (MA04) 07:44 (MA04)	06:17 18:42	06:28 20:14
28	07:38 17:35	16:27 (MA11) 16:52 (MA11)	07:00 18:12	07:26 (MA04) 07:42 (MA04)	06:15 18:43	06:27 20:15
29	07:37 17:36	16:28 (MA11) 16:51 (MA11)		07:13 19:44	07:13 19:44	06:26 20:16
30	07:36 17:37	16:29 (MA11) 16:51 (MA11)		07:12 19:45	07:12 19:45	06:24 20:17
31	07:35 17:38	16:30 (MA11) 16:50 (MA11)		07:10 19:46	07:10 19:46	06:22 20:17
Potential sun hours	298	298	370	398	448	451
Total, worst case	666	261				
Sun reduction	0,40	0,43		11		
Oper. time red.	0,89	0,89		0,47		
Wind dir. red.	0,70	0,63		0,89		
Total reduction	0,25	0,25		0,62		
Total, real	168	64		0,26		
				3		

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R36 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (11)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December
1	05:55	06:19	06:49	07:19	06:52	07:27
	20:58	20:40	19:57	19:07	17:21	16:57
2	05:55	06:20	06:50	07:20	06:54	07:28
	20:58	20:39	19:55	19:05	17:19	16:56
3	05:56	06:21	06:51	07:21	06:55	07:29
	20:58	20:37	19:54	19:03	17:18	16:56
4	05:56	06:21	06:52	07:22	06:56	07:30
	20:58	20:36	19:52	19:02	17:17	16:56
5	05:57	06:22	06:53	07:23	06:57	07:31
	20:58	20:35	19:50	19:00	17:16	16:56
6	05:58	06:23	06:54	07:24	06:58	07:32
	20:57	20:34	19:49	18:59	17:15	16:56
7	05:58	06:24	06:55	07:25	06:59	07:33
	20:57	20:33	19:47	18:57	17:14	16:55
8	05:59	06:25	06:56	07:26	07:01	07:34
	20:57	20:32	19:45	18:55	17:13	16:55
9	05:59	06:26	06:57	07:27	07:02	07:35
	20:57	20:30	19:44	18:54	17:11	16:55
10	06:00	06:27	06:58	07:28	07:03	07:36
	20:56	20:29	19:42	18:52	17:10	16:55
11	06:01	06:28	06:59	07:29	07:04	07:36
	20:56	20:28	19:40	18:51	17:09	16:55
12	06:02	06:29	07:00	07:30	08:04 (MA04)	07:05
	20:55	20:27	19:39	18:49	7 08:11 (MA04)	17:09
13	06:02	06:30	07:01	07:31	08:00 (MA04)	07:07
	20:55	20:25	19:37	18:47	14 08:14 (MA04)	17:08
14	06:03	06:31	07:02	07:32	07:58 (MA04)	07:08
	20:54	20:24	19:35	18:46	17 08:15 (MA04)	17:07
15	06:04	06:32	07:03	07:33	07:57 (MA04)	07:09
	20:54	20:22	19:34	18:44	20 08:17 (MA04)	17:06
16	06:05	06:33	07:04	07:34	07:56 (MA04)	07:10
	20:53	20:21	19:32	18:43	22 08:18 (MA04)	17:05
17	06:05	06:34	07:05	07:35	07:56 (MA04)	07:11
	20:53	20:20	19:30	18:41	22 08:18 (MA04)	17:04
18	06:06	06:35	07:06	07:36	07:57 (MA04)	07:12
	20:52	20:18	19:29	18:40	21 08:18 (MA04)	17:03
19	06:07	06:36	07:07	07:38	07:58 (MA04)	07:14
	20:51	20:17	19:27	18:38	20 08:18 (MA04)	17:03
20	06:08	06:37	07:08	07:39	07:59 (MA04)	07:15
	20:50	20:15	19:25	18:37	19 08:18 (MA04)	17:02
21	06:09	06:38	07:09	07:40	08:00 (MA04)	07:16
	20:50	20:14	19:24	18:35	18 08:18 (MA04)	17:01
22	06:09	06:39	07:10	07:41	08:02 (MA04)	07:17
	20:49	20:12	19:22	18:34	16 08:18 (MA04)	17:01
23	06:10	06:40	07:11	07:42	08:03 (MA04)	07:18
	20:48	20:11	19:20	18:32	14 08:17 (MA04)	17:00
24	06:11	06:41	07:12	07:43	08:04 (MA04)	07:19
	20:47	20:09	19:19	18:31	12 08:16 (MA04)	16:59
25	06:12	06:42	07:13	07:44	07:05 (MA04)	07:20
	20:46	20:08	19:17	17:30	10 07:15 (MA04)	16:59
26	06:13	06:43	07:14	07:45	07:06 (MA04)	07:22
	20:46	20:06	19:15	17:28	8 07:14 (MA04)	16:58
27	06:14	06:44	07:15	07:46	07:08 (MA04)	07:23
	20:45	20:05	19:13	17:27	5 07:13 (MA04)	16:58
28	06:15	06:45	07:16	07:47	07:09 (MA04)	07:24
	20:44	20:03	19:12	17:26	1 07:10 (MA04)	16:58
29	06:16	06:46	07:17	07:48	07:25	07:25
	20:43	20:02	19:10	17:24	16:57	22 16:24 (MA11)
30	06:17	06:47	07:18	07:49	07:26	16:03 (MA11)
	20:42	20:00	19:08	17:23	16:57	21 16:24 (MA11)
31	06:18	06:48	07:19	07:50	07:27	07:27
	20:41	19:59	19:07	17:22	17:05	10 16:34 (MA11)
Potential sun hours	458	427	375	346	299	289
Total, worst case				246	535	234
Sun reduction				0,56	0,48	0,42
Oper. time red.				0,89	0,89	0,89
Wind dir. red.				0,62	0,70	0,70
Total reduction				0,31	0,30	0,26
Total, real				77	161	61

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R37 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (12)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June
1	07:47	16:16 (MA11)	07:34			
	17:06	17	16:33 (MA11)	17:40		
2	07:47	16:16 (MA11)	07:33			
	17:06	17	16:33 (MA11)	17:41		
3	07:48	16:16 (MA11)	07:32			
	17:07	18	16:34 (MA11)	17:42		
4	07:48	16:16 (MA11)	07:31			
	17:08	19	16:35 (MA11)	17:43		
5	07:48	16:16 (MA11)	07:30			
	17:09	20	16:36 (MA11)	17:45		
6	07:48	16:16 (MA11)	07:29			
	17:10	20	16:36 (MA11)	17:46		
7	07:48	16:16 (MA11)	07:28			
	17:11	21	16:37 (MA11)	17:47		
8	07:47	16:16 (MA11)	07:27			
	17:12	22	16:38 (MA11)	17:48		
9	07:47	16:16 (MA11)	07:26			
	17:13	23	16:39 (MA11)	17:49		
10	07:47	16:17 (MA11)	07:25			
	17:14	23	16:40 (MA11)	17:51		
11	07:47	16:16 (MA11)	07:23			
	17:15	25	16:41 (MA11)	17:52		
12	07:47	16:17 (MA11)	07:22			
	17:16	25	16:42 (MA11)	17:53		
13	07:46	16:17 (MA11)	07:21			
	17:17	26	16:43 (MA11)	17:54		
14	07:46	16:17 (MA11)	07:20			
	17:18	27	16:44 (MA11)	17:56		
15	07:46	16:17 (MA11)	07:18			
	17:19	28	16:45 (MA11)	17:57		
16	07:45	16:17 (MA11)	07:17			
	17:20	28	16:45 (MA11)	17:58		
17	07:45	16:18 (MA11)	07:16			
	17:22	28	16:46 (MA11)	17:59		
18	07:44	16:18 (MA11)	07:14			
	17:23	29	16:47 (MA11)	18:00		
19	07:44	16:19 (MA11)	07:13			
	17:24	29	16:48 (MA11)	18:02		
20	07:43	16:19 (MA11)	07:12			
	17:25	30	16:49 (MA11)	18:03		
21	07:43	16:19 (MA11)	07:10			
	17:26	29	16:48 (MA11)	18:04		
22	07:42	16:20 (MA11)	07:09			
	17:27	29	16:49 (MA11)	18:05		
23	07:41	16:20 (MA11)	07:07			
	17:29	29	16:49 (MA11)	18:06		
24	07:41	16:20 (MA11)	07:06			
	17:30	29	16:49 (MA11)	18:07		
25	07:40	16:21 (MA11)	07:05			
	17:31	27	16:48 (MA11)	18:09		
26	07:39	16:23 (MA11)	07:03			
	17:32	26	16:49 (MA11)	18:10		
27	07:39	16:23 (MA11)	07:02			
	17:33	25	16:48 (MA11)	18:11		
28	07:38	16:24 (MA11)	07:00			
	17:35	24	16:48 (MA11)	18:12		
29	07:37	16:25 (MA11)				
	17:36	22	16:47 (MA11)			
30	07:36	16:27 (MA11)				
	17:37	19	16:46 (MA11)			
31	07:35	16:29 (MA11)				
	17:38	15	16:44 (MA11)			
Potential sun hours	298	298	370	398	448	451
Total, worst case	749	200	27			
Sun reduction	0,40	0,43	0,47			
Oper. time red.	0,89	0,89	0,89			
Wind dir. red.	0,70	0,63	0,63			
Total reduction	0,25	0,25	0,27			
Total, real	189	49	7			

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R37 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (12)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December
1	05:55	06:19	06:49	07:19	06:52	07:27
	20:58	20:40	19:57	19:07	17:21	16:57
2	05:55	06:20	06:50	07:20	06:54	07:28
	20:58	20:39	19:55	19:05	17:19	16:56
3	05:56	06:21	06:51	07:21	06:55	07:29
	20:58	20:37	19:54	19:03	17:18	16:56
4	05:56	06:21	06:52	07:22	06:56	07:30
	20:58	20:36	19:52	19:02	17:17	16:56
5	05:57	06:22	06:53	07:23	06:57	07:31
	20:58	20:35	19:50	19:00	17:16	16:56
6	05:58	06:23	06:54	07:24	06:58	07:32
	20:57	20:34	19:49	18:59	17:15	16:56
7	05:58	06:24	06:55	07:25	06:59	07:33
	20:57	20:33	19:47	18:57	17:14	16:55
8	05:59	06:25	06:56	07:26	07:01	07:34
	20:57	20:32	19:46	18:55	17:13	16:55
9	05:59	06:26	06:57	07:27	07:02	07:35
	20:57	20:30	19:44	18:54	17:11	16:55
10	06:00	06:27	06:58	07:28	07:03	16:02 (MA11)
	20:56	20:29	19:42	18:52	17:10	16:13 (MA11)
11	06:01	06:28	06:59	07:29	08:01 (MA04)	07:04
	20:56	20:28	19:40	18:51	7	08:08 (MA04)
12	06:02	06:29	07:00	07:30	07:58 (MA04)	07:05
	20:55	20:27	19:39	18:49	13	08:11 (MA04)
13	06:02	06:30	07:01	07:31	07:56 (MA04)	07:07
	20:55	20:25	19:37	18:47	17	08:13 (MA04)
14	06:03	06:31	07:02	07:32	07:54 (MA04)	07:08
	20:54	20:24	19:35	18:46	20	08:14 (MA04)
15	06:04	06:32	07:03	07:33	07:54 (MA04)	07:09
	20:54	20:22	19:34	18:44	21	08:15 (MA04)
16	06:05	06:33	07:04	07:34	07:55 (MA04)	07:10
	20:53	20:21	19:32	18:43	21	08:16 (MA04)
17	06:05	06:34	07:05	07:35	07:56 (MA04)	07:11
	20:53	20:20	19:30	18:41	20	08:16 (MA04)
18	06:06	06:35	07:06	07:36	07:57 (MA04)	07:12
	20:52	20:18	19:29	18:40	19	08:16 (MA04)
19	06:07	06:36	07:07	07:38	07:58 (MA04)	07:14
	20:51	20:17	19:27	18:38	17	08:15 (MA04)
20	06:08	06:37	07:08	07:39	07:59 (MA04)	07:15
	20:50	20:15	19:25	18:37	16	08:15 (MA04)
21	06:09	06:38	07:09	07:40	08:00 (MA04)	07:16
	20:50	20:14	19:24	18:35	14	08:14 (MA04)
22	06:09	06:39	07:10	07:41	08:02 (MA04)	07:17
	20:49	20:12	19:22	18:34	12	08:14 (MA04)
23	06:10	06:40	07:11	07:42	08:03 (MA04)	07:18
	20:48	20:11	19:20	18:32	10	08:13 (MA04)
24	06:11	06:41	07:12	07:43	08:04 (MA04)	07:19
	20:47	20:09	19:19	18:31	8	08:12 (MA04)
25	06:12	06:42	07:13	07:44	07:05 (MA04)	07:20
	20:46	20:08	19:17	17:30	5	07:10 (MA04)
26	06:13	06:43	07:14	07:45	07:06 (MA04)	07:22
	20:46	20:06	19:15	17:28	2	07:08 (MA04)
27	06:14	06:44	07:15	07:46	07:23	15:56 (MA11)
	20:45	20:05	19:13	17:27	16:58	28
28	06:15	06:45	07:16	07:48	07:24	15:57 (MA11)
	20:44	20:03	19:12	17:26	16:58	27
29	06:16	06:46	07:17	07:49	07:25	15:57 (MA11)
	20:43	20:02	19:10	17:24	16:57	26
30	06:17	06:47	07:18	07:50	07:26	15:58 (MA11)
	20:42	20:00	19:08	17:23	16:57	25
31	06:18	06:48	07:19	07:51	07:27	16:23 (MA11)
	20:41	19:59	19:07	17:22	17:05	16
Potential sun hours	458	427	375	346	299	289
Total, worst case				222	535	521
Sun reduction				0,56	0,48	0,42
Oper. time red.				0,89	0,89	0,89
Wind dir. red.				0,63	0,70	0,70
Total reduction				0,31	0,30	0,26
Total, real				70	162	136

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R39 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (13)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June
1	07:47 17:06	16:11 (MA11) 16:32 (MA11)	07:34 17:40	06:59 18:13		05:54 20:48
2	07:47 17:06	16:11 (MA11) 16:33 (MA11)	07:33 17:41	06:57 18:14	07:21 (MA04) 07:39 (MA04)	05:54 20:48
3	07:48 17:07	16:11 (MA11) 16:33 (MA11)	07:32 17:42	06:56 18:16	07:22 (MA04) 07:37 (MA04)	05:54 20:49
4	07:48 17:08	16:11 (MA11) 16:34 (MA11)	07:31 17:43	06:54 18:17	07:23 (MA04) 07:34 (MA04)	05:53 20:50
5	07:48 17:09	16:12 (MA11) 16:35 (MA11)	07:30 17:45	06:52 18:18	07:05 07:05	05:53 20:50
6	07:48 17:10	16:11 (MA11) 16:35 (MA11)	07:29 17:46	06:51 18:19	07:06 19:52	05:52 20:51
7	07:48 17:11	16:11 (MA11) 16:36 (MA11)	07:28 17:47	06:49 18:20	06:59 19:53	05:52 20:52
8	07:47 17:12	16:11 (MA11) 16:37 (MA11)	07:27 17:48	06:48 18:21	06:57 19:54	05:52 20:52
9	07:47 17:13	16:12 (MA11) 16:38 (MA11)	07:26 17:49	06:46 18:22	06:55 19:55	05:52 20:53
10	07:47 17:14	16:12 (MA11) 16:39 (MA11)	07:25 17:51	06:45 18:23	06:54 19:56	05:52 20:53
11	07:47 17:15	16:12 (MA11) 16:40 (MA11)	07:23 17:52	06:43 18:24	06:52 19:57	05:51 20:54
12	07:47 17:16	16:12 (MA11) 16:41 (MA11)	07:22 17:53	06:41 18:26	06:51 19:58	05:51 20:54
13	07:46 17:17	16:13 (MA11) 16:42 (MA11)	07:21 17:54	06:40 18:27	06:49 19:59	05:51 20:55
14	07:46 17:18	16:13 (MA11) 16:42 (MA11)	07:20 17:56	06:38 18:28	06:47 20:01	05:51 20:55
15	07:46 17:19	16:13 (MA11) 16:43 (MA11)	07:18 17:57	06:36 18:29	06:46 20:02	05:51 20:56
16	07:45 17:20	16:13 (MA11) 16:43 (MA11)	07:17 17:58	06:35 18:30	06:44 20:03	05:51 20:56
17	07:45 17:22	16:14 (MA11) 16:45 (MA11)	07:16 17:59	06:33 18:31	20:03 20:04	20:56 20:57
18	07:44 17:23	16:14 (MA11) 16:45 (MA11)	07:14 18:00	06:31 18:32	06:43 20:05	05:51 20:57
19	07:44 17:24	16:15 (MA11) 16:46 (MA11)	07:13 18:02	06:30 18:33	06:40 20:06	05:51 20:57
20	07:43 17:25	16:15 (MA11) 16:46 (MA11)	07:12 18:03	06:28 18:34	06:38 20:07	05:51 20:57
21	07:43 17:26	16:15 (MA11) 16:45 (MA11)	07:10 18:04	06:27 18:35	06:37 20:08	05:52 20:58
22	07:42 17:27	16:17 (MA11) 16:46 (MA11)	07:09 18:05	06:25 18:36	06:35 20:09	05:52 20:58
23	07:41 17:29	16:17 (MA11) 16:46 (MA11)	07:08 18:06	06:23 18:37	06:34 20:10	05:52 20:58
24	07:41 17:30	16:18 (MA11) 16:45 (MA11)	07:06 18:07	06:22 18:38	06:32 20:11	05:52 20:58
25	07:40 17:31	16:18 (MA11) 16:45 (MA11)	07:05 18:09	06:20 18:40	06:31 20:12	05:53 20:58
26	07:39 17:32	16:20 (MA11) 16:45 (MA11)	07:03 18:10	06:18 18:41	06:30 20:13	05:53 20:58
27	07:39 17:33	16:21 (MA11) 16:44 (MA11)	07:02 18:11	06:17 18:42	06:28 20:14	05:53 20:59
28	07:38 17:35	16:22 (MA11) 16:43 (MA11)	07:00 18:12	06:15 18:43	06:27 20:15	05:54 20:59
29	07:37 17:36	16:24 (MA11) 16:42 (MA11)		07:13 19:44	06:26 20:16	05:54 20:59
30	07:36 17:37	16:25 (MA11) 16:41 (MA11)		07:12 19:45	06:24 20:17	05:54 20:58
31	07:35 17:38	16:28 (MA11) 16:38 (MA11)		07:10 19:46	05:55 20:47	
Potential sun hours	298	298	370	398	448	451
Total, worst case	793	158	44			
Sun reduction	0,40	0,43	0,47			
Oper. time red.	0,89	0,89	0,89			
Wind dir. red.	0,70	0,63	0,63			
Total reduction	0,25	0,25	0,27			
Total, real	200	39	12			

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R39 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (13)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December
1	05:55	06:19	06:49	07:19	06:52	07:27
	20:58	20:40	19:57	19:07	17:21	16:57
2	05:55	06:20	06:50	07:20	06:54	07:28
	20:58	20:39	19:55	19:05	17:19	16:56
3	05:56	06:21	06:51	07:21	06:55	07:29
	20:58	20:37	19:54	19:03	17:18	16:56
4	05:56	06:21	06:52	07:22	06:56	07:30
	20:58	20:36	19:52	19:02	17:17	16:56
5	05:57	06:22	06:53	07:23	06:57	07:31
	20:58	20:35	19:50	19:00	17:16	16:56
6	05:58	06:23	06:54	07:24	06:58	07:32
	20:57	20:34	19:49	18:59	17:15	16:56
7	05:58	06:24	06:55	07:25	06:59	07:33
	20:57	20:33	19:47	18:57	17:14	16:55
8	05:59	06:25	06:56	07:26	07:01	07:34
	20:57	20:32	19:46	18:55	17:13	16:55
9	05:59	06:26	06:57	07:27	07:02	07:35
	20:57	20:30	19:44	18:54	17:11	16:55
10	06:00	06:27	06:58	07:28	07:03	07:36
	20:56	20:29	19:42	18:52	17:10	16:55
11	06:01	06:28	06:59	07:29	07:04	07:36
	20:56	20:28	19:40	18:51	17:09	16:55
12	06:02	06:29	07:00	07:30	07:05	07:37
	20:55	20:27	19:39	18:49	17:09	16:56
13	06:02	06:30	07:01	07:31	07:07	07:38
	20:55	20:25	19:37	18:47	17:08	16:56
14	06:03	06:31	07:02	07:32	07:08	07:39
	20:54	20:24	19:35	18:46	17:07	16:56
15	06:04	06:32	07:03	07:33	07:09	07:39
	20:54	20:22	19:34	18:44	17:06	16:56
16	06:05	06:33	07:04	07:34	07:10	07:40
	20:53	20:21	19:32	18:43	17:05	16:56
17	06:05	06:34	07:05	07:35	07:11	07:41
	20:53	20:20	19:30	18:41	17:04	16:57
18	06:06	06:35	07:06	07:36	07:12	07:42
	20:52	20:18	19:29	18:40	17:03	16:57
19	06:07	06:36	07:07	07:38	07:14	07:42
	20:51	20:17	19:27	18:38	17:03	16:57
20	06:08	06:37	07:08	07:39	07:15	07:43
	20:50	20:15	19:25	18:37	17:02	16:58
21	06:09	06:38	07:09	07:40	07:16	07:43
	20:50	20:14	19:24	18:35	17:01	16:58
22	06:10	06:39	07:10	07:41	07:17	07:44
	20:49	20:12	19:22	18:34	17:01	16:59
23	06:10	06:40	07:11	07:42	07:18	07:44
	20:48	20:11	19:20	18:32	17:00	16:59
24	06:11	06:41	07:12	07:43	07:19	07:45
	20:47	20:09	19:19	18:31	16:59	17:00
25	06:12	06:42	07:13	07:44	07:20	07:45
	20:46	20:08	19:17	17:30	16:59	17:00
26	06:13	06:43	07:14	07:45	07:22	07:46
	20:46	20:06	19:15	17:28	16:58	17:01
27	06:14	06:44	07:15	07:46	07:23	07:46
	20:45	20:05	19:13	17:27	16:58	17:02
28	06:15	06:45	07:16	07:48	07:24	07:46
	20:44	20:03	19:12	17:26	16:58	17:02
29	06:16	06:46	07:17	07:49	07:25	07:47
	20:43	20:02	19:10	17:24	16:57	17:03
30	06:17	06:47	07:18	07:50	07:26	07:47
	20:42	20:00	19:08	17:23	16:57	17:04
31	06:18	06:48	07:19	07:51	07:27	07:47
	20:41	19:59	19:07	17:22	16:57	17:05
Potential sun hours	458	427	375	346	299	289
Total, worst case				206	530	648
Sun reduction				0,56	0,48	0,42
Oper. time red.				0,89	0,89	0,89
Wind dir. red.				0,63	0,70	0,70
Total reduction				0,31	0,30	0,26
Total, real				65	160	169

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R43 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June		
1	07:47	07:34	16:32 (MA11)	06:59	07:08	06:23	05:54	
	17:06	17:40	17:00 (MA11)	18:13	19:47	20:18	20:48	
2	07:47	07:33	16:32 (MA11)	06:57	07:16 (MA04)	07:07	06:22	05:54
	17:06	17:41	17:01 (MA11)	18:14	2 07:18 (MA04)	19:48	20:19	20:48
3	07:48	07:32	16:32 (MA11)	06:56	07:14 (MA04)	07:05	06:20	05:54
	17:07	17:42	17:02 (MA11)	18:16	6 07:20 (MA04)	19:49	20:20	20:49
4	07:48	07:31	16:32 (MA11)	06:54	07:13 (MA04)	07:03	06:19	05:53
	17:08	17:43	17:04 (MA11)	18:17	9 07:22 (MA04)	19:50	20:21	20:50
5	07:48	07:30	16:32 (MA11)	06:52	07:11 (MA04)	07:02	06:18	05:53
	17:09	17:45	17:05 (MA11)	18:18	11 07:22 (MA04)	19:51	20:22	20:50
6	07:48	07:29	16:32 (MA11)	06:51	07:10 (MA04)	07:00	06:17	05:52
	17:10	17:46	17:06 (MA11)	18:19	13 07:23 (MA04)	19:52	20:24	20:51
7	07:47	07:28	16:33 (MA11)	06:49	07:08 (MA04)	06:59	06:15	05:52
	17:11	17:47	17:06 (MA11)	18:20	15 07:23 (MA04)	19:53	20:25	20:52
8	07:47	07:27	16:33 (MA11)	06:48	07:06 (MA04)	06:57	06:14	05:52
	17:12	17:48	17:06 (MA11)	18:21	17 07:23 (MA04)	19:54	20:26	20:52
9	07:47	07:26	16:33 (MA11)	06:46	07:05 (MA04)	06:55	06:13	05:52
	17:13	17:49	17:05 (MA11)	18:22	18 07:23 (MA04)	19:55	20:27	20:53
10	07:47	07:25	16:34 (MA11)	06:45	07:03 (MA04)	06:54	06:12	05:52
	17:14	17:51	17:04 (MA11)	18:23	20 07:23 (MA04)	19:56	20:28	20:53
11	07:47	07:23	16:35 (MA11)	06:43	07:02 (MA04)	06:52	06:11	05:51
	17:15	17:52	17:04 (MA11)	18:24	21 07:23 (MA04)	19:57	20:29	20:54
12	07:47	07:22	16:36 (MA11)	06:41	07:00 (MA04)	06:51	06:10	05:51
	17:16	17:53	17:03 (MA11)	18:26	21 07:21 (MA04)	19:58	20:30	20:54
13	07:46	07:21	16:37 (MA11)	06:40	07:01 (MA04)	06:49	06:09	05:51
	17:17	17:54	17:01 (MA11)	18:27	19 07:20 (MA04)	19:59	20:31	20:55
14	07:46	07:20	16:38 (MA11)	06:38	07:02 (MA04)	06:47	06:08	05:51
	17:18	17:56	17:00 (MA11)	18:28	17 07:19 (MA04)	20:01	20:32	20:55
15	07:46	07:18	16:41 (MA11)	06:36	07:04 (MA04)	06:46	06:07	05:51
	17:19	17:57	16:59 (MA11)	18:29	12 07:16 (MA04)	20:02	20:33	20:56
16	07:45	07:17	16:43 (MA11)	06:35	07:07 (MA04)	06:44	06:06	05:51
	17:20	17:58	16:56 (MA11)	18:30	5 07:12 (MA04)	20:03	20:34	20:56
17	07:45	07:16		06:33		06:43	06:05	05:51
	17:22	17:59		18:31		20:04	20:35	20:57
18	07:44	07:14		06:31		06:41	06:04	05:51
	17:23	18:00		18:32		20:05	20:35	20:57
19	07:44	07:13		06:30		06:40	06:03	05:51
	17:24	18:02		18:33		20:06	20:36	20:57
20	07:43	07:12		06:28		06:38	06:02	05:51
	17:25	18:03		18:34		20:07	20:37	20:57
21	07:43	07:10		06:27		06:37	06:01	05:52
	17:26	9 16:40 (MA11)	18:04	18:35		20:08	20:38	20:58
22	07:42	16:39 (MA11)	07:09	06:25		06:35	06:01	05:52
	17:27	12 16:51 (MA11)	18:05	18:36		20:09	20:39	20:58
23	07:41	16:37 (MA11)	07:08	06:23		06:34	06:00	05:52
	17:29	15 16:52 (MA11)	18:06	18:37		20:10	20:40	20:58
24	07:41	16:36 (MA11)	07:06	06:22		06:32	05:59	05:52
	17:30	17 16:53 (MA11)	18:08	18:38		20:11	20:41	20:58
25	07:40	16:34 (MA11)	07:05	06:20		06:31	05:58	05:53
	17:31	20 16:54 (MA11)	18:09	18:40		20:12	20:42	20:58
26	07:39	16:35 (MA11)	07:03	06:18		06:30	05:58	05:53
	17:32	21 16:56 (MA11)	18:10	18:41		20:13	20:43	20:58
27	07:39	16:34 (MA11)	07:02	06:17		06:28	05:57	05:53
	17:33	23 16:57 (MA11)	18:11	18:42		20:14	20:44	20:59
28	07:38	16:33 (MA11)	07:00	06:15		06:27	05:57	05:54
	17:35	24 16:57 (MA11)	18:12	18:43		20:15	20:44	20:59
29	07:37	16:33 (MA11)		07:13		06:26	05:56	05:54
	17:36	25 16:58 (MA11)		19:44		20:16	20:45	20:59
30	07:36	16:32 (MA11)		07:12		06:24	05:55	05:54
	17:37	26 16:58 (MA11)		19:45		20:17	20:46	20:58
31	07:35	16:32 (MA11)		07:10			05:55	
	17:38	27 16:59 (MA11)		19:46			20:47	
Potential sun hours	298	298	370		398	448	451	
Total, worst case	219	447	206					
Sun reduction	0,40	0,43	0,47					
Oper. time red.	0,89	0,89	0,89					
Wind dir. red.	0,69	0,69	0,66					
Total reduction	0,25	0,27	0,28					
Total, real	55	120	57					

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R43 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December				
1	05:55	06:19	06:49	07:19	07:40 (MA04)	06:52	16:04 (MA11)	07:27		
	20:58	20:40	19:57	19:07	08:00 (MA04)	17:21	30	16:34 (MA11)	16:57	
2	05:55	06:20	06:50	07:20	07:40 (MA04)	06:54	16:03 (MA11)	07:28		
	20:58	20:39	19:55	19:05	21	08:01 (MA04)	17:19	31	16:34 (MA11)	16:56
3	05:56	06:21	06:51	07:21	07:41 (MA04)	06:55	16:02 (MA11)	07:29		
	20:58	20:37	19:54	19:03	20	08:01 (MA04)	17:18	33	16:35 (MA11)	16:56
4	05:56	06:22	06:52	07:22	07:42 (MA04)	06:56	16:03 (MA11)	07:30		
	20:58	20:36	19:52	19:02	19	08:01 (MA04)	17:17	33	16:36 (MA11)	16:56
5	05:57	06:22	06:53	07:23	07:43 (MA04)	06:57	16:02 (MA11)	07:31		
	20:58	20:35	19:50	19:00	18	08:01 (MA04)	17:16	33	16:35 (MA11)	16:56
6	05:58	06:23	06:54	07:24	07:44 (MA04)	06:58	16:02 (MA11)	07:32		
	20:57	20:34	19:49	18:59	16	08:00 (MA04)	17:15	32	16:34 (MA11)	16:56
7	05:58	06:24	06:55	07:25	07:45 (MA04)	06:59	16:02 (MA11)	07:33		
	20:57	20:33	19:47	18:57	14	07:59 (MA04)	17:14	31	16:33 (MA11)	16:55
8	05:59	06:25	06:56	07:26	07:46 (MA04)	07:01	16:02 (MA11)	07:34		
	20:57	20:32	19:46	18:55	12	07:58 (MA04)	17:13	31	16:33 (MA11)	16:55
9	06:00	06:26	06:57	07:27	07:47 (MA04)	07:02	16:02 (MA11)	07:35		
	20:57	20:30	19:44	18:54	10	07:57 (MA04)	17:11	30	16:32 (MA11)	16:55
10	06:00	06:27	06:58	07:28	07:48 (MA04)	07:03	16:03 (MA11)	07:36		
	20:56	20:29	19:42	18:52	7	07:55 (MA04)	17:10	28	16:31 (MA11)	16:55
11	06:01	06:28	06:59	07:29	07:49 (MA04)	07:04	16:03 (MA11)	07:36		
	20:56	20:28	19:40	18:51	4	07:53 (MA04)	17:09	27	16:30 (MA11)	16:55
12	06:02	06:29	07:00	07:30	07:05	16:04 (MA11)	07:37			
	20:55	20:27	19:39	18:49	17:09	26	16:30 (MA11)	16:56		
13	06:02	06:30	07:01	07:31	07:07	16:05 (MA11)	07:38			
	20:55	20:25	19:37	18:47	17:08	25	16:30 (MA11)	16:56		
14	06:03	06:31	07:02	07:32	07:08	16:05 (MA11)	07:39			
	20:54	20:24	19:35	18:46	17:07	24	16:29 (MA11)	16:56		
15	06:04	06:32	07:03	07:33	07:09	16:06 (MA11)	07:39			
	20:54	20:22	19:34	18:44	17:06	22	16:28 (MA11)	16:56		
16	06:05	06:33	07:04	07:34	07:10	16:08 (MA11)	07:40			
	20:53	20:21	19:32	18:43	17:05	21	16:29 (MA11)	16:56		
17	06:05	06:34	07:05	07:35	07:11	16:08 (MA11)	07:41			
	20:53	20:20	19:30	18:41	17:04	20	16:28 (MA11)	16:57		
18	06:06	06:35	07:06	07:36	07:12	16:10 (MA11)	07:42			
	20:52	20:18	19:29	18:40	17:03	17	16:27 (MA11)	16:57		
19	06:07	06:36	07:07	07:38	07:14	16:11 (MA11)	07:42			
	20:51	20:17	19:27	18:38	17:03	15	16:26 (MA11)	16:57		
20	06:08	06:37	07:08	07:39	07:15	16:14 (MA11)	07:43			
	20:50	20:15	19:25	18:37	17:02	12	16:26 (MA11)	16:58		
21	06:09	06:38	07:09	07:40	07:16	16:16 (MA11)	07:43			
	20:50	20:14	19:24	18:35	17:01	9	16:25 (MA11)	16:58		
22	06:10	06:39	07:10	07:41	07:17	16:17 (MA11)	07:44			
	20:49	20:12	19:22	18:34	17:01	16:59				
23	06:10	06:40	07:11	07:42	07:18	16:18 (MA11)	07:44			
	20:48	20:11	19:20	18:32	17:00	16:59				
24	06:11	06:41	07:12	07:43	07:19	16:19 (MA11)	07:45			
	20:47	20:09	19:19	18:31	16:59	17:00				
25	06:12	06:42	07:13	06:44	16:16 (MA11)	07:20	07:45			
	20:46	20:08	19:17	17:30	6	16:22 (MA11)	16:59	17:00		
26	06:13	06:43	07:14	06:45	16:11 (MA11)	07:22	07:46			
	20:46	20:06	19:15	17:28	15	16:26 (MA11)	16:58	17:01		
27	06:14	06:44	07:15	06:47	16:10 (MA11)	07:23	07:46			
	20:45	20:05	19:13	17:27	19	16:29 (MA11)	16:58	17:02		
28	06:15	06:45	07:16	07:45 (MA04)	06:48	16:08 (MA11)	07:24	07:46		
	20:44	20:03	19:12	11	07:56 (MA04)	17:26	22	16:30 (MA11)	16:58	17:02
29	06:16	06:46	07:17	07:43 (MA04)	06:49	16:06 (MA11)	07:25	07:47		
	20:43	20:02	19:10	15	07:58 (MA04)	17:24	25	16:31 (MA11)	16:57	17:03
30	06:17	06:47	07:18	07:42 (MA04)	06:50	16:05 (MA11)	07:26	07:47		
	20:42	20:00	19:08	18	08:00 (MA04)	17:23	27	16:32 (MA11)	16:57	17:04
31	06:18	06:48	07:19	06:51	16:05 (MA11)	07:27	07:47			
	20:41	19:59	17:22	29	16:34 (MA11)	17:05				
Potential sun hours	458	427	375	346	299	289				
Total, worst case			44	304	530					
Sun reduction			0,64	0,56	0,48					
Oper. time red.			0,89	0,89	0,89					
Wind dir. red.			0,66	0,67	0,69					
Total reduction			0,38	0,34	0,30					
Total, real			17	102	158					

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)
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### SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R47 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	January	February	March	April	May	June			
1	07:47	09:00 (MA08)	07:34	06:59	16:24 (MA11)	07:08	06:23	05:54	
	17:06	37 09:37 (MA08)	17:40	18:13	48 17:12 (MA11)	19:47	20:18	20:48	
2	07:47	09:01 (MA08)	07:33	06:57	16:24 (MA11)	07:07	06:22	05:54	
	17:06	36 09:37 (MA08)	17:41	18:14	47 17:11 (MA11)	19:48	20:19	20:48	
3	07:48	09:02 (MA08)	07:32	06:56	16:24 (MA11)	07:05	06:20	05:54	
	17:07	35 09:37 (MA08)	17:42	18:16	46 17:10 (MA11)	19:49	20:20	20:49	
4	07:48	09:03 (MA08)	07:31	06:54	16:26 (MA11)	07:03	06:19	05:53	
	17:08	34 09:37 (MA08)	17:43	18:17	43 17:09 (MA11)	19:50	20:21	20:50	
5	07:48	09:05 (MA08)	07:30	16:42 (MA11)	06:52	16:26 (MA11)	07:02	06:18	05:53
	17:09	31 09:36 (MA08)	17:45	12 16:54 (MA11)	18:18	42 17:08 (MA11)	19:51	20:23	20:50
6	07:48	09:05 (MA08)	07:29	16:38 (MA11)	06:51	16:28 (MA11)	07:00	06:17	05:53
	17:10	30 09:35 (MA08)	17:46	20 16:58 (MA11)	18:19	39 17:07 (MA11)	19:52	20:24	20:51
7	07:48	09:07 (MA08)	07:28	16:36 (MA11)	06:49	16:29 (MA11)	06:59	06:16	05:52
	17:11	27 09:34 (MA08)	17:47	25 17:01 (MA11)	18:20	36 17:05 (MA11)	19:53	20:25	20:52
8	07:47	09:09 (MA08)	07:27	16:34 (MA11)	06:48	16:30 (MA11)	06:57	06:14	05:52
	17:12	24 09:33 (MA08)	17:48	28 17:02 (MA11)	18:21	33 17:03 (MA11)	19:54	20:26	20:52
9	07:47	09:11 (MA08)	07:26	16:31 (MA11)	06:46	16:32 (MA11)	06:55	06:13	05:52
	17:13	21 09:32 (MA08)	17:49	31 17:02 (MA11)	18:22	29 17:01 (MA11)	19:55	20:27	20:53
10	07:47	09:13 (MA08)	07:25	16:30 (MA11)	06:45	16:34 (MA11)	06:54	06:12	05:52
	17:14	18 09:31 (MA08)	17:51	33 17:03 (MA11)	18:23	24 16:58 (MA11)	19:56	20:28	20:53
11	07:47	09:16 (MA08)	07:23	16:29 (MA11)	06:43	16:38 (MA11)	06:52	06:11	05:51
	17:15	12 09:28 (MA08)	17:52	35 17:04 (MA11)	18:25	17 16:55 (MA11)	19:57	20:29	20:54
12	07:47	07:22	16:28 (MA11)	06:41	16:28 (MA11)	06:51	06:10	05:51	
	17:16	38 17:53	17:06 (MA11)	18:26	19:58	20:30	20:54		
13	07:46	07:21	16:26 (MA11)	06:40	16:26 (MA11)	06:49	06:09	05:51	
	17:17	41 17:54	17:07 (MA11)	18:27	20:00	20:31	20:55		
14	07:46	07:20	16:26 (MA11)	06:38	16:26 (MA11)	06:47	06:08	05:51	
	17:18	43 17:56	17:09 (MA11)	18:28	20:01	20:32	20:55		
15	07:46	07:18	16:25 (MA11)	06:36	16:25 (MA11)	06:46	06:07	05:51	
	17:19	44 17:57	17:09 (MA11)	18:29	20:02	20:33	20:56		
16	07:45	07:17	16:24 (MA11)	06:35	16:24 (MA11)	06:44	06:06	05:51	
	17:20	45 17:58	17:09 (MA11)	18:30	20:03	20:34	20:56		
17	07:45	07:16	16:24 (MA11)	06:33	16:24 (MA11)	06:43	06:05	05:51	
	17:22	46 17:59	17:10 (MA11)	18:31	20:04	20:35	20:57		
18	07:44	07:14	16:24 (MA11)	06:32	16:24 (MA11)	06:41	06:04	05:51	
	17:23	47 18:00	17:11 (MA11)	18:32	20:05	20:35	20:57		
19	07:44	07:13	16:23 (MA11)	06:30	16:23 (MA11)	06:40	06:03	05:51	
	17:24	48 18:02	17:11 (MA11)	18:33	20:06	20:36	20:57		
20	07:43	07:12	16:23 (MA11)	06:28	16:23 (MA11)	06:38	06:02	05:51	
	17:25	49 18:03	17:12 (MA11)	18:34	20:07	20:37	20:57		
21	07:43	07:10	16:22 (MA11)	06:27	16:22 (MA11)	06:37	06:02	05:52	
	17:26	50 18:04	17:12 (MA11)	18:35	20:08	20:38	20:58		
22	07:42	07:09	16:22 (MA11)	06:25	16:22 (MA11)	06:35	06:01	05:52	
	17:27	51 18:05	17:13 (MA11)	18:36	20:09	20:39	20:58		
23	07:41	07:08	16:23 (MA11)	06:23	16:23 (MA11)	06:34	06:00	05:52	
	17:29	51 18:06	17:14 (MA11)	18:37	20:10	20:40	20:58		
24	07:41	07:06	16:22 (MA11)	06:22	16:22 (MA11)	06:32	05:59	05:52	
	17:30	52 18:08	17:14 (MA11)	18:38	20:11	20:41	20:58		
25	07:40	07:05	16:23 (MA11)	06:20	16:23 (MA11)	06:31	05:58	05:53	
	17:31	51 18:09	17:14 (MA11)	18:40	20:12	20:42	20:58		
26	07:39	07:03	16:22 (MA11)	06:18	16:22 (MA11)	06:30	05:58	05:53	
	17:32	51 18:10	17:13 (MA11)	18:41	20:13	20:43	20:58		
27	07:39	07:02	16:23 (MA11)	06:17	16:23 (MA11)	06:28	05:57	05:53	
	17:33	50 18:11	17:13 (MA11)	18:42	20:14	20:44	20:59		
28	07:38	07:00	16:23 (MA11)	06:15	16:23 (MA11)	06:27	05:57	05:54	
	17:35	49 18:12	17:12 (MA11)	18:43	20:15	20:44	20:59		
29	07:37			07:13	16:23 (MA11)	06:26	05:56	05:54	
	17:36			19:44	20:16	20:45	20:59		
30	07:36			07:12	16:23 (MA11)	06:24	05:55	05:55	
	17:37			19:45	20:17	20:46	20:58		
31	07:35			07:10	16:23 (MA11)		05:55		
	17:38			19:46		20:47			
Potential sun hours	298	298	370		398	448	451		
Total, worst case	305	990	404						
Sun reduction	0,40	0,43	0,47						
Oper. time red.	0,89	0,89	0,89						
Wind dir. red.	0,60	0,68	0,68						
Total reduction	0,21	0,26	0,29						
Total, real	65	260	115						

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R47 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December			
1	05:55	06:19	06:49	07:19	06:52	16:00 (MA11)	07:27	08:58 (MA08)	
	20:58	20:40	19:57	19:07	17:21	33 16:33 (MA11)	16:57	12 09:10 (MA08)	
2	05:55	06:20	06:50	07:20	17:19 (MA11)	06:54	16:01 (MA11)	07:28	08:55 (MA08)
	20:58	20:39	19:55	19:05	13 17:32 (MA11)	17:19	31 16:32 (MA11)	16:56	18 09:13 (MA08)
3	05:56	06:21	06:51	07:21	17:14 (MA11)	06:55	16:03 (MA11)	07:29	08:54 (MA08)
	20:58	20:37	19:54	19:03	21 17:35 (MA11)	17:18	28 16:31 (MA11)	16:56	21 09:15 (MA08)
4	05:57	06:22	06:52	07:22	17:11 (MA11)	06:56	16:06 (MA11)	07:30	08:53 (MA08)
	20:58	20:36	19:52	19:02	27 17:38 (MA11)	17:17	24 16:30 (MA11)	16:56	24 09:17 (MA08)
5	05:57	06:22	06:53	07:23	17:08 (MA11)	06:57	16:08 (MA11)	07:31	08:52 (MA08)
	20:58	20:35	19:50	19:00	31 17:39 (MA11)	17:16	19 16:27 (MA11)	16:56	27 09:19 (MA08)
6	05:58	06:23	06:54	07:24	17:06 (MA11)	06:58	16:13 (MA11)	07:32	08:51 (MA08)
	20:57	20:34	19:49	18:59	35 17:41 (MA11)	17:15	10 16:23 (MA11)	16:56	30 09:21 (MA08)
7	05:58	06:24	06:55	07:25	17:04 (MA11)	06:59	07:33	08:51 (MA08)	
	20:57	20:33	19:47	18:57	38 17:42 (MA11)	17:14	16:55	31 09:22 (MA08)	
8	05:59	06:25	06:56	07:26	17:02 (MA11)	07:01	07:34	08:50 (MA08)	
	20:57	20:32	19:46	18:55	41 17:43 (MA11)	17:13	16:55	34 09:24 (MA08)	
9	06:00	06:26	06:57	07:27	17:01 (MA11)	07:02	07:35	08:50 (MA08)	
	20:57	20:30	19:44	18:54	42 17:43 (MA11)	17:12	16:55	35 09:25 (MA08)	
10	06:00	06:27	06:58	07:28	16:59 (MA11)	07:03	07:36	08:50 (MA08)	
	20:56	20:29	19:42	18:52	45 17:44 (MA11)	17:10	16:55	36 09:26 (MA08)	
11	06:01	06:28	06:59	07:29	16:58 (MA11)	07:04	07:36	08:50 (MA08)	
	20:56	20:28	19:41	18:51	46 17:44 (MA11)	17:10	16:56	37 09:27 (MA08)	
12	06:02	06:29	07:00	07:30	16:57 (MA11)	07:05	07:37	08:50 (MA08)	
	20:55	20:27	19:39	18:49	48 17:45 (MA11)	17:09	16:56	38 09:28 (MA08)	
13	06:02	06:30	07:01	07:31	16:56 (MA11)	07:07	07:38	08:50 (MA08)	
	20:55	20:25	19:37	18:47	49 17:45 (MA11)	17:08	16:56	39 09:29 (MA08)	
14	06:03	06:31	07:02	07:32	16:55 (MA11)	07:08	07:39	08:50 (MA08)	
	20:54	20:24	19:35	18:46	50 17:45 (MA11)	17:07	16:56	40 09:30 (MA08)	
15	06:04	06:32	07:03	07:33	16:55 (MA11)	07:09	07:39	08:50 (MA08)	
	20:54	20:22	19:34	18:44	51 17:46 (MA11)	17:06	16:56	41 09:31 (MA08)	
16	06:05	06:33	07:04	07:34	16:55 (MA11)	07:10	07:40	08:51 (MA08)	
	20:53	20:21	19:32	18:43	51 17:46 (MA11)	17:05	16:56	41 09:32 (MA08)	
17	06:05	06:34	07:05	07:35	16:54 (MA11)	07:11	07:41	08:51 (MA08)	
	20:53	20:20	19:30	18:41	52 17:46 (MA11)	17:04	16:57	41 09:32 (MA08)	
18	06:06	06:35	07:06	07:37	16:54 (MA11)	07:12	07:42	08:51 (MA08)	
	20:52	20:18	19:29	18:40	51 17:45 (MA11)	17:03	16:57	42 09:33 (MA08)	
19	06:07	06:36	07:07	07:38	16:53 (MA11)	07:14	07:42	08:51 (MA08)	
	20:51	20:17	19:27	18:38	51 17:44 (MA11)	17:03	16:57	42 09:33 (MA08)	
20	06:08	06:37	07:08	07:39	16:53 (MA11)	07:15	07:43	08:52 (MA08)	
	20:50	20:15	19:25	18:37	50 17:43 (MA11)	17:02	16:58	42 09:34 (MA08)	
21	06:09	06:38	07:09	07:40	16:53 (MA11)	07:16	07:43	08:53 (MA08)	
	20:50	20:14	19:24	18:35	50 17:43 (MA11)	17:01	16:58	42 09:35 (MA08)	
22	06:10	06:39	07:10	07:41	16:53 (MA11)	07:17	07:44	08:53 (MA08)	
	20:49	20:12	19:22	18:34	50 17:43 (MA11)	17:01	16:59	42 09:35 (MA08)	
23	06:10	06:40	07:11	07:42	16:53 (MA11)	07:18	07:44	08:53 (MA08)	
	20:48	20:11	19:20	18:32	49 17:42 (MA11)	17:00	16:59	42 09:35 (MA08)	
24	06:11	06:41	07:12	07:43	16:54 (MA11)	07:19	07:45	08:54 (MA08)	
	20:47	20:09	19:19	18:31	47 17:41 (MA11)	17:00	17:00	42 09:36 (MA08)	
25	06:12	06:42	07:13	06:44	15:54 (MA11)	07:20	07:45	08:54 (MA08)	
	20:46	20:08	19:17	17:30	46 16:40 (MA11)	16:59	17:00	42 09:36 (MA08)	
26	06:13	06:43	07:14	06:45	15:54 (MA11)	07:22	07:46	08:55 (MA08)	
	20:46	20:06	19:15	17:28	45 16:39 (MA11)	16:58	17:01	42 09:37 (MA08)	
27	06:14	06:44	07:15	06:47	15:55 (MA11)	07:23	07:46	08:56 (MA08)	
	20:45	20:05	19:13	17:27	44 16:39 (MA11)	16:58	17:02	41 09:37 (MA08)	
28	06:15	06:45	07:16	06:48	15:56 (MA11)	07:24	07:46	08:56 (MA08)	
	20:44	20:03	19:12	17:26	42 16:38 (MA11)	16:58	17:02	41 09:37 (MA08)	
29	06:16	06:46	07:17	06:49	15:56 (MA11)	07:25	07:47	08:57 (MA08)	
	20:43	20:02	19:10	17:24	40 16:36 (MA11)	16:57	17:03	40 09:37 (MA08)	
30	06:17	06:47	07:18	06:50	15:57 (MA11)	07:26	07:47	08:57 (MA08)	
	20:42	20:00	19:08	17:23	38 16:35 (MA11)	16:57	17:04	40 09:37 (MA08)	
31	06:18	06:48	06:51	15:59 (MA11)			07:47	08:59 (MA08)	
	20:41	19:59	17:22	35 16:34 (MA11)			17:05	38 09:37 (MA08)	
Potential sun hours	458	427	375	346	299		289		
Total, worst case				1278		145		1123	
Sun reduction				0,56		0,48		0,42	
Oper. time red.				0,89		0,89		0,89	
Wind dir. red.				0,68		0,68		0,60	
Total reduction				0,34		0,29		0,22	
Total, real				431		42		247	

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)
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### SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R48 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (16)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

#### Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	January	February	March	April	May	June				
1	07:47	07:34	07:54 (MA08)	06:59	07:27 (MA08)	07:08	18:05 (MA11)	06:23	18:05 (MA11)	05:54
	17:06	17:40	28 08:22 (MA08)	18:13	66 08:33 (MA08)	19:47	36 18:41 (MA11)	20:18	43 18:48 (MA11)	20:48
2	07:47	07:33	07:53 (MA08)	06:57	07:27 (MA08)	07:07	18:03 (MA11)	06:22	18:07 (MA11)	05:54
	17:06	17:41	31 08:24 (MA08)	18:14	65 08:32 (MA08)	19:48	39 18:42 (MA11)	20:19	40 18:47 (MA11)	20:48
3	07:48	07:32	07:52 (MA08)	06:56	07:27 (MA08)	07:05	18:02 (MA11)	06:20	18:08 (MA11)	05:54
	17:07	17:42	33 08:25 (MA08)	18:16	63 08:30 (MA08)	19:49	40 18:42 (MA11)	20:20	37 18:45 (MA11)	20:49
4	07:48	07:31	07:51 (MA08)	06:54	07:28 (MA08)	07:03	18:01 (MA11)	06:19	18:10 (MA11)	05:53
	17:08	17:43	36 08:27 (MA08)	18:17	62 08:30 (MA08)	19:50	43 18:44 (MA11)	20:21	34 18:44 (MA11)	20:50
5	07:48	07:30	07:50 (MA08)	06:52	07:29 (MA08)	07:02	18:00 (MA11)	06:18	18:11 (MA11)	05:53
	17:09	17:45	38 08:28 (MA08)	18:18	59 08:28 (MA08)	19:51	45 18:45 (MA11)	20:23	30 18:41 (MA11)	20:50
6	07:48	07:29	07:49 (MA08)	06:51	07:30 (MA08)	07:00	18:00 (MA11)	06:17	18:14 (MA11)	05:53
	17:10	17:46	40 08:29 (MA08)	18:19	57 08:27 (MA08)	19:52	47 18:47 (MA11)	20:24	25 18:39 (MA11)	20:51
7	07:48	07:28	07:48 (MA08)	06:49	07:30 (MA08)	06:59	17:59 (MA11)	06:16	18:17 (MA11)	05:52
	17:11	17:47	42 08:30 (MA08)	18:20	56 08:26 (MA08)	19:53	49 18:48 (MA11)	20:25	19 18:36 (MA11)	20:52
8	07:47	07:27	07:47 (MA08)	06:48	07:32 (MA08)	06:57	17:58 (MA11)	06:14	18:21 (MA11)	05:52
	17:12	17:48	44 08:31 (MA08)	18:21	53 08:25 (MA08)	19:54	51 18:49 (MA11)	20:26	11 18:32 (MA11)	20:52
9	07:47	07:26	07:45 (MA08)	06:46	07:33 (MA08)	06:55	17:58 (MA11)	06:13		05:52
	17:13	17:50	46 08:31 (MA08)	18:22	50 08:23 (MA08)	19:55	52 18:50 (MA11)	20:27		20:53
10	07:47	07:25	07:44 (MA08)	06:45	07:34 (MA08)	06:54	17:57 (MA11)	06:12		05:52
	17:14	17:51	48 08:32 (MA08)	18:23	46 08:20 (MA08)	19:56	54 18:51 (MA11)	20:28		20:53
11	07:47	07:23	07:43 (MA08)	06:43	07:36 (MA08)	06:52	17:57 (MA11)	06:11		05:51
	17:15	17:52	50 08:33 (MA08)	18:25	43 08:19 (MA08)	19:57	56 18:53 (MA11)	20:29		20:54
12	07:47	07:22	07:42 (MA08)	06:41	07:37 (MA08)	06:51	17:57 (MA11)	06:10		05:51
	17:16	17:53	52 08:34 (MA08)	18:26	39 08:16 (MA08)	19:58	57 18:54 (MA11)	20:30		20:54
13	07:46	07:21	07:40 (MA08)	06:40	07:39 (MA08)	06:49	17:56 (MA11)	06:09		05:51
	17:17	17:54	54 08:34 (MA08)	18:27	34 08:13 (MA08)	20:00	58 18:54 (MA11)	20:31		20:55
14	07:46	07:20	07:39 (MA08)	06:38	07:42 (MA08)	06:47	17:56 (MA11)	06:08		05:51
	17:18	17:56	56 08:35 (MA08)	18:28	28 08:10 (MA08)	20:01	60 18:56 (MA11)	20:32		20:55
15	07:46	07:18	07:38 (MA08)	06:36	07:45 (MA08)	06:46	17:56 (MA11)	06:07		05:51
	17:19	17:57	58 08:36 (MA08)	18:29	21 08:06 (MA08)	20:02	61 18:57 (MA11)	20:33		20:56
16	07:45	07:17	07:36 (MA08)	06:35	07:52 (MA08)	06:44	17:56 (MA11)	06:06		05:51
	17:20	17:58	59 08:35 (MA08)	18:30	5 07:57 (MA08)	20:03	63 18:59 (MA11)	20:34		20:56
17	07:45	07:16	07:35 (MA08)	06:33		06:43	17:56 (MA11)	06:05		05:51
	17:22	17:59	61 08:36 (MA08)	18:31		20:04	64 19:00 (MA11)	20:35		20:57
18	07:44	07:14	07:34 (MA08)	06:32		06:41	17:57 (MA11)	06:04		05:51
	17:23	18:00	62 08:36 (MA08)	18:32		20:05	63 19:00 (MA11)	20:35		20:57
19	07:44	07:13	07:32 (MA08)	06:30		06:40	17:56 (MA11)	06:03		05:51
	17:24	18:02	64 08:36 (MA08)	18:33		20:06	63 18:59 (MA11)	20:36		20:57
20	07:43	07:12	07:31 (MA08)	06:28		06:38	17:57 (MA11)	06:02		05:52
	17:25	18:03	65 08:36 (MA08)	18:34		20:07	61 18:58 (MA11)	20:37		20:57
21	07:43	07:10	07:29 (MA08)	06:27		06:37	17:58 (MA11)	06:02		05:52
	17:26	18:04	66 08:35 (MA08)	18:35		20:08	60 18:58 (MA11)	20:38		20:58
22	07:42	07:09	07:28 (MA08)	06:25		06:35	17:58 (MA11)	06:01		05:52
	17:27	18:05	68 08:36 (MA08)	18:36		20:09	59 18:57 (MA11)	20:39		20:58
23	07:41	07:08	07:27 (MA08)	06:23		06:34	17:59 (MA11)	06:00		05:52
	17:29	18:06	69 08:36 (MA08)	18:37	3	17:34 (MA11)	58 18:57 (MA11)	20:40		20:58
24	07:41	07:06	07:26 (MA08)	06:22		06:32	17:59 (MA11)	05:59		05:52
	17:30	18:08	69 08:35 (MA08)	18:38	12	17:35 (MA11)	56 18:55 (MA11)	20:41		20:58
25	07:40	07:05	07:26 (MA08)	06:20		06:31	18:00 (MA11)	05:59		05:53
	17:31	18:09	69 08:35 (MA08)	18:40	16	17:35 (MA11)	55 18:55 (MA11)	20:42		20:58
26	07:39	08:00 (MA08)	07:03	06:18		06:30	18:01 (MA11)	05:58		05:53
	17:32	7 08:07 (MA08)	18:10	68 08:34 (MA08)	18:41	20 17:36 (MA11)	53 18:54 (MA11)	20:43		20:58
27	07:39	07:59 (MA08)	07:02	06:17		06:28	18:01 (MA11)	05:57		05:53
	17:33	12 08:11 (MA08)	18:11	67 08:34 (MA08)	18:42	24 17:37 (MA11)	51 18:52 (MA11)	20:44		20:59
28	07:38	07:58 (MA08)	07:00	06:15		06:27	18:02 (MA11)	05:57		05:54
	17:35	16 08:14 (MA08)	18:12	66 08:33 (MA08)	18:43	26 17:37 (MA11)	50 18:52 (MA11)	20:44		20:59
29	07:37	07:57 (MA08)		07:13		06:26	18:03 (MA11)	05:56		05:54
	17:36	19 08:16 (MA08)		19:44	28	18:38 (MA11)	48 18:51 (MA11)	20:45		20:59
30	07:36	07:56 (MA08)		07:12		06:24	18:04 (MA11)	05:55		05:55
	17:37	22 08:18 (MA08)		19:45	32	18:39 (MA11)	45 18:49 (MA11)	20:46		20:58
31	07:35	07:55 (MA08)		07:10		06:24		05:55		
	17:38	25 08:20 (MA08)		19:46	33	18:39 (MA11)		20:47		
Potential sun hours	298	298	370	398	448	451				
Total, worst case	101	1509	941	1597	239					
Sun reduction	0,40	0,43	0,47	0,51	0,58					
Oper. time red.	0,89	0,89	0,89	0,89	0,89					
Wind dir. red.	0,60	0,60	0,62	0,69	0,69					
Total reduction	0,21	0,23	0,26	0,31	0,35					
Total, real	22	348	243	494	84					

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

Calculation: SHADOW\_Real case\_MapShadow receptor: R48 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (16)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	July	August	September	October	November	December								
1	05:55	06:19	06:49	17:56 (MA11)	07:19	08:17 (MA08)	06:52	07:14 (MA08)	07:27					
	20:58	20:40	19:57	56	18:52 (MA11)	19:07	38	08:55 (MA08)	17:21	48	08:02 (MA08)	16:57		
2	05:55	06:20	06:50	17:56 (MA11)	07:20	08:15 (MA08)	06:54	07:15 (MA08)	07:28					
	20:58	20:39	19:55	54	18:50 (MA11)	19:05	42	08:57 (MA08)	17:19	46	08:01 (MA08)	16:56		
3	05:56	06:21	06:51	17:56 (MA11)	07:21	08:13 (MA08)	06:55	07:16 (MA08)	07:29					
	20:58	20:37	19:54	52	18:48 (MA11)	19:04	45	08:58 (MA08)	17:18	44	08:00 (MA08)	16:56		
4	05:57	06:22	06:52	17:56 (MA11)	07:22	08:11 (MA08)	06:56	07:18 (MA08)	07:30					
	20:58	20:36	19:52	51	18:47 (MA11)	19:02	48	08:59 (MA08)	17:17	42	08:00 (MA08)	16:56		
5	05:57	06:23	18:29 (MA11)	06:53	17:55 (MA11)	07:23	08:09 (MA08)	06:57	07:19 (MA08)	07:31				
	20:58	20:35	14	18:43 (MA11)	19:50	49	18:44 (MA11)	19:00	52	09:01 (MA08)	17:16	40	07:59 (MA08)	16:56
6	05:58	06:23	18:25 (MA11)	06:54	17:55 (MA11)	07:24	08:08 (MA08)	06:58	07:20 (MA08)	07:32				
	20:57	20:34	22	18:47 (MA11)	19:49	47	18:42 (MA11)	18:59	54	09:02 (MA08)	17:15	38	07:58 (MA08)	16:56
7	05:58	06:24	18:23 (MA11)	06:55	17:55 (MA11)	07:25	08:06 (MA08)	06:59	07:21 (MA08)	07:33				
	20:57	20:33	26	18:49 (MA11)	19:47	45	18:40 (MA11)	18:57	57	09:03 (MA08)	17:14	35	07:56 (MA08)	16:55
8	05:59	06:25	18:20 (MA11)	06:56	17:55 (MA11)	07:26	08:05 (MA08)	07:01	07:23 (MA08)	07:34				
	20:57	20:32	31	18:51 (MA11)	19:46	44	18:39 (MA11)	18:55	58	09:03 (MA08)	17:13	33	07:56 (MA08)	16:55
9	06:00	06:26	18:18 (MA11)	06:57	17:56 (MA11)	07:27	08:04 (MA08)	07:02	07:24 (MA08)	07:35				
	20:57	20:30	35	18:53 (MA11)	19:44	41	18:37 (MA11)	18:54	60	09:04 (MA08)	17:12	30	07:54 (MA08)	16:55
10	06:00	06:27	18:17 (MA11)	06:58	17:56 (MA11)	07:28	08:02 (MA08)	07:03	07:25 (MA08)	07:36				
	20:56	20:29	37	18:54 (MA11)	19:42	39	18:35 (MA11)	18:52	62	09:04 (MA08)	17:11	28	07:53 (MA08)	16:55
11	06:01	06:28	18:15 (MA11)	06:59	17:57 (MA11)	07:29	08:01 (MA08)	07:04	07:26 (MA08)	07:36				
	20:56	20:28	41	18:56 (MA11)	19:41	36	18:33 (MA11)	18:51	64	09:05 (MA08)	17:10	25	07:51 (MA08)	16:56
12	06:02	06:29	18:13 (MA11)	07:00	17:58 (MA11)	07:30	08:00 (MA08)	07:05	07:28 (MA08)	07:37				
	20:55	20:27	44	18:57 (MA11)	19:39	33	18:31 (MA11)	18:49	65	09:05 (MA08)	17:09	22	07:50 (MA08)	16:56
13	06:02	06:30	18:12 (MA11)	07:01	17:58 (MA11)	07:31	08:00 (MA08)	07:07	07:29 (MA08)	07:38				
	20:55	20:25	46	18:58 (MA11)	19:37	32	18:30 (MA11)	18:47	66	09:06 (MA08)	17:08	19	07:48 (MA08)	16:56
14	06:03	06:31	18:11 (MA11)	07:02	18:00 (MA11)	07:32	07:59 (MA08)	07:08	07:30 (MA08)	07:39				
	20:54	20:24	48	18:59 (MA11)	19:35	29	18:29 (MA11)	18:46	67	09:06 (MA08)	17:07	16	07:46 (MA08)	16:56
15	06:04	06:32	18:09 (MA11)	07:03	18:01 (MA11)	07:33	07:59 (MA08)	07:09	07:31 (MA08)	07:39				
	20:54	20:22	51	19:00 (MA11)	19:34	26	18:27 (MA11)	18:44	68	09:07 (MA08)	17:06	12	07:43 (MA08)	16:56
16	06:05	06:33	18:08 (MA11)	07:04	18:02 (MA11)	07:34	07:58 (MA08)	07:10	07:33 (MA08)	07:40				
	20:53	20:21	52	19:00 (MA11)	19:32	24	18:26 (MA11)	18:43	69	09:07 (MA08)	17:05	7	07:40 (MA08)	16:56
17	06:05	06:34	18:07 (MA11)	07:05	18:04 (MA11)	07:35	07:58 (MA08)	07:11	07:41					
	20:53	20:20	54	19:01 (MA11)	19:30	21	18:25 (MA11)	18:41	69	09:07 (MA08)	17:04		16:57	
18	06:06	06:35	18:06 (MA11)	07:06	18:06 (MA11)	07:37	07:57 (MA08)	07:12	07:42					
	20:52	20:18	56	19:02 (MA11)	19:29	18	18:24 (MA11)	18:40	70	09:07 (MA08)	17:03		16:57	
19	06:07	06:36	18:05 (MA11)	07:07	18:10 (MA11)	07:38	07:58 (MA08)	07:14	07:42					
	20:51	20:17	57	19:02 (MA11)	19:27	12	18:22 (MA11)	18:38	69	09:07 (MA08)	17:03		16:57	
20	06:08	06:37	18:03 (MA11)	07:08	18:15 (MA11)	07:39	07:59 (MA08)	07:15	07:43					
	20:50	20:15	59	19:02 (MA11)	19:25	6	18:21 (MA11)	18:37	67	09:06 (MA08)	17:02		16:58	
21	06:09	06:38	18:02 (MA11)	07:09	07:40	08:00 (MA08)	07:16	07:43						
	20:50	20:14	60	19:02 (MA11)	19:24		18:35	66	09:06 (MA08)	17:01		16:58		
22	06:10	06:39	18:02 (MA11)	07:10	07:41	08:02 (MA08)	07:17	07:44						
	20:49	20:12	60	19:02 (MA11)	19:22		18:34	65	09:07 (MA08)	17:01		16:59		
23	06:10	06:40	18:01 (MA11)	07:11	07:42	08:03 (MA08)	07:18	07:44						
	20:48	20:11	61	19:02 (MA11)	19:20		18:33	63	09:06 (MA08)	17:00		16:59		
24	06:11	06:41	18:00 (MA11)	07:12	07:43	08:04 (MA08)	07:19	07:45						
	20:47	20:09	63	19:03 (MA11)	19:19		18:31	62	09:06 (MA08)	17:00		17:00		
25	06:12	06:42	17:59 (MA11)	07:13	06:44	07:05 (MA08)	07:20	07:45						
	20:46	20:08	64	19:03 (MA11)	19:17		17:30	60	08:05 (MA08)	16:59		17:00		
26	06:13	06:43	17:59 (MA11)	07:14	06:45	07:06 (MA08)	07:22	07:46						
	20:46	20:06	63	19:02 (MA11)	19:15		17:28	59	08:05 (MA08)	16:58		17:01		
27	06:14	06:44	17:58 (MA11)	07:15	06:47	07:08 (MA08)	07:23	07:46						
	20:45	20:05	63	19:01 (MA11)	19:14		17:27	57	08:05 (MA08)	16:58		17:02		
28	06:15	06:45	17:58 (MA11)	07:16	08:29 (MA08)	06:48	07:09 (MA08)	07:24	07:46					
	20:44	20:03	61	18:59 (MA11)	19:12	16	08:45 (MA08)	17:26	55	08:04 (MA08)	16:58		17:02	
29	06:16	06:46	17:57 (MA11)	07:17	08:24 (MA08)	06:49	07:10 (MA08)	07:25	07:47					
	20:43	20:02	60	18:57 (MA11)	19:10	26	08:50 (MA08)	17:24	54	08:04 (MA08)	16:57		17:03	
30	06:17	06:47	17:57 (MA11)	07:18	08:20 (MA08)	06:50	07:11 (MA08)	07:26	07:47					
	20:42	20:00	58	18:55 (MA11)	19:08	32	08:52 (MA08)	17:23	52	08:03 (MA08)	16:57		17:04	
31	06:18	06:48	17:56 (MA11)		06:51	07:13 (MA08)		07:47						
	20:41	19:59	57	18:53 (MA11)		17:22	50	08:03 (MA08)		17:05				
Potential sun hours	458	427		375		346		299		289				
Total, worst case			1343		789		1833		485					
Sun reduction			0,72		0,64		0,56		0,48					
Oper. time red.			0,89		0,89		0,89		0,89					
Wind dir. red.			0,69		0,68		0,60		0,60					
Total reduction			0,44		0,39		0,30		0,26					
Total, real			589		306		543		124					

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

Calculation: SHADOW\_Real case\_MapShadow receptor: R62 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June
1	07:47	08:38 (MA06)	07:34	06:59	07:08	05:55
	17:06	09:03 (MA06)	17:40	18:13	19:47	20:47
2	07:47	08:40 (MA06)	07:33	06:57	07:07	05:54
	17:07	09:04 (MA06)	17:41	18:14	19:48	20:48
3	07:47	08:41 (MA06)	07:32	06:56	07:05	05:54
	17:07	09:04 (MA06)	17:42	18:16	19:49	20:49
4	07:47	08:41 (MA06)	07:31	06:54	07:03	05:53
	17:08	09:04 (MA06)	17:43	18:17	19:50	20:50
5	07:47	08:41 (MA06)	07:30	06:52	07:02	05:53
	17:09	09:03 (MA06)	17:45	18:18	19:51	20:50
6	07:47	08:42 (MA06)	07:29	06:51	07:00	05:53
	17:10	09:03 (MA06)	17:46	18:19	19:52	20:51
7	07:47	08:44 (MA06)	07:28	06:49	06:59	05:52
	17:11	09:03 (MA06)	17:47	18:20	19:53	20:52
8	07:47	08:45 (MA06)	07:27	06:48	06:57	05:52
	17:12	09:03 (MA06)	17:48	18:21	19:54	20:52
9	07:47	08:46 (MA06)	07:26	06:46	06:55	05:52
	17:13	09:02 (MA06)	17:50	18:22	19:55	20:53
10	07:47	08:48 (MA06)	07:25	06:45	06:54	05:52
	17:14	09:02 (MA06)	17:51	18:23	19:56	20:53
11	07:47	08:49 (MA06)	07:23	06:43	07:02 (MA07)	05:52
	17:15	09:00 (MA06)	17:52	18:25	19:57	20:54
12	07:47	08:52 (MA06)	07:22	06:41	07:00 (MA07)	05:51
	17:16	08:58 (MA06)	17:53	18:26	19:58	20:54
13	07:46		07:21	06:40	06:58 (MA07)	05:51
	17:17		17:54	18:27	19:59	20:55
14	07:46		07:20	06:38	06:57 (MA07)	05:51
	17:18		17:56	18:28	20:00	20:55
15	07:46		07:18	06:36	06:55 (MA07)	05:51
	17:19		17:57	18:29	20:02	20:56
16	07:45		07:17	06:35	06:53 (MA07)	05:51
	17:21		17:58	18:30	20:03	20:56
17	07:45		07:16	06:33	06:52 (MA07)	05:51
	17:22		17:59	18:31	20:04	20:56
18	07:44		07:14	06:32	06:50 (MA07)	05:51
	17:23		18:00	18:32	20:05	20:57
19	07:44		07:13	06:30	06:48 (MA07)	05:52
	17:24		18:02	18:33	20:06	20:57
20	07:43		07:12	06:28	06:47 (MA07)	05:52
	17:25		18:03	18:34	20:07	20:57
21	07:43		07:10	06:27	06:45 (MA07)	05:52
	17:26		18:04	18:35	20:08	20:58
22	07:42		07:09	06:25	06:43 (MA07)	05:52
	17:28		18:05	18:36	20:09	20:58
23	07:41		07:07	06:23	06:42 (MA07)	05:52
	17:29		18:06	18:37	20:10	20:58
24	07:41		07:06	06:22	06:41 (MA07)	05:53
	17:30		18:08	18:38	20:11	20:58
25	07:40		07:05	06:20	06:41 (MA07)	05:53
	17:31		18:09	18:40	20:12	20:58
26	07:39		07:03	06:18	06:41 (MA07)	05:53
	17:32		18:10	18:41	20:13	20:58
27	07:38		07:02	06:17	06:41 (MA07)	05:53
	17:34		18:11	18:42	20:14	20:58
28	07:38		07:00	06:15	06:40 (MA07)	05:54
	17:35		18:12	18:43	20:15	20:58
29	07:37		07:13	06:13	07:41 (MA07)	05:54
	17:36		19:44	20:16	08:25 (MA07)	20:58
30	07:36		07:12	06:12	07:41 (MA07)	05:55
	17:37		19:45	20:17	08:23 (MA07)	20:58
31	07:35		07:10	06:11	07:41 (MA07)	05:55
	17:38		19:46	20:18	08:22 (MA07)	20:47
Potential sun hours	298	298	370	398	447	451
Total, worst case	222		783		236	
Sun reduction	0,40		0,47		0,51	
Oper. time red.	0,89		0,89		0,89	
Wind dir. red.	0,61		0,68		0,68	
Total reduction	0,22		0,28		0,30	
Total, real	48		221		72	

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R62 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December
1	05:55	06:19	06:49	07:19	07:39 (MA07)	07:27
	20:58	20:40	19:57	19:07	08:00 (MA07)	16:57
2	05:56	06:20	06:50	07:20	07:40 (MA07)	07:28
	20:58	20:38	19:55	19:05	07:57 (MA07)	16:56
3	05:56	06:21	06:51	07:21	07:42 (MA07)	07:29
	20:58	20:37	19:54	19:04	07:52 (MA07)	16:56
4	05:57	06:22	06:52	07:22	07:22	07:30
	20:58	20:36	19:52	13 08:03 (MA07)	19:02	17:17
5	05:57	06:23	06:53	07:23	07:23	06:57
	20:58	20:35	19:50	21 08:06 (MA07)	19:00	17:16
6	05:58	06:24	06:54	07:24	07:24	06:58
	20:57	20:34	19:49	25 08:08 (MA07)	18:59	17:15
7	05:58	06:25	06:55	07:25	07:25	06:59
	20:57	20:33	19:47	30 08:10 (MA07)	18:57	17:14
8	05:59	06:26	06:56	07:26	07:26	07:01
	20:57	20:32	19:45	33 08:11 (MA07)	18:55	17:13
9	06:00	06:26	06:57	07:27	07:27	07:02
	20:56	20:30	19:44	35 08:12 (MA07)	18:54	17:12
10	06:00	06:27	06:58	07:28	07:28	07:03
	20:56	20:29	19:42	38 08:13 (MA07)	18:52	17:11
11	06:01	06:28	06:59	07:29	07:29	07:04
	20:56	20:28	19:40	40 08:14 (MA07)	18:51	17:10
12	06:02	06:29	07:00	07:30	07:30	07:05
	20:55	20:26	19:39	41 08:14 (MA07)	18:49	17:09
13	06:02	06:30	07:01	07:31	07:31	07:06
	20:55	20:25	19:37	43 08:15 (MA07)	18:47	17:08
14	06:03	06:31	07:02	07:32	07:32	07:08
	20:54	20:24	19:35	44 08:15 (MA07)	18:46	17:07
15	06:04	06:32	07:03	07:33	07:33	07:09
	20:54	20:22	19:34	45 08:15 (MA07)	18:44	17:06
16	06:05	06:33	07:04	07:34	07:34	07:10
	20:53	20:21	19:32	45 08:15 (MA07)	18:43	17:05
17	06:06	06:34	07:05	07:35	07:35	07:11
	20:52	20:20	19:30	46 08:15 (MA07)	18:41	17:04
18	06:06	06:35	07:06	07:36	07:36	07:12
	20:52	20:18	19:29	46 08:15 (MA07)	18:40	17:04
19	06:07	06:36	07:07	07:38	07:38	07:13
	20:51	20:17	19:27	46 08:15 (MA07)	18:38	17:03
20	06:08	06:37	07:08	07:39	07:39	07:15
	20:50	20:15	19:25	46 08:14 (MA07)	18:37	17:02
21	06:09	06:38	07:09	07:40	07:40	07:16
	20:50	20:14	19:24	45 08:14 (MA07)	18:35	17:01
22	06:10	06:39	07:10	07:41	07:41	07:17
	20:49	20:12	19:22	43 08:13 (MA07)	18:34	17:01
23	06:11	06:40	07:11	07:42	07:42	07:18
	20:48	20:11	19:20	41 08:12 (MA07)	18:33	17:00
24	06:11	06:41	07:12	07:43	07:43	07:19
	20:47	20:09	19:19	39 08:11 (MA07)	18:31	17:00
25	06:12	06:42	07:13	07:44	07:44	07:20
	20:46	20:08	19:17	37 08:10 (MA07)	17:30	16:59
26	06:13	06:43	07:14	07:45	07:45	07:21
	20:45	20:06	19:15	35 08:08 (MA07)	17:28	16:59
27	06:14	06:44	07:15	07:47	07:47	07:23
	20:45	20:05	19:14	33 08:07 (MA07)	17:27	16:58
28	06:15	06:45	07:16	07:48	07:48	07:24
	20:44	20:03	19:12	30 08:05 (MA07)	17:26	16:58
29	06:16	06:46	07:17	07:49	07:49	07:25
	20:43	20:02	19:10	28 08:04 (MA07)	17:24	16:57
30	06:17	06:47	07:18	07:50	07:50	07:26
	20:42	20:00	19:08	24 08:01 (MA07)	17:23	16:57
31	06:18	06:48		06:51		07:27
	20:41	19:59		17:22		17:05
Potential sun hours	458	427	375	346	299	289
Total, worst case			992	48	5	736
Sun reduction			0,64	0,56	0,48	0,42
Oper. time red.			0,89	0,89	0,89	0,89
Wind dir. red.			0,68	0,68	0,61	0,61
Total reduction			0,38	0,33	0,26	0,22
Total, real			382	16	1	165

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R67 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (17)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June
1	07:47	07:34	06:59	07:08	06:23	18:46 (MA07) 05:55
	17:06	17:40	18:13	19:47	20:18	63 19:49 (MA07) 20:47
2	07:47	07:33	06:57	07:07	06:22	18:46 (MA07) 05:54
	17:07	17:41	18:14	19:48	20:19	64 19:50 (MA07) 20:48
3	07:47	07:32	06:55	07:05	06:20	18:46 (MA07) 05:54
	17:07	17:42	18:16	19:49	20:20	64 19:50 (MA07) 20:49
4	07:47	07:31	06:54	07:03	06:19	18:47 (MA07) 05:53
	17:08	17:43	18:17	19:50	20:21	63 19:50 (MA07) 20:49
5	07:47	07:30	06:52	07:02	06:18	18:46 (MA07) 05:53
	17:09	17:45	18:18	19:51	20:22	63 19:49 (MA07) 20:50
6	07:47	07:29	06:51	07:00	06:17	18:46 (MA07) 05:53
	17:10	17:46	18:19	19:52	20:23	63 19:49 (MA07) 20:51
7	07:47	07:28	06:49	06:59	06:16	18:47 (MA07) 05:52
	17:11	17:47	18:20	19:53	20:24	61 19:48 (MA07) 20:51
8	07:47	07:27	06:48	06:57	06:14	18:47 (MA07) 05:52
	17:12	17:48	18:21	19:54	20:25	61 19:48 (MA07) 20:52
9	07:47	07:26	06:46	06:55	19:16 (MA07) 06:13	18:47 (MA07) 05:52
	17:13	17:50	18:22	19:55	14 19:30 (MA07) 20:26	61 19:48 (MA07) 20:53
10	07:47	07:24	06:44	06:54	19:10 (MA07) 06:12	18:48 (MA07) 05:52
	17:14	17:51	18:23	19:56	24 19:34 (MA07) 20:27	60 19:48 (MA07) 20:53
11	07:47	07:23	06:43	06:52	19:07 (MA07) 06:11	18:48 (MA07) 05:51
	17:15	17:52	18:24	19:57	29 19:36 (MA07) 20:28	59 19:47 (MA07) 20:54
12	07:46	07:22	06:41	06:51	19:04 (MA07) 06:10	18:49 (MA07) 05:51
	17:16	17:53	18:26	19:58	33 19:37 (MA07) 20:29	58 19:47 (MA07) 20:54
13	07:46	07:21	06:40	06:49	19:01 (MA07) 06:09	18:49 (MA07) 05:51
	17:17	17:54	18:27	19:59	36 19:37 (MA07) 20:30	57 19:46 (MA07) 20:55
14	07:46	07:20	06:38	06:47	19:00 (MA07) 06:08	18:49 (MA07) 05:51
	17:18	17:56	18:28	20:00	39 19:39 (MA07) 20:31	57 19:46 (MA07) 20:55
15	07:45	07:18	06:36	06:46	18:58 (MA07) 06:07	18:50 (MA07) 05:51
	17:19	17:57	18:29	20:01	41 19:39 (MA07) 20:32	55 19:45 (MA07) 20:56
16	07:45	07:17	06:35	06:44	18:57 (MA07) 06:06	18:50 (MA07) 05:51
	17:21	17:58	18:30	20:03	44 19:41 (MA07) 20:33	54 19:44 (MA07) 20:56
17	07:45	07:16	06:33	06:43	18:55 (MA07) 06:05	18:51 (MA07) 05:51
	17:22	17:59	18:31	20:04	46 19:41 (MA07) 20:34	53 19:44 (MA07) 20:56
18	07:44	07:14	06:31	06:41	18:54 (MA07) 06:04	18:52 (MA07) 05:51
	17:23	18:00	18:32	20:05	49 19:43 (MA07) 20:35	51 19:43 (MA07) 20:57
19	07:44	07:13	06:30	06:40	18:52 (MA07) 06:03	18:53 (MA07) 05:51
	17:24	18:02	18:33	20:06	50 19:42 (MA07) 20:36	50 19:43 (MA07) 20:57
20	07:43	07:12	06:28	06:38	18:52 (MA07) 06:02	18:54 (MA07) 05:52
	17:25	18:03	18:34	20:07	51 19:43 (MA07) 20:37	48 19:42 (MA07) 20:57
21	07:43	07:10	06:26	06:37	18:51 (MA07) 06:02	18:54 (MA07) 05:52
	17:26	18:04	18:35	20:08	53 19:44 (MA07) 20:38	48 19:42 (MA07) 20:57
22	07:42	07:09	06:25	06:35	18:50 (MA07) 06:01	18:55 (MA07) 05:52
	17:27	18:05	18:36	20:09	54 19:44 (MA07) 20:39	46 19:41 (MA07) 20:58
23	07:41	07:07	06:23	06:34	18:49 (MA07) 06:00	18:56 (MA07) 05:52
	17:29	18:06	18:37	20:10	56 19:45 (MA07) 20:40	45 19:41 (MA07) 20:58
24	07:41	07:06	06:22	06:32	18:48 (MA07) 05:59	18:57 (MA07) 05:52
	17:30	18:08	18:38	20:11	57 19:45 (MA07) 20:41	43 19:40 (MA07) 20:58
25	07:40	07:04	06:20	06:31	18:48 (MA07) 05:59	18:57 (MA07) 05:53
	17:31	18:09	18:39	20:12	58 19:46 (MA07) 20:42	41 19:38 (MA07) 20:58
26	07:39	07:03	06:18	06:30	18:48 (MA07) 05:58	18:59 (MA07) 05:53
	17:32	18:10	18:41	20:13	59 19:47 (MA07) 20:42	39 19:38 (MA07) 20:58
27	07:38	07:02	06:17	06:28	18:47 (MA07) 05:57	19:00 (MA07) 05:53
	17:33	18:11	18:42	20:14	60 19:47 (MA07) 20:43	37 19:37 (MA07) 20:58
28	07:38	07:00	06:15	06:27	18:47 (MA07) 05:57	19:01 (MA07) 05:54
	17:35	18:12	18:43	20:15	60 19:47 (MA07) 20:44	36 19:37 (MA07) 20:58
29	07:37	07:13	06:26	06:36	18:47 (MA07) 05:56	19:02 (MA07) 05:54
	17:36	18:09	18:44	20:16	61 19:48 (MA07) 20:45	33 19:35 (MA07) 20:58
30	07:36	07:12	06:24	06:34	18:46 (MA07) 05:56	19:04 (MA07) 05:55
	17:37	18:14	18:45	20:17	62 19:48 (MA07) 20:46	31 19:35 (MA07) 20:58
31	07:35	07:10	06:23	06:33	18:45 (MA07) 05:55	19:04 (MA07) 05:55
	17:38	18:15	18:46	20:18	62 19:48 (MA07) 20:46	31 19:35 (MA07) 20:58
Potential sun hours	298	298	370	398	447	451
Total, worst case				1036		128
Sun reduction				0,51		0,67
Oper. time red.				0,89		0,89
Wind dir. red.				0,65		0,65
Total reduction				0,30		0,39
Total, real				306		50

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)
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### SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R67 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (17)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

#### Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	July	August	September	October	November	December
1	05:55 20:58	06:19 20:39	18:59 (MA07) 06:49	19:07 (MA07) 07:19	06:52 17:21	07:27 16:57
2	05:56 20:58	06:20 20:38	18:59 (MA07) 06:50	19:09 (MA07) 07:20	06:53 17:19	07:28 16:56
3	05:56 20:58	06:21 20:37	18:57 (MA07) 06:51	19:14 (MA07) 07:21	06:55 17:18	07:29 16:56
4	05:57 20:58	06:22 20:36	18:57 (MA07) 06:52	19:28 (MA07) 19:03	07:22 17:17	07:30 16:56
5	05:57 20:58	19:25 (MA07) 06:23	18:56 (MA07) 06:53	19:00 07:23	06:57 17:16	07:31 16:56
6	05:58 20:57	19:21 (MA07) 06:24	18:56 (MA07) 06:54	19:00 07:24	06:58 17:15	07:32 16:56
7	05:58 20:57	19:31 (MA07) 06:24	18:56 (MA07) 06:55	19:00 07:25	06:59 17:14	07:33 16:56
8	05:59 20:57	19:17 (MA07) 06:25	18:56 (MA07) 06:56	19:00 07:26	07:00 17:13	07:34 16:56
9	06:00 20:56	19:16 (MA07) 06:26	18:55 (MA07) 06:57	19:00 07:27	07:02 17:12	07:34 16:55
10	06:00 20:56	19:16 (MA07) 06:27	18:55 (MA07) 06:58	19:00 07:28	07:03 17:11	07:35 16:56
11	06:01 20:56	19:14 (MA07) 06:28	18:55 (MA07) 06:59	19:00 07:29	07:04 17:10	07:36 16:56
12	06:02 20:55	19:13 (MA07) 06:29	18:55 (MA07) 07:00	19:00 07:30	07:05 17:09	07:37 16:56
13	06:02 20:55	19:41 (MA07) 06:30	19:57 (MA07) 07:01	18:47 07:31	07:06 17:08	07:38 16:56
14	06:03 20:54	19:12 (MA07) 06:31	18:55 (MA07) 07:02	19:00 07:32	07:08 17:07	07:39 16:56
15	06:04 20:54	19:10 (MA07) 06:32	18:55 (MA07) 07:03	19:00 07:33	07:09 17:06	07:39 16:56
16	06:05 20:53	19:09 (MA07) 06:33	18:55 (MA07) 07:04	19:00 07:34	07:10 17:05	07:40 16:57
17	06:05 20:52	19:09 (MA07) 06:34	18:55 (MA07) 07:05	19:00 07:35	07:11 17:04	07:41 16:57
18	06:06 20:52	19:08 (MA07) 06:35	18:55 (MA07) 07:06	19:00 07:36	07:12 17:03	07:41 16:57
19	06:07 20:51	19:07 (MA07) 06:36	18:54 (MA07) 07:07	19:00 07:37	07:13 17:03	07:42 16:58
20	06:08 20:50	19:06 (MA07) 06:37	18:54 (MA07) 07:08	19:00 07:38	07:15 17:02	07:43 16:58
21	06:09 20:50	19:06 (MA07) 06:38	18:55 (MA07) 07:09	19:00 07:40	07:16 17:01	07:43 16:58
22	06:10 20:49	19:05 (MA07) 06:39	18:55 (MA07) 07:10	19:00 07:41	07:17 17:01	07:44 16:59
23	06:10 20:48	19:52 (MA07) 06:40	18:56 (MA07) 07:11	19:00 07:42	07:18 17:00	07:44 16:59
24	06:11 20:47	19:04 (MA07) 06:41	18:56 (MA07) 07:12	19:00 07:43	07:19 17:00	07:45 17:00
25	06:12 20:46	19:53 (MA07) 06:42	18:57 (MA07) 07:12	19:00 06:44	07:20 17:00	07:45 17:01
26	06:13 20:45	19:02 (MA07) 06:43	18:58 (MA07) 07:13	19:00 06:45	07:21 17:00	07:45 17:01
27	06:14 20:44	19:54 (MA07) 06:44	19:15 (MA07) 07:14	19:00 06:46	07:22 17:00	07:46 17:02
28	06:15 20:44	19:01 (MA07) 06:45	19:00 (MA07) 07:15	19:00 06:48	07:24 17:00	07:46 17:02
29	06:16 20:43	19:55 (MA07) 06:46	19:01 (MA07) 07:17	19:00 06:49	07:25 17:00	07:46 17:03
30	06:17 20:42	19:00 (MA07) 06:47	19:02 (MA07) 07:18	19:00 06:50	07:26 17:00	07:47 17:04
31	06:18 20:41	19:57 (MA07) 06:48	19:04 (MA07) 07:19	19:00 06:51	07:27 17:00	07:47 17:05
Potential sun hours	458	427	375	346	299	289
Total, worst case	1012	1704	66			
Sun reduction	0,75	0,72	0,64			
Oper. time red.	0,89	0,89	0,89			
Wind dir. red.	0,65	0,65	0,65			
Total reduction	0,44	0,42	0,37			
Total, real	441	713	25			

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)
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### SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R68 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	January	February	March	April	May	June
1	07:47 17:06	07:34 17:40	06:59 18:13	07:08 19:47	06:23 20:18	18:50 (MA07) 20:47
2	07:47 17:07	07:33 17:41	06:57 18:14	07:07 19:48	06:22 20:19	64 18:49 (MA07) 20:48
3	07:47 17:07	07:32 17:42	06:55 18:16	07:05 19:49	06:20 20:20	65 18:49 (MA07) 20:49
4	07:47 17:08	07:31 17:43	06:54 18:17	07:03 19:50	06:19 20:21	66 18:49 (MA07) 20:49
5	07:47 17:09	07:30 17:45	06:52 18:18	07:02 19:51	06:18 20:22	66 18:48 (MA07) 20:50
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:23	66 18:48 (MA07) 20:51
7	07:47 17:11	07:28 17:47	06:49 18:20	06:59 19:53	06:16 20:24	66 18:48 (MA07) 20:51
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	06:14 20:25	66 18:48 (MA07) 20:52
9	07:47 17:13	07:26 17:50	06:46 18:22	06:55 19:55	06:13 20:26	66 18:48 (MA07) 20:53
10	07:47 17:14	07:24 17:51	06:44 18:23	06:54 19:56	06:12 20:27	65 18:49 (MA07) 20:53
11	07:47 17:15	07:23 17:52	06:43 18:24	06:52 19:57	06:11 20:28	65 18:49 (MA07) 20:54
12	07:46 17:16	07:22 17:53	06:41 18:26	06:51 19:58	06:10 20:29	65 18:49 (MA07) 20:54
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	10 19:20 (MA07) 20:30	65 18:49 (MA07) 20:55
14	07:46 17:18	07:20 17:56	06:38 18:28	06:47 20:00	22 19:14 (MA07) 20:31	65 18:49 (MA07) 20:55
15	07:45 17:19	07:18 17:57	06:36 18:29	06:46 20:01	29 19:39 (MA07) 20:32	64 18:49 (MA07) 20:56
16	07:45 17:21	07:17 17:58	06:35 18:30	06:44 20:03	33 19:08 (MA07) 20:33	63 18:50 (MA07) 20:56
17	07:45 17:22	07:16 17:59	06:33 18:31	06:43 20:04	36 19:05 (MA07) 20:34	63 18:50 (MA07) 20:56
18	07:44 17:23	07:14 18:00	06:31 18:32	06:41 20:05	40 19:03 (MA07) 20:35	62 18:50 (MA07) 20:57
19	07:44 17:24	07:13 18:02	06:30 18:33	06:40 20:06	42 19:01 (MA07) 20:36	62 18:51 (MA07) 20:57
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	46 18:59 (MA07) 20:37	61 18:51 (MA07) 20:57
21	07:43 17:26	07:10 18:04	06:26 18:35	06:37 20:08	48 18:58 (MA07) 20:38	60 18:52 (MA07) 20:57
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	49 18:57 (MA07) 20:39	59 18:52 (MA07) 20:58
23	07:41 17:29	07:07 18:06	06:23 18:37	06:34 20:10	52 18:56 (MA07) 20:40	58 18:53 (MA07) 20:58
24	07:41 17:30	07:06 18:08	06:22 18:38	06:33 20:11	54 18:54 (MA07) 20:41	58 18:53 (MA07) 20:58
25	07:40 17:31	07:04 18:09	06:20 18:39	06:31 20:12	56 18:54 (MA07) 20:42	56 18:54 (MA07) 20:58
26	07:39 17:32	07:03 18:10	06:18 18:41	06:30 20:13	58 18:53 (MA07) 20:42	55 18:55 (MA07) 20:58
27	07:38 17:33	07:02 18:11	06:17 18:42	06:28 20:14	59 18:52 (MA07) 20:43	54 18:55 (MA07) 20:58
28	07:38 17:35	07:00 18:12	06:15 18:43	06:27 20:15	61 18:51 (MA07) 20:44	54 18:56 (MA07) 20:58
29	07:37 17:36	07:00 18:13	06:13 18:44	06:26 20:16	63 18:51 (MA07) 20:45	53 18:56 (MA07) 20:58
30	07:36 17:37	07:00 18:14	06:12 18:45	06:24 20:17	63 18:50 (MA07) 20:46	52 18:57 (MA07) 20:58
31	07:35 17:38	07:00 18:15	06:10 18:46	06:22 19:47	51 19:48 (MA07)	451
Potential sun hours	298	298	370	398	447	451
Total, worst case				821	1901	1222
Sun reduction				0,51	0,58	0,67
Oper. time red.				0,89	0,89	0,89
Wind dir. red.				0,64	0,64	0,64
Total reduction				0,29	0,33	0,38
Total, real				239	633	469

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

Calculation: SHADOW\_Real case\_MapShadow receptor: R68 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December		
1	05:55	19:10 (MA07)	06:19	18:59 (MA07)	06:49	07:19	06:52	07:27
	20:58	40 19:50 (MA07)	20:39	66 20:05 (MA07)	19:57	19:07	17:21	16:57
2	05:56	19:09 (MA07)	06:20	18:59 (MA07)	06:50	07:20	06:53	07:28
	20:58	41 19:50 (MA07)	20:38	66 20:05 (MA07)	19:55	19:05	17:19	16:56
3	05:56	19:09 (MA07)	06:21	18:58 (MA07)	06:51	07:21	06:55	07:29
	20:58	42 19:51 (MA07)	20:37	66 20:04 (MA07)	19:54	19:03	17:18	16:56
4	05:57	19:08 (MA07)	06:22	18:58 (MA07)	06:52	07:22	06:56	07:30
	20:58	43 19:51 (MA07)	20:36	66 20:04 (MA07)	19:52	19:02	17:17	16:56
5	05:57	19:09 (MA07)	06:23	18:58 (MA07)	06:53	07:23	06:57	07:31
	20:58	43 19:52 (MA07)	20:35	66 20:04 (MA07)	19:50	19:00	17:16	16:56
6	05:58	19:08 (MA07)	06:24	18:58 (MA07)	06:54	07:24	06:58	07:32
	20:57	44 19:52 (MA07)	20:34	66 20:04 (MA07)	19:49	18:59	17:15	16:56
7	05:58	19:08 (MA07)	06:24	18:58 (MA07)	06:55	07:25	06:59	07:33
	20:57	45 19:53 (MA07)	20:33	66 20:04 (MA07)	19:47	18:57	17:14	16:56
8	05:59	19:07 (MA07)	06:25	18:58 (MA07)	06:56	07:26	07:00	07:34
	20:57	46 19:53 (MA07)	20:31	66 20:04 (MA07)	19:45	18:55	17:13	16:56
9	06:00	19:07 (MA07)	06:26	18:58 (MA07)	06:57	07:27	07:02	07:34
	20:56	47 19:54 (MA07)	20:30	65 20:03 (MA07)	19:44	18:54	17:12	16:55
10	06:00	19:07 (MA07)	06:27	18:58 (MA07)	06:58	07:28	07:03	07:35
	20:56	48 19:55 (MA07)	20:29	65 20:03 (MA07)	19:42	18:52	17:11	16:56
11	06:01	19:06 (MA07)	06:28	18:58 (MA07)	06:59	07:29	07:04	07:36
	20:56	49 19:55 (MA07)	20:28	65 20:03 (MA07)	19:40	18:51	17:10	16:56
12	06:02	19:06 (MA07)	06:29	18:58 (MA07)	07:00	07:30	07:05	07:37
	20:55	50 19:56 (MA07)	20:26	64 20:02 (MA07)	19:39	18:49	17:09	16:56
13	06:02	19:06 (MA07)	06:30	18:59 (MA07)	07:01	07:31	07:06	07:38
	20:55	51 19:57 (MA07)	20:25	63 20:02 (MA07)	19:37	18:47	17:08	16:56
14	06:03	19:06 (MA07)	06:31	18:59 (MA07)	07:02	07:32	07:08	07:39
	20:54	52 19:58 (MA07)	20:24	62 20:01 (MA07)	19:35	18:46	17:07	16:56
15	06:04	19:05 (MA07)	06:32	18:59 (MA07)	07:03	07:33	07:09	07:39
	20:54	53 19:58 (MA07)	20:22	61 20:00 (MA07)	19:34	18:44	17:06	16:56
16	06:05	19:04 (MA07)	06:33	18:59 (MA07)	07:04	07:34	07:10	07:40
	20:53	55 19:59 (MA07)	20:21	60 19:59 (MA07)	19:32	18:43	17:05	16:57
17	06:05	19:04 (MA07)	06:34	19:00 (MA07)	07:05	07:35	07:11	07:41
	20:52	55 19:59 (MA07)	20:20	57 19:57 (MA07)	19:30	18:41	17:04	16:57
18	06:06	19:04 (MA07)	06:35	19:00 (MA07)	07:06	07:36	07:12	07:41
	20:52	56 20:00 (MA07)	20:18	56 19:56 (MA07)	19:29	18:40	17:03	16:57
19	06:07	19:03 (MA07)	06:36	19:00 (MA07)	07:07	07:37	07:13	07:42
	20:51	57 20:00 (MA07)	20:17	54 19:54 (MA07)	19:27	18:38	17:03	16:58
20	06:08	19:03 (MA07)	06:37	19:01 (MA07)	07:08	07:39	07:15	07:43
	20:50	58 20:01 (MA07)	20:15	51 19:52 (MA07)	19:25	18:37	17:02	16:58
21	06:09	19:03 (MA07)	06:38	19:02 (MA07)	07:09	07:40	07:16	07:43
	20:50	58 20:01 (MA07)	20:14	49 19:51 (MA07)	19:24	18:35	17:01	16:58
22	06:10	19:02 (MA07)	06:39	19:02 (MA07)	07:10	07:41	07:17	07:44
	20:49	60 20:02 (MA07)	20:12	48 19:50 (MA07)	19:22	18:34	17:01	16:59
23	06:10	19:02 (MA07)	06:40	19:03 (MA07)	07:11	07:42	07:18	07:44
	20:48	60 20:02 (MA07)	20:11	45 19:48 (MA07)	19:20	18:32	17:00	16:59
24	06:11	19:02 (MA07)	06:41	19:05 (MA07)	07:12	07:43	07:19	07:45
	20:47	61 20:03 (MA07)	20:09	42 19:47 (MA07)	19:18	18:31	17:00	17:00
25	06:12	19:01 (MA07)	06:42	19:06 (MA07)	07:12	06:44	07:20	07:45
	20:46	61 20:02 (MA07)	20:08	39 19:45 (MA07)	19:17	17:30	16:59	17:01
26	06:13	19:01 (MA07)	06:43	19:08 (MA07)	07:13	06:45	07:21	07:45
	20:45	62 20:03 (MA07)	20:06	36 19:44 (MA07)	19:15	17:28	16:59	17:01
27	06:14	19:00 (MA07)	06:44	19:10 (MA07)	07:14	06:46	07:22	07:46
	20:44	63 20:03 (MA07)	20:05	33 19:43 (MA07)	19:13	17:27	16:58	17:02
28	06:15	19:00 (MA07)	06:45	19:12 (MA07)	07:15	06:48	07:24	07:46
	20:44	64 20:04 (MA07)	20:03	29 19:41 (MA07)	19:12	17:26	16:58	17:02
29	06:16	19:00 (MA07)	06:46	19:16 (MA07)	07:17	06:49	07:25	07:46
	20:43	64 20:04 (MA07)	20:02	21 19:37 (MA07)	19:10	17:24	16:57	17:03
30	06:17	19:00 (MA07)	06:47	19:22 (MA07)	07:18	06:50	07:26	07:47
	20:42	64 20:04 (MA07)	20:00	8 19:30 (MA07)	19:08	17:23	16:57	17:04
31	06:18	19:00 (MA07)	06:48			06:51	07:27	07:47
	20:41	64 20:04 (MA07)	19:58			17:22	17:05	17:05
Potential sun hours	458		427		375	346	299	289
Total, worst case	1656		1601					
Sun reduction	0,75		0,72					
Oper. time red.	0,89		0,89					
Wind dir. red.	0,64		0,64					
Total reduction	0,43		0,41					
Total, real	712		662					

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)
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### SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R69 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	January	February	March	April	May	June
1	07:47	07:34	06:59	07:08	06:23	18:50 (MA07) 05:55
	17:06	17:40	18:13	19:47	20:18	59 19:49 (MA07) 20:47
2	07:47	07:33	06:57	07:07	06:22	18:50 (MA07) 05:54
	17:07	17:41	18:14	19:48	20:19	59 19:49 (MA07) 20:48
3	07:47	07:32	06:55	07:05	06:20	18:51 (MA07) 05:54
	17:07	17:42	18:16	19:49	20:20	58 19:49 (MA07) 20:49
4	07:47	07:31	06:54	07:03	06:19	18:51 (MA07) 05:53
	17:08	17:43	18:17	19:50	20:21	58 19:49 (MA07) 20:49
5	07:47	07:30	06:52	07:02	06:18	18:50 (MA07) 05:53
	17:09	17:45	18:18	19:51	20:22	58 19:48 (MA07) 20:50
6	07:47	07:29	06:51	07:00	06:17	18:51 (MA07) 05:53
	17:10	17:46	18:19	19:52	20:23	56 19:47 (MA07) 20:51
7	07:47	07:28	06:49	06:58	06:16	18:51 (MA07) 05:52
	17:11	17:47	18:20	19:53	20:24	56 19:47 (MA07) 20:51
8	07:47	07:27	06:48	06:57	19:22 (MA07) 06:14	18:52 (MA07) 05:52
	17:12	17:48	18:21	19:54	5 19:27 (MA07) 20:25	55 19:47 (MA07) 20:52
9	07:47	07:26	06:46	06:55	19:15 (MA07) 06:13	18:52 (MA07) 05:52
	17:13	17:50	18:22	19:55	19 19:34 (MA07) 20:26	54 19:46 (MA07) 20:53
10	07:47	07:24	06:44	06:54	19:11 (MA07) 06:12	18:53 (MA07) 05:52
	17:14	17:51	18:23	19:56	24 19:35 (MA07) 20:27	53 19:46 (MA07) 20:53
11	07:47	07:23	06:43	06:52	19:08 (MA07) 06:11	18:53 (MA07) 05:51
	17:15	17:52	18:24	19:57	28 19:36 (MA07) 20:28	52 19:45 (MA07) 20:54
12	07:46	07:22	06:41	06:51	19:05 (MA07) 06:10	18:54 (MA07) 05:51
	17:16	17:53	18:26	19:58	32 19:37 (MA07) 20:29	51 19:45 (MA07) 20:54
13	07:46	07:21	06:40	06:49	19:03 (MA07) 06:09	18:55 (MA07) 05:51
	17:17	17:54	18:27	19:59	34 19:37 (MA07) 20:30	49 19:44 (MA07) 20:55
14	07:46	07:20	06:38	06:47	19:02 (MA07) 06:08	18:55 (MA07) 05:51
	17:18	17:56	18:28	20:00	37 19:39 (MA07) 20:31	48 19:43 (MA07) 20:55
15	07:45	07:18	06:36	06:46	18:59 (MA07) 06:07	18:56 (MA07) 05:51
	17:19	17:57	18:29	20:01	40 19:39 (MA07) 20:32	46 19:42 (MA07) 20:56
16	07:45	07:17	06:35	06:44	18:59 (MA07) 06:06	18:57 (MA07) 05:51
	17:21	17:58	18:30	20:03	42 19:41 (MA07) 20:33	45 19:42 (MA07) 20:56
17	07:45	07:16	06:33	06:43	18:57 (MA07) 06:05	18:57 (MA07) 05:51
	17:22	17:59	18:31	20:04	44 19:41 (MA07) 20:34	44 19:41 (MA07) 20:56
18	07:44	07:14	06:31	06:41	18:56 (MA07) 06:04	18:58 (MA07) 05:51
	17:23	18:00	18:32	20:05	47 19:43 (MA07) 20:35	42 19:40 (MA07) 20:57
19	07:44	07:13	06:30	06:40	18:55 (MA07) 06:03	19:00 (MA07) 05:51
	17:24	18:02	18:33	20:06	48 19:43 (MA07) 20:36	39 19:39 (MA07) 20:57
20	07:43	07:12	06:28	06:38	18:54 (MA07) 06:02	19:01 (MA07) 05:52
	17:25	18:03	18:34	20:07	51 19:45 (MA07) 20:37	37 19:38 (MA07) 20:57
21	07:43	07:10	06:26	06:37	18:54 (MA07) 06:02	19:02 (MA07) 05:52
	17:26	18:04	18:35	20:08	52 19:46 (MA07) 20:38	35 19:37 (MA07) 20:57
22	07:42	07:09	06:25	06:35	18:53 (MA07) 06:01	19:03 (MA07) 05:52
	17:27	18:05	18:36	20:09	53 19:46 (MA07) 20:39	33 19:36 (MA07) 20:58
23	07:41	07:07	06:23	06:34	18:52 (MA07) 06:00	19:05 (MA07) 05:52
	17:29	18:06	18:37	20:10	56 19:48 (MA07) 20:40	30 19:35 (MA07) 20:58
24	07:41	07:06	06:22	06:32	18:51 (MA07) 05:59	19:06 (MA07) 05:52
	17:30	18:08	18:38	20:11	57 19:48 (MA07) 20:41	28 19:34 (MA07) 20:58
25	07:40	07:04	06:20	06:31	18:51 (MA07) 05:59	19:07 (MA07) 05:53
	17:31	18:09	18:39	20:12	59 19:50 (MA07) 20:42	25 19:32 (MA07) 20:58
26	07:39	07:03	06:18	06:30	18:51 (MA07) 05:58	19:09 (MA07) 05:53
	17:32	18:10	18:41	20:13	59 19:50 (MA07) 20:42	22 19:31 (MA07) 20:58
27	07:38	07:02	06:17	06:28	18:50 (MA07) 05:57	19:11 (MA07) 05:53
	17:33	18:11	18:42	20:14	60 19:50 (MA07) 20:43	18 19:29 (MA07) 20:58
28	07:38	07:00	06:15	06:27	18:50 (MA07) 05:57	19:14 (MA07) 05:54
	17:35	18:12	18:43	20:15	60 19:50 (MA07) 20:44	13 19:27 (MA07) 20:58
29	07:37	07:01	06:13	06:26	18:50 (MA07) 05:56	19:18 (MA07) 05:54
	17:36	18:13	19:44	20:16	60 19:50 (MA07) 20:45	4 19:22 (MA07) 20:58
30	07:36	07:00	06:12	06:24	18:50 (MA07) 05:56	05:55
	17:37	18:14	19:45	20:17	59 19:49 (MA07) 20:46	20:58
31	07:35	07:00	06:11	06:23	05:55	
	17:38	18:15	19:46	20:18	20:47	
Potential sun hours	298	298	370	398	447	451
Total, worst case				1026		1227
Sun reduction				0,51		0,58
Oper. time red.				0,89		0,89
Wind dir. red.				0,65		0,65
Total reduction				0,30		0,34
Total, real				303		415

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R69 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)  
Assumptions for shadow calculations

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

Operational time									
N	NE	E	SE	S	SW	W	NW	Sum	
956	594	724	502	522	1.378	1.886	1.253	7.815	

	July	August	September	October	November	December		
1	05:55	06:19	19:04 (MA07)	06:49	19:07 (MA07)	07:19	06:52	07:27
	20:58	20:39	19:55 (MA07)	19:57	19:35 (MA07)	19:07	17:21	16:57
2	05:56	06:20	19:04 (MA07)	06:50	19:10 (MA07)	07:20	06:53	07:28
	20:58	20:38	19:56 (MA07)	19:55	19:34 (MA07)	19:05	17:19	16:56
3	05:56	06:21	19:02 (MA07)	06:51	19:13 (MA07)	07:21	06:55	07:29
	20:58	20:37	19:56 (MA07)	19:54	19:32 (MA07)	19:03	17:18	16:56
4	05:57	06:22	19:02 (MA07)	06:52	19:18 (MA07)	07:22	06:56	07:30
	20:58	20:36	19:56 (MA07)	19:52	19:24 (MA07)	19:02	17:17	16:56
5	05:57	06:23	19:01 (MA07)	06:53		07:23	06:57	07:31
	20:58	20:35	19:57 (MA07)	19:50		19:00	17:16	16:56
6	05:58	06:23	19:01 (MA07)	06:54		07:24	06:58	07:32
	20:57	20:34	19:57 (MA07)	19:49		18:59	17:15	16:56
7	05:58	06:24	19:00 (MA07)	06:55		07:25	06:59	07:33
	20:57	20:33	19:57 (MA07)	19:47		18:57	17:14	16:56
8	05:59	06:25	19:00 (MA07)	06:56		07:26	07:00	07:34
	20:57	20:31	19:57 (MA07)	19:45		18:55	17:13	16:56
9	06:00	06:26	18:59 (MA07)	06:57		07:27	07:02	07:34
	20:56	20:30	19:58 (MA07)	19:44		18:54	17:12	16:55
10	06:00	06:27	18:59 (MA07)	06:58		07:28	07:03	07:35
	20:56	20:29	19:58 (MA07)	19:42		18:52	17:11	16:56
11	06:01	06:28	18:59 (MA07)	06:59		07:29	07:04	07:36
	20:56	20:28	19:58 (MA07)	19:40		18:51	17:10	16:56
12	06:02	06:29	18:59 (MA07)	07:00		07:30	07:05	07:37
	20:55	20:26	19:58 (MA07)	19:39		18:49	17:09	16:56
13	06:02	06:30	18:58 (MA07)	07:01		07:31	07:06	07:38
	20:55	20:25	19:58 (MA07)	19:37		18:47	17:08	16:56
14	06:03	06:31	18:58 (MA07)	07:02		07:32	07:08	07:39
	20:54	20:24	19:58 (MA07)	19:35		18:46	17:07	16:56
15	06:04	19:24 (MA07)	06:32	18:58 (MA07)	07:03	07:33	07:09	07:39
	20:54	10 19:34 (MA07)	20:22	19:57 (MA07)	19:34	18:44	17:06	16:56
16	06:05	19:21 (MA07)	06:33	18:58 (MA07)	07:04	07:34	07:10	07:40
	20:53	16 19:37 (MA07)	20:21	19:57 (MA07)	19:32	18:43	17:05	16:57
17	06:05	19:20 (MA07)	06:34	18:58 (MA07)	07:05	07:35	07:11	07:41
	20:52	19 19:39 (MA07)	20:20	19:57 (MA07)	19:30	18:41	17:04	16:57
18	06:06	19:18 (MA07)	06:35	18:58 (MA07)	07:06	07:36	07:12	07:41
	20:52	24 19:42 (MA07)	20:18	19:56 (MA07)	19:29	18:40	17:03	16:57
19	06:07	19:16 (MA07)	06:36	18:57 (MA07)	07:07	07:37	07:13	07:42
	20:51	26 19:42 (MA07)	20:17	19:54 (MA07)	19:27	18:38	17:03	16:58
20	06:08	19:15 (MA07)	06:37	18:57 (MA07)	07:08	07:39	07:15	07:43
	20:50	29 19:44 (MA07)	20:15	19:52 (MA07)	19:25	18:37	17:02	16:58
21	06:09	19:14 (MA07)	06:38	18:57 (MA07)	07:09	07:40	07:16	07:43
	20:50	32 19:46 (MA07)	20:14	19:51 (MA07)	19:24	18:35	17:01	16:58
22	06:10	19:13 (MA07)	06:39	18:58 (MA07)	07:10	07:41	07:17	07:44
	20:49	34 19:47 (MA07)	20:12	19:50 (MA07)	19:22	18:34	17:01	16:59
23	06:10	19:12 (MA07)	06:40	18:58 (MA07)	07:11	07:42	07:18	07:44
	20:48	36 19:48 (MA07)	20:11	19:48 (MA07)	19:20	18:32	17:00	16:59
24	06:11	19:11 (MA07)	06:41	18:59 (MA07)	07:12	07:43	07:19	07:45
	20:47	38 19:49 (MA07)	20:09	19:47 (MA07)	19:18	18:31	17:00	17:00
25	06:12	19:09 (MA07)	06:42	18:59 (MA07)	07:12	06:44	07:20	07:45
	20:46	41 19:50 (MA07)	20:08	19:45 (MA07)	19:17	17:30	16:59	17:01
26	06:13	19:08 (MA07)	06:43	19:00 (MA07)	07:13	06:45	07:21	07:45
	20:45	43 19:51 (MA07)	20:06	19:44 (MA07)	19:15	17:28	16:59	17:01
27	06:14	19:08 (MA07)	06:44	19:01 (MA07)	07:14	06:46	07:22	07:46
	20:44	44 19:52 (MA07)	20:05	19:43 (MA07)	19:13	17:27	16:58	17:02
28	06:15	19:07 (MA07)	06:45	19:01 (MA07)	07:15	06:48	07:24	07:46
	20:44	45 19:52 (MA07)	20:03	19:41 (MA07)	19:12	17:26	16:58	17:02
29	06:16	19:06 (MA07)	06:46	19:03 (MA07)	07:17	06:49	07:25	07:46
	20:43	47 19:53 (MA07)	20:02	19:40 (MA07)	19:10	17:24	16:57	17:03
30	06:17	19:06 (MA07)	06:47	19:04 (MA07)	07:18	06:50	07:26	07:47
	20:42	48 19:54 (MA07)	20:00	19:38 (MA07)	19:08	17:23	16:57	17:04
31	06:18	19:05 (MA07)	06:48	19:05 (MA07)		06:51	07:27	07:47
	20:41	50 19:55 (MA07)	19:58	19:37 (MA07)		17:22	17:05	17:05
Potential sun hours	458	427		375		346	299	289
Total, worst case	582		1619		77			
Sun reduction	0,75		0,72		0,64			
Oper. time red.	0,89		0,89		0,89			
Wind dir. red.	0,65		0,65		0,65			
Total reduction	0,44		0,42		0,37			
Total, real	254		679		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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R74 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (22)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

### Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	January	February	March	April	May	June
1	07:47 17:06 35 14:39 (MA06)	07:34 17:40 15:14 (MA06)	06:59 18:13 17:40	07:08 19:47 18:13	06:23 20:18 19:47	05:55 19:17 (MA07) 20:47 63
2	07:47 17:07 34 14:40 (MA06)	07:33 17:41 15:14 (MA06)	06:57 18:14 17:41	07:07 19:48 18:14	06:22 20:19 19:41 (MA07)	05:54 20:48 63 19:17 (MA07)
3	07:47 17:07 33 14:41 (MA06)	07:32 17:42 15:14 (MA06)	06:55 18:16 17:42	07:05 19:49 18:16	06:20 20:20 19:37 (MA07)	05:54 20:49 63 19:17 (MA07)
4	07:47 17:08 32 14:42 (MA06)	07:31 17:43 15:14 (MA06)	06:54 18:17 17:43	07:03 19:50 18:17	06:19 20:21 19:34 (MA07)	05:53 20:49 63 19:18 (MA07)
5	07:47 17:09 30 14:43 (MA06)	07:30 17:45 15:13 (MA06)	06:52 18:18 17:45	07:02 19:51 18:18	06:18 20:22 19:31 (MA07)	05:53 20:50 63 19:17 (MA07)
6	07:47 17:10 28 14:45 (MA06)	07:29 17:46 15:13 (MA06)	06:51 18:19 17:46	07:00 19:52 18:19	06:17 20:23 19:29 (MA07)	05:53 20:51 63 19:18 (MA07)
7	07:47 17:11 27 14:46 (MA06)	07:28 17:47 15:13 (MA06)	06:49 18:20 17:47	06:59 19:53 18:20	06:16 20:24 20:01 (MA07)	05:52 20:51 63 19:18 (MA07)
8	07:47 17:12 24 14:48 (MA06)	07:27 17:48 15:12 (MA06)	06:48 18:21 17:48	06:57 19:54 18:21	06:14 20:25 19:26 (MA07)	05:52 20:52 63 19:18 (MA07)
9	07:47 17:13 22 14:50 (MA06)	07:26 17:50 15:12 (MA06)	06:46 18:22 17:50	06:55 19:55 18:22	06:13 20:26 19:25 (MA07)	05:52 20:53 63 19:19 (MA07)
10	07:47 17:14 19 14:51 (MA06)	07:24 17:51 15:10 (MA06)	06:44 18:23 17:51	06:54 19:56 18:23	06:12 20:27 19:24 (MA07)	05:52 20:53 63 19:18 (MA07)
11	07:47 17:15 14 14:54 (MA06)	07:23 17:52 15:08 (MA06)	06:43 18:24 17:52	06:52 19:57 18:24	06:11 20:28 20:05 (MA07)	05:52 20:54 63 19:18 (MA07)
12	07:46 17:16 8 15:08 (MA06)	07:22 17:53 15:06 (MA06)	06:41 18:26 17:53	06:51 19:58 18:26	06:10 20:29 19:22 (MA07)	05:51 20:54 63 19:19 (MA07)
13	07:46 17:17 17:17	07:21 17:54 17:54	06:40 18:27 18:27	06:49 19:59 19:59	06:09 20:30 20:07 (MA07)	05:51 20:55 63 19:19 (MA07)
14	07:46 17:18 17:18	07:20 17:56 17:56	06:38 18:28 18:28	06:47 20:00 20:00	06:08 20:31 19:20 (MA07)	05:51 20:55 63 19:19 (MA07)
15	07:45 17:19 17:19	07:18 17:57 17:57	06:36 18:29 18:29	06:46 20:01 20:01	06:07 20:32 20:09 (MA07)	05:51 20:56 62 19:20 (MA07)
16	07:45 17:21 17:21	07:17 17:58 17:58	06:35 18:30 18:30	06:44 20:03 20:03	06:06 20:33 19:19 (MA07)	05:51 20:56 62 19:20 (MA07)
17	07:45 17:22 17:22	07:16 17:59 17:59	06:33 18:31 18:31	06:43 20:04 20:04	06:05 20:34 19:18 (MA07)	05:51 20:56 62 19:20 (MA07)
18	07:44 17:23 17:23	07:14 18:00 18:00	06:31 18:32 18:32	06:41 20:05 20:05	06:04 20:35 19:18 (MA07)	05:51 20:57 63 19:21 (MA07)
19	07:44 17:24 17:24	07:13 18:01 18:01	06:30 18:33 18:33	06:40 20:06 20:06	06:03 20:36 19:18 (MA07)	05:51 20:57 63 19:21 (MA07)
20	07:43 17:25 17:25	07:12 18:03 18:03	06:28 18:34 18:34	06:38 20:07 20:07	06:02 20:37 19:18 (MA07)	05:52 20:57 63 19:21 (MA07)
21	07:43 17:26 17:26	07:10 18:04 18:04	06:26 18:35 18:35	06:37 20:08 20:08	06:02 20:38 19:17 (MA07)	05:52 20:57 63 19:21 (MA07)
22	07:42 17:27 17:27	07:09 18:05 18:05	06:25 18:36 18:36	06:35 20:09 20:09	06:01 20:39 19:17 (MA07)	05:52 20:58 63 19:21 (MA07)
23	07:41 17:29 17:29	07:07 18:06 18:06	06:23 18:37 18:37	06:34 20:10 20:10	06:00 20:40 19:17 (MA07)	05:52 20:58 63 19:21 (MA07)
24	07:41 17:30 17:30	07:06 18:08 18:08	06:22 18:38 18:38	06:33 20:11 20:11	05:59 20:41 20:16 (MA07)	05:52 20:58 63 19:22 (MA07)
25	07:40 17:31 17:31	07:04 18:09 18:09	06:20 18:39 18:39	06:31 20:12 20:12	05:59 20:42 19:17 (MA07)	05:53 20:58 62 19:22 (MA07)
26	07:39 17:32 17:32	07:03 18:10 18:10	06:18 18:41 18:41	06:30 20:13 20:13	05:58 20:43 19:17 (MA07)	05:53 20:58 62 19:22 (MA07)
27	07:38 17:33 17:33	07:02 18:11 18:11	06:17 18:42 18:42	06:28 20:14 20:14	05:57 20:44 19:16 (MA07)	05:53 20:58 62 19:23 (MA07)
28	07:38 17:35 17:35	07:00 18:12 18:12	06:15 18:43 18:43	06:27 20:15 20:15	05:57 20:45 19:17 (MA07)	05:54 20:58 63 19:22 (MA07)
29	07:37 17:36 17:36	07:13 19:44 19:44	06:26 20:16 20:16	06:26 20:16 20:16	05:56 20:45 19:17 (MA07)	05:54 20:58 63 19:23 (MA07)
30	07:36 17:37 17:37	07:12 19:45 19:45	06:24 20:17 20:17	06:24 20:17 20:17	05:56 20:46 19:17 (MA07)	05:55 20:58 63 19:23 (MA07)
31	07:35 17:38 17:38	07:10 19:46 19:46	06:23 20:18 20:18	06:23 20:18 20:18	05:55 20:47 19:17 (MA07)	05:55 20:58 62 19:23 (MA07)
Potential sun hours	298	298	370	398	447	451
Total, worst case	306				1424	1884
Sun reduction	0,40				0,58	0,67
Oper. time red.	0,89				0,89	0,89
Wind dir. red.	0,67				0,60	0,60
Total reduction	0,24				0,31	0,36
Total, real	75				445	679

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R74 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (22)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December				
1	05:55	19:24 (MA07)	06:19	19:33 (MA07)	06:49	07:19	06:52	07:27	14:36 (MA06)	
	20:58	62 20:26 (MA07)	20:39	20:16 (MA07)	19:57	19:07	17:21	16:57	14	14:50 (MA06)
2	05:56	19:23 (MA07)	06:20	19:34 (MA07)	06:50	07:20	06:53	07:28	14:34 (MA06)	
	20:58	63 20:26 (MA07)	20:38	20:15 (MA07)	19:55	19:05	17:19	16:56	19	14:53 (MA06)
3	05:56	19:24 (MA07)	06:21	19:34 (MA07)	06:51	07:21	06:55	07:29	14:33 (MA06)	
	20:58	63 20:27 (MA07)	20:37	20:13 (MA07)	19:54	19:03	17:18	16:56	22	14:55 (MA06)
4	05:57	19:24 (MA07)	06:22	19:35 (MA07)	06:52	07:22	06:56	07:30	14:32 (MA06)	
	20:58	62 20:26 (MA07)	20:36	20:12 (MA07)	19:52	19:02	17:17	16:56	24	14:56 (MA06)
5	05:57	19:24 (MA07)	06:23	19:36 (MA07)	06:53	07:23	06:57	07:31	14:31 (MA06)	
	20:58	63 20:27 (MA07)	20:35	20:11 (MA07)	19:50	19:00	17:16	16:56	27	14:58 (MA06)
6	05:58	19:24 (MA07)	06:24	19:38 (MA07)	06:54	07:24	06:58	07:32	14:31 (MA06)	
	20:57	63 20:27 (MA07)	20:34	20:10 (MA07)	19:49	18:59	17:15	16:56	28	14:59 (MA06)
7	05:58	19:24 (MA07)	06:24	19:39 (MA07)	06:55	07:25	06:59	07:33	14:30 (MA06)	
	20:57	63 20:27 (MA07)	20:33	20:09 (MA07)	19:47	18:57	17:14	16:56	30	15:00 (MA06)
8	05:59	19:24 (MA07)	06:25	19:41 (MA07)	06:56	07:26	07:00	07:34	14:30 (MA06)	
	20:57	63 20:27 (MA07)	20:31	20:08 (MA07)	19:45	18:55	17:13	16:56	32	15:02 (MA06)
9	06:00	19:24 (MA07)	06:26	19:44 (MA07)	06:57	07:27	07:02	07:34	14:30 (MA06)	
	20:56	63 20:27 (MA07)	20:30	20:07 (MA07)	19:44	18:54	17:12	16:56	33	15:03 (MA06)
10	06:00	19:25 (MA07)	06:27	19:47 (MA07)	06:58	07:28	07:03	07:35	14:30 (MA06)	
	20:56	63 20:28 (MA07)	20:29	20:06 (MA07)	19:42	18:52	17:11	16:56	34	15:04 (MA06)
11	06:01	19:24 (MA07)	06:28	19:52 (MA07)	06:59	07:29	07:04	07:36	14:30 (MA06)	
	20:56	63 20:27 (MA07)	20:28	20:01 (MA07)	19:40	18:51	17:10	16:56	35	15:05 (MA06)
12	06:02	19:25 (MA07)	06:29	19:59 (MA07)	07:00	07:30	07:05	07:37	14:29 (MA06)	
	20:55	63 20:28 (MA07)	20:26	20:02 (MA07)	19:39	18:49	17:09	16:56	36	15:05 (MA06)
13	06:02	19:25 (MA07)	06:30	20:03 (MA07)	07:01	07:31	07:06	07:38	14:29 (MA06)	
	20:55	63 20:28 (MA07)	20:25	20:03 (MA07)	19:37	18:47	17:08	16:56	37	15:06 (MA06)
14	06:03	19:26 (MA07)	06:31	20:04 (MA07)	07:02	07:32	07:08	07:39	14:30 (MA06)	
	20:54	62 20:28 (MA07)	20:24	20:04 (MA07)	19:35	18:46	17:07	16:56	37	15:07 (MA06)
15	06:04	19:25 (MA07)	06:32	20:05 (MA07)	07:03	07:33	07:09	07:39	14:30 (MA06)	
	20:54	63 20:28 (MA07)	20:22	20:05 (MA07)	19:34	18:44	17:06	16:56	38	15:08 (MA06)
16	06:05	19:26 (MA07)	06:33	20:06 (MA07)	07:04	07:34	07:10	07:40	14:30 (MA06)	
	20:53	62 20:28 (MA07)	20:21	20:06 (MA07)	19:32	18:43	17:05	16:57	38	15:08 (MA06)
17	06:05	19:26 (MA07)	06:34	20:07 (MA07)	07:05	07:35	07:11	07:41	14:30 (MA06)	
	20:52	62 20:28 (MA07)	20:20	20:07 (MA07)	19:30	18:41	17:04	16:57	39	15:09 (MA06)
18	06:06	19:27 (MA07)	06:35	20:08 (MA07)	07:06	07:36	07:12	07:41	14:31 (MA06)	
	20:52	61 20:28 (MA07)	20:18	20:08 (MA07)	19:29	18:40	17:03	16:57	39	15:10 (MA06)
19	06:07	19:26 (MA07)	06:36	20:09 (MA07)	07:07	07:37	07:13	07:42	14:31 (MA06)	
	20:51	60 20:26 (MA07)	20:17	20:09 (MA07)	19:27	18:38	17:03	16:58	39	15:10 (MA06)
20	06:08	19:27 (MA07)	06:37	20:10 (MA07)	07:08	07:39	07:15	07:43	14:31 (MA06)	
	20:50	59 20:26 (MA07)	20:15	20:10 (MA07)	19:25	18:37	17:02	16:58	40	15:11 (MA06)
21	06:09	19:27 (MA07)	06:38	20:11 (MA07)	07:09	07:40	07:16	07:43	14:31 (MA06)	
	20:50	58 20:25 (MA07)	20:14	20:11 (MA07)	19:24	18:35	17:01	16:58	40	15:11 (MA06)
22	06:10	19:27 (MA07)	06:39	20:12 (MA07)	07:10	07:41	07:17	07:44	14:32 (MA06)	
	20:49	58 20:25 (MA07)	20:12	20:12 (MA07)	19:22	18:34	17:01	16:59	40	15:12 (MA06)
23	06:10	19:28 (MA07)	06:40	20:13 (MA07)	07:11	07:42	07:18	07:44	14:32 (MA06)	
	20:48	56 20:24 (MA07)	20:11	20:13 (MA07)	19:20	18:32	17:00	16:59	40	15:12 (MA06)
24	06:11	19:29 (MA07)	06:41	20:14 (MA07)	07:12	07:43	07:19	07:45	14:34 (MA06)	
	20:47	54 20:23 (MA07)	20:09	20:14 (MA07)	19:18	18:31	17:00	17:00	39	15:13 (MA06)
25	06:12	19:28 (MA07)	06:42	20:15 (MA07)	07:12	06:44	07:20	07:45	14:34 (MA06)	
	20:46	54 20:22 (MA07)	20:08	20:15 (MA07)	19:17	17:30	16:59	17:01	39	15:13 (MA06)
26	06:13	19:29 (MA07)	06:43	20:16 (MA07)	07:13	06:45	07:21	07:45	14:34 (MA06)	
	20:45	52 20:21 (MA07)	20:06	20:16 (MA07)	19:15	17:28	16:59	17:01	39	15:13 (MA06)
27	06:14	19:29 (MA07)	06:44	20:17 (MA07)	07:14	06:46	07:22	07:46	14:35 (MA06)	
	20:44	51 20:20 (MA07)	20:05	20:17 (MA07)	19:13	17:27	16:58	17:02	39	15:14 (MA06)
28	06:15	19:30 (MA07)	06:45	20:18 (MA07)	07:15	06:48	07:24	07:46	14:36 (MA06)	
	20:44	50 20:20 (MA07)	20:03	20:18 (MA07)	19:12	17:26	16:58	17:02	38	15:14 (MA06)
29	06:16	19:31 (MA07)	06:46	20:19 (MA07)	07:17	06:49	07:25	07:46	14:36 (MA06)	
	20:43	48 20:19 (MA07)	20:02	20:19 (MA07)	19:10	17:24	16:57	17:03	38	15:14 (MA06)
30	06:17	19:31 (MA07)	06:47	20:20 (MA07)	07:18	06:50	07:26	07:47	14:37 (MA06)	
	20:42	47 20:18 (MA07)	20:00	20:20 (MA07)	19:08	17:23	16:57	17:04	37	15:14 (MA06)
31	06:18	19:32 (MA07)	06:48	20:21 (MA07)	07:19	06:51	07:27	07:47	14:38 (MA06)	
	20:41	45 20:17 (MA07)	19:58	20:21 (MA07)	17:22	17:22	17:05	17:05	36	15:14 (MA06)
Potential sun hours	458		427		375	346	299		289	
Total, worst case	1819		335				6		1066	
Sun reduction	0,75		0,72				0,48		0,42	
Oper. time red.	0,89		0,89				0,89		0,89	
Wind dir. red.	0,60		0,60				0,67		0,67	
Total reduction	0,40		0,39				0,29		0,25	
Total, real	735		130				2		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

Calculation: SHADOW\_Real case\_MapShadow receptor: R77 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (20) Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

### Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47 17:06	07:34 17:40	06:59 18:13	07:08 19:47	06:23 20:18	05:54 20:47	06:22 (MA09) 20:58	06:29 (MA09) 20:40	06:19 19:57	06:49 19:07	07:19 17:21	06:52 16:57
2	07:47 17:06	07:33 17:41	06:57 18:14	07:07 19:48	06:20 20:19	05:54 20:48	06:22 (MA09) 20:58	06:30 (MA09) 20:39	06:20 19:55	06:50 19:05	07:20 17:19	06:54 16:56
3	07:47 17:07	07:32 17:42	06:56 18:16	07:05 19:49	06:20 20:20	05:54 20:49	06:22 (MA09) 20:58	06:29 (MA09) 20:37	06:21 19:54	06:51 19:03	07:21 17:18	06:55 16:56
4	07:48 17:08	07:31 17:43	06:54 18:17	07:03 19:50	06:19 20:21	05:53 20:50	06:23 (MA09) 20:58	06:30 (MA09) 20:36	06:22 19:52	06:52 19:02	07:22 17:17	06:56 16:56
5	07:48 17:09	07:30 17:45	06:52 18:18	07:02 19:51	06:18 20:22	05:53 20:50	06:23 (MA09) 20:58	06:30 (MA09) 20:35	06:22 19:50	06:53 19:00	07:23 17:16	06:57 16:56
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:23	05:53 20:51	06:23 (MA09) 20:57	06:30 (MA09) 20:34	06:23 19:49	06:54 18:59	07:24 17:15	06:58 16:56
7	07:47 17:11	07:28 17:47	06:49 18:20	06:59 19:53	06:16 20:25	05:52 20:52	06:24 (MA09) 20:57	06:30 (MA09) 20:33	06:24 19:47	06:55 18:57	07:25 17:14	06:59 16:55
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	06:14 20:26	05:52 20:52	06:24 (MA09) 20:57	06:29 (MA09) 20:32	06:25 19:45	06:56 18:55	07:26 17:13	07:01 16:55
9	07:47 17:13	07:26 17:49	06:46 18:22	06:55 19:55	06:13 20:27	05:52 20:53	06:25 (MA09) 20:56	06:30 (MA09) 20:30	06:26 19:44	06:57 18:54	07:27 17:11	07:02 16:55
10	07:47 17:14	07:25 17:51	06:45 18:23	06:54 19:56	06:12 20:28	05:52 20:53	06:24 (MA09) 20:56	06:30 (MA09) 20:29	06:27 19:42	06:58 18:52	07:28 17:10	07:03 16:55
11	07:47 17:15	07:23 17:52	06:43 18:24	06:52 19:57	06:11 20:29	05:51 20:54	06:25 (MA09) 20:56	06:30 (MA09) 20:28	06:28 19:40	06:59 18:51	07:29 17:09	07:04 16:56
12	07:47 17:16	07:22 17:53	06:41 18:26	06:51 19:58	06:10 20:30	05:51 20:54	06:25 (MA09) 20:55	06:30 (MA09) 20:26	07:00 19:39	07:30 18:49	07:05 17:05	07:05 16:56
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	06:09 20:31	05:51 20:55	06:26 (MA09) 20:55	06:30 (MA09) 20:25	07:01 19:37	07:31 18:47	07:06 17:08	07:06 16:56
14	07:46 17:18	07:20 17:56	06:38 18:28	06:47 20:00	06:08 20:32	05:51 20:55	06:26 (MA09) 20:54	06:31 (MA09) 20:24	07:02 19:35	07:32 18:46	07:08 17:07	07:07 16:56
15	07:46 17:19	07:18 17:57	06:36 18:29	06:46 20:02	06:07 20:33	05:51 20:56	06:26 (MA09) 20:54	06:30 (MA09) 20:22	07:03 19:34	07:33 18:44	07:09 17:06	07:09 16:56
16	07:45 17:20	07:17 17:58	06:35 18:30	06:44 20:03	06:06 20:34	05:51 20:56	06:27 (MA09) 20:53	06:31 (MA09) 20:21	07:04 19:32	07:34 18:43	07:10 17:05	07:10 16:56
17	07:45 17:22	07:16 17:59	06:33 18:31	06:43 20:04	06:05 20:34	05:51 20:56	06:27 (MA09) 20:52	06:31 (MA09) 20:20	07:05 19:30	07:35 18:41	07:11 17:04	07:11 16:57
18	07:44 17:23	07:14 18:00	06:31 18:32	06:41 20:05	06:04 20:35	05:51 20:57	06:27 (MA09) 20:52	06:31 (MA09) 20:18	07:06 19:29	07:36 18:40	07:12 17:03	07:12 16:57
19	07:44 17:24	07:13 18:02	06:30 18:33	06:40 20:06	06:03 20:36	05:51 20:57	06:28 (MA09) 20:51	06:31 (MA09) 20:17	07:07 19:27	07:38 18:38	07:14 17:03	07:14 16:57
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	06:02 20:37	05:51 20:57	06:28 (MA09) 20:50	06:31 (MA09) 20:15	07:08 19:25	07:39 18:37	07:15 17:02	07:15 16:58
21	07:43 17:26	07:10 18:04	06:27 18:35	06:37 20:08	06:02 20:38	05:52 20:58	06:28 (MA09) 20:50	06:32 (MA09) 20:14	07:09 19:24	07:40 18:35	07:16 17:01	07:16 16:58
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	06:01 20:39	05:52 20:58	06:28 (MA09) 20:49	06:33 (MA09) 20:12	07:10 19:22	07:41 18:34	07:17 17:01	07:17 16:59
23	07:41 17:29	07:07 18:06	06:23 18:37	06:34 20:10	06:00 20:40	05:52 20:58	06:28 (MA09) 20:48	06:33 (MA09) 20:11	07:11 19:20	07:42 18:32	07:18 17:00	07:18 16:59
24	07:41 17:30	07:06 18:07	06:22 18:38	06:32 20:11	05:59 20:41	05:52 20:58	06:29 (MA09) 20:47	06:34 (MA09) 20:09	07:12 19:19	07:43 18:31	07:19 17:00	07:19 17:00
25	07:40 17:31	07:05 18:09	06:20 18:40	06:31 20:12	05:58 20:42	05:53 20:58	06:29 (MA09) 20:46	06:35 (MA09) 20:08	07:13 19:17	06:44 17:30	07:20 16:59	07:20 17:00
26	07:39 17:32	07:03 18:10	06:18 18:41	06:30 20:13	05:58 20:43	05:53 20:58	06:29 (MA09) 20:46	06:36 (MA09) 20:06	07:14 19:15	06:45 17:28	07:21 16:58	07:21 17:01
27	07:38 17:33	07:02 18:11	06:17 18:42	06:28 20:14	05:57 20:43	05:53 20:58	06:30 (MA09) 20:45	06:38 (MA09) 20:05	07:15 19:13	06:47 17:27	07:23 16:58	07:23 17:02
28	07:38 17:35	07:00 18:12	06:15 18:43	06:27 20:15	05:57 20:44	05:54 20:58	06:29 (MA09) 20:44	06:39 (MA09) 20:03	07:16 19:12	06:48 17:26	07:24 16:58	07:24 17:02
29	07:37 17:36	07:02 18:14	06:14 19:44	06:26 20:16	05:56 20:45	05:54 20:58	06:30 (MA09) 20:43	06:41 (MA09) 20:02	07:17 19:10	06:49 17:24	07:25 16:57	07:25 17:03
30	07:36 17:37	07:06 18:12	06:12 19:45	06:24 20:17	05:55 20:46	05:55 20:58	06:30 (MA09) 20:42	06:47 (MA09) 20:00	07:18 19:08	06:50 17:23	07:26 16:57	07:26 17:04
31	07:35 17:38	07:10 19:46	06:10 19:46	06:22 20:17	05:55 20:47	05:55 20:58	06:30 (MA09) 20:41	06:48 19:59	07:19 17:22	06:51 17:22	07:27 16:57	07:27 17:05
Potential sun hours	298	298	370	398	448	451	458	427	375	346	299	289
Total, worst case					400	710	694					
Sun reduction					0,58	0,67	0,75					
Oper. time red.					0,89	0,89	0,89					
Wind dir. red.					0,68	0,68	0,68					
Total reduction					0,35	0,40	0,45					
Total, real					140	285	313					

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)
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## SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R78 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

### Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47 17:06	07:34 17:40	06:59 18:13	07:08 19:47	06:23 20:18	05:54 20:47	06:22 (MA09) 20:58	06:28 (MA09) 20:40	06:19 19:57	07:19 19:07	06:52 17:21	07:27 16:57
2	07:47 17:06	07:33 17:41	06:57 18:14	07:07 19:48	06:22 20:19	05:54 20:48	06:21 (MA09) 20:58	06:28 (MA09) 20:39	06:20 19:55	07:20 19:05	06:54 17:19	07:28 16:56
3	07:47 17:07	07:32 17:42	06:56 18:16	07:05 19:49	06:20 20:20	05:54 20:49	06:22 (MA09) 20:58	06:28 (MA09) 20:37	06:21 19:54	07:21 19:03	06:55 17:18	07:29 16:56
4	07:48 17:08	07:31 17:43	06:54 18:17	07:03 19:50	06:19 20:21	05:53 20:50	06:22 (MA09) 20:58	06:29 (MA09) 20:36	06:22 19:52	07:22 19:02	06:56 17:17	07:30 16:56
5	07:48 17:09	07:30 17:45	06:52 18:18	07:02 19:51	06:18 20:22	05:53 20:50	06:22 (MA09) 20:58	06:29 (MA09) 20:35	06:22 19:50	07:23 19:00	06:57 17:16	07:31 16:56
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:23	05:53 20:51	06:22 (MA09) 20:57	06:29 (MA09) 20:34	06:23 19:49	07:24 18:59	06:58 17:15	07:32 16:56
7	07:47 17:11	07:28 17:47	06:49 18:20	06:59 19:53	06:16 20:25	05:52 20:52	06:23 (MA09) 20:57	06:29 (MA09) 20:33	06:24 19:47	07:25 18:57	06:59 17:14	07:33 16:55
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	06:14 20:26	05:52 20:52	06:23 (MA09) 20:57	06:29 (MA09) 20:32	06:25 19:45	07:26 18:55	07:01 17:13	07:34 16:55
9	07:47 17:13	07:26 17:49	06:46 18:22	06:55 19:55	06:13 20:27	05:52 20:53	06:24 (MA09) 20:56	06:29 (MA09) 20:30	06:26 19:44	07:27 18:54	07:02 17:11	07:35 16:55
10	07:47 17:14	07:25 17:51	06:45 18:23	06:54 19:56	06:12 20:28	05:52 20:53	06:23 (MA09) 20:56	06:29 (MA09) 20:29	06:27 19:42	07:28 18:52	07:03 17:10	07:35 16:55
11	07:47 17:15	07:23 17:52	06:43 18:24	06:52 19:57	06:11 20:29	05:51 20:54	06:24 (MA09) 20:56	06:29 (MA09) 20:28	06:28 19:40	07:29 18:51	07:04 17:09	07:36 16:56
12	07:47 17:16	07:22 17:53	06:41 18:26	06:51 19:58	06:10 20:30	05:51 20:54	06:24 (MA09) 20:55	06:29 (MA09) 20:26	07:00 19:39	07:30 18:49	07:05 17:09	07:37 16:56
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	06:09 20:31	05:51 20:55	06:24 (MA09) 20:55	06:30 (MA09) 20:25	07:01 19:37	07:31 18:47	07:06 17:08	07:38 16:56
14	07:46 17:18	07:20 17:56	06:38 18:28	06:47 20:00	06:08 20:32	05:51 20:55	06:25 (MA09) 20:54	06:30 (MA09) 20:24	07:02 19:35	07:32 18:46	07:08 17:07	07:39 16:56
15	07:46 17:19	07:18 17:57	06:36 18:29	06:46 20:02	06:07 20:33	05:51 20:56	06:25 (MA09) 20:54	06:30 (MA09) 20:22	07:03 19:34	07:33 18:44	07:09 17:06	07:39 16:56
16	07:45 17:20	07:17 17:58	06:35 18:30	06:44 20:03	06:06 20:33	05:51 20:56	06:25 (MA09) 20:53	06:30 (MA09) 20:21	07:04 19:32	07:34 18:43	07:10 17:05	07:40 16:56
17	07:45 17:22	07:16 17:59	06:33 18:31	06:43 20:04	06:05 20:34	05:51 20:56	06:25 (MA09) 20:52	06:31 (MA09) 20:20	07:05 19:30	07:35 18:41	07:11 17:04	07:41 16:57
18	07:44 17:23	07:14 18:00	06:31 18:32	06:41 20:05	06:04 20:35	05:51 20:57	06:26 (MA09) 20:52	06:31 (MA09) 20:18	07:06 19:29	07:36 18:40	07:12 17:03	07:41 16:57
19	07:44 17:24	07:13 18:02	06:30 18:33	06:40 20:06	06:03 20:36	05:51 20:57	06:27 (MA09) 20:51	06:31 (MA09) 20:17	07:07 19:27	07:37 18:38	07:14 17:03	07:42 16:57
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	06:02 20:37	05:51 20:57	06:27 (MA09) 20:50	06:31 (MA09) 20:15	07:08 19:25	07:38 18:37	07:15 17:02	07:43 16:58
21	07:43 17:26	07:10 18:04	06:27 18:35	06:37 20:08	06:02 20:38	05:52 20:58	06:27 (MA09) 20:50	06:32 (MA09) 20:14	07:09 19:24	07:40 18:35	07:16 17:01	07:44 16:58
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	06:01 20:39	05:52 20:58	06:27 (MA09) 20:49	06:33 (MA09) 20:12	07:10 19:22	07:41 18:34	07:17 17:01	07:45 16:59
23	07:41 17:29	07:07 18:06	06:23 18:37	06:34 20:10	06:00 20:40	05:52 20:58	06:27 (MA09) 20:48	06:35 (MA09) 20:11	07:11 19:20	07:42 18:32	07:18 17:00	07:46 16:59
24	07:41 17:30	07:06 18:07	06:22 18:38	06:32 20:11	05:59 20:41	05:52 20:58	06:28 (MA09) 20:47	06:35 (MA09) 20:09	07:12 19:19	07:43 18:31	07:19 17:00	07:45 17:00
25	07:40 17:31	07:05 18:09	06:20 18:40	06:31 20:12	05:58 20:42	05:53 20:58	06:28 (MA09) 20:46	06:36 (MA09) 20:08	07:13 19:17	07:44 18:30	07:20 16:59	07:45 17:00
26	07:39 17:32	07:03 18:10	06:18 18:41	06:30 20:13	05:58 20:43	05:53 20:58	06:27 (MA09) 20:46	06:38 (MA09) 20:06	07:14 19:15	07:45 17:28	07:21 16:58	07:46 17:01
27	07:38 17:33	07:02 18:11	06:17 18:42	06:28 20:14	05:57 20:43	05:53 20:58	06:28 (MA09) 20:45	06:39 (MA09) 20:05	07:15 19:13	07:46 17:27	07:23 16:58	07:46 17:02
28	07:38 17:35	07:00 18:12	06:15 18:43	06:27 20:15	05:57 20:44	05:54 20:58	06:28 (MA09) 20:44	06:40 (MA09) 20:03	07:16 19:12	07:47 17:26	07:24 16:58	07:46 17:02
29	07:37 17:36	07:07 18:12	06:13 18:43	06:26 20:15	05:56 20:44	05:54 20:58	06:29 (MA09) 20:43	06:42 (MA09) 20:03	07:17 19:10	07:48 17:24	07:25 16:57	07:47 17:03
30	07:36 17:37	07:06 18:13	06:12 18:44	06:24 20:16	05:55 20:45	05:55 20:58	06:28 (MA09) 20:42	06:43 (MA09) 20:02	07:18 19:08	07:49 17:23	07:26 16:57	07:47 17:04
31	07:35 17:38	07:05 18:14	06:11 18:45	06:23 20:17	05:55 20:46	05:55 20:58	06:21 (MA09) 20:42	06:44 (MA09) 20:00	07:19 19:08	07:50 17:22	07:27 16:57	07:47 17:05
Potential sun hours	298	298	370	398	448	451	458	427	375	346	299	289
Total, worst case					375	766	684					
Sun reduction					0,58	0,67	0,75					
Oper. time red.					0,89	0,89	0,89					
Wind dir. red.					0,68	0,68	0,68					
Total reduction					0,35	0,40	0,45					
Total, real					131	308	309					

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)
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### SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R84 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

#### Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

	January	February	March	April	May	June
1	07:47 17:06	07:34 17:40	07:54 (MA08) 16:14 (MA11)	06:59 18:13	07:08 19:47	06:23 20:18
2	07:47 17:06	07:33 17:41	07:53 (MA08) 16:15 (MA11)	06:57 18:14	07:07 19:48	06:22 20:19
3	07:48 17:07	07:32 17:42	07:52 (MA08) 16:16 (MA11)	06:56 18:16	07:05 19:49	06:20 20:20
4	07:48 17:08	07:31 17:43	07:51 (MA08) 16:16 (MA11)	06:54 18:17	07:03 19:50	06:19 20:21
5	07:48 17:09	07:30 17:45	07:50 (MA08) 16:17 (MA11)	06:53 18:18	07:02 19:51	06:18 20:23
6	07:48 17:10	07:29 17:46	07:49 (MA08) 16:19 (MA11)	06:51 18:19	07:00 19:52	06:17 20:24
7	07:48 17:11	07:28 17:47	07:48 (MA08) 16:20 (MA11)	06:49 18:20	06:59 19:53	06:16 20:25
8	07:47 17:12	07:27 17:48	07:47 (MA08) 16:21 (MA11)	06:48 18:21	06:57 19:54	06:14 20:26
9	07:47 17:13	07:26 17:50	07:45 (MA08) 16:22 (MA11)	06:46 18:22	06:55 19:55	06:13 20:27
10	07:47 17:14	07:25 17:51	07:44 (MA08) 16:23 (MA11)	06:45 18:23	06:54 19:56	06:12 20:28
11	07:47 17:15	08:08 (MA08) 17:52	07:44 (MA08) 16:25 (MA11)	06:43 18:25	06:52 19:57	06:11 20:29
12	07:47 17:16	08:08 (MA08) 17:53	07:45 (MA08) 16:26 (MA11)	06:41 18:26	06:51 19:58	06:10 20:30
13	07:46 17:17	08:08 (MA08) 17:54	07:45 (MA08) 16:27 (MA11)	06:40 18:27	06:49 20:00	06:09 20:31
14	07:46 17:18	08:07 (MA08) 17:56	07:47 (MA08) 16:28 (MA11)	06:38 18:28	06:47 20:01	06:08 20:32
15	07:46 17:19	08:07 (MA08) 17:57	07:48 (MA08) 16:30 (MA11)	06:36 18:29	06:46 20:02	06:07 20:33
16	07:45 17:20	08:06 (MA08) 17:58	07:49 (MA08) 16:31 (MA11)	06:35 18:30	06:44 20:03	06:06 20:34
17	07:45 17:22	08:06 (MA08) 17:59	07:52 (MA08) 16:32 (MA11)	06:33 18:31	06:43 20:04	06:05 20:35
18	07:44 17:23	08:05 (MA08) 18:00	07:55 (MA08) 16:34 (MA11)	06:32 18:32	06:41 20:05	06:04 20:35
19	07:44 17:24	08:05 (MA08) 18:02	07:58 (MA08) 16:35 (MA11)	06:30 18:33	06:40 20:06	06:03 20:36
20	07:43 17:25	08:20 (MA08) 18:03	15:29 (MA11) 16:37 (MA11)	06:28 18:34	15:39 (MA11) 20:07	06:02 20:37
21	07:43 17:26	08:21 (MA08) 18:04	15:29 (MA11) 16:39 (MA11)	06:27 18:35	15:40 (MA11) 20:08	06:02 20:38
22	07:42 17:27	08:03 (MA08) 18:05	15:28 (MA11) 16:40 (MA11)	06:25 18:36	15:41 (MA11) 20:09	06:01 20:39
23	07:41 17:29	08:02 (MA08) 18:06	15:28 (MA11) 16:42 (MA11)	06:23 18:37	15:43 (MA11) 20:10	06:00 20:40
24	07:41 17:30	08:23 (MA08) 18:07	15:28 (MA11) 16:44 (MA11)	06:22 18:39	15:44 (MA11) 20:11	05:59 20:41
25	07:40 17:31	08:24 (MA08) 18:09	15:28 (MA11) 16:46 (MA11)	06:20 18:40	15:46 (MA11) 20:12	05:59 20:42
26	07:39 17:32	08:00 (MA08) 18:10	15:27 (MA11) 16:47 (MA11)	06:18 18:41	15:49 (MA11) 20:13	05:58 20:43
27	07:39 17:33	07:59 (MA08) 18:11	15:28 (MA11) 16:50 (MA11)	06:17 18:42	15:51 (MA11) 20:14	05:57 20:44
28	07:38 17:35	07:58 (MA08) 18:12	15:27 (MA11) 16:52 (MA11)	06:15 18:43	15:53 (MA11) 20:15	05:57 20:44
29	07:37 17:36	16:12 (MA11) 17:57 (MA08)		07:13 19:44	16:57 (MA11) 20:16	05:56 20:45
30	07:36 17:37	07:56 (MA08) 18:13		07:12 19:45	17:01 (MA11) 20:17	05:55 20:46
31	07:35 17:38	07:55 (MA08) 16:14 (MA11)		07:10 19:46		05:55 20:47
Potential sun hours	298	298	370		398	448
Total, worst case	456	2215		2142		
Sun reduction	0,40	0,43		0,47		
Oper. time red.	0,89	0,89		0,89		
Wind dir. red.	0,62	0,67		0,69		
Total reduction	0,22	0,26		0,29		
Total, real	101	571		623		

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)
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### SHADOW - Calendar

Calculation: SHADOW\_Real case\_MapShadow receptor: R84 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,87	4,61	5,62	6,73	8,36	10,04	11,06	9,91	8,03	6,21	4,80	3,87

#### Operational time

N	NE	E	SE	S	SW	W	NW	Sum
956	594	724	502	522	1.378	1.886	1.253	7.815

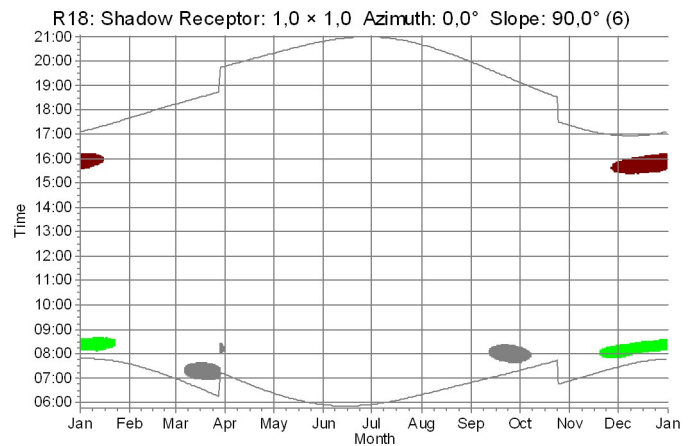
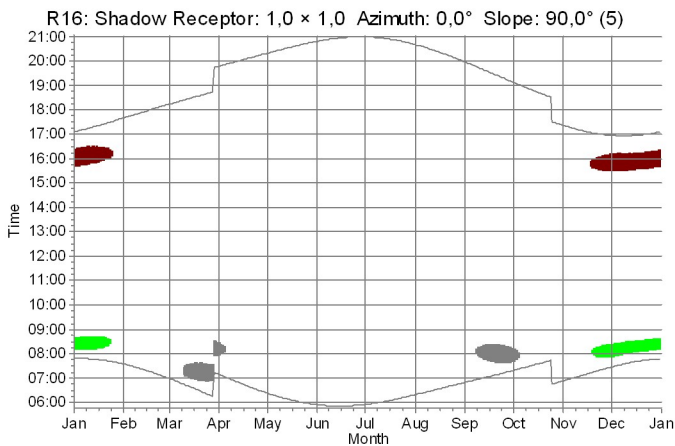
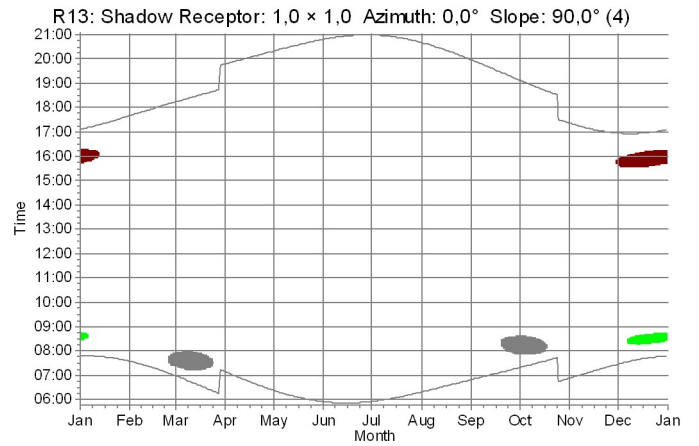
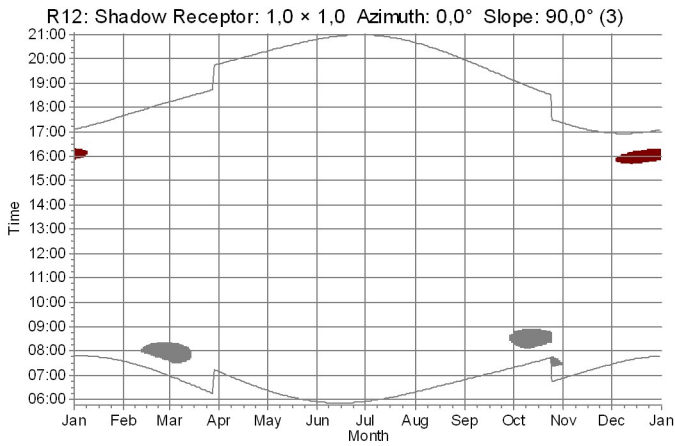
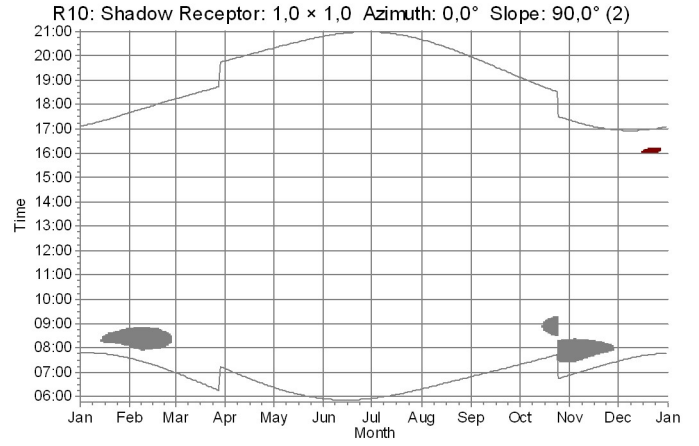
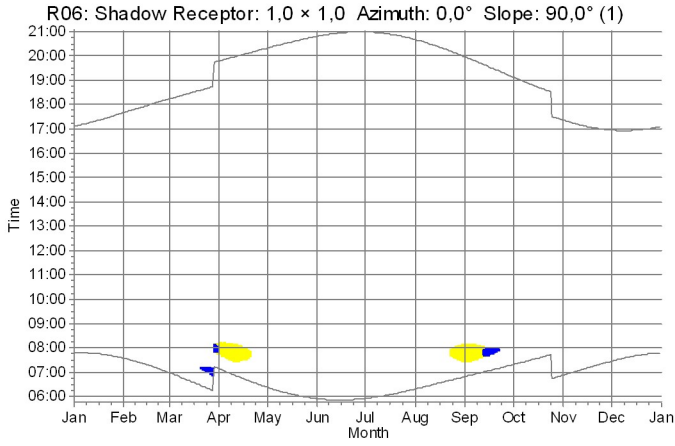
	July	August	September	October	November	December	
1	05:55	06:19	06:49	07:19	16:11 (MA11) 06:52	07:14 (MA08)	07:27
	20:58	20:40	19:57	19:07	83 17:34 (MA11) 17:21	88 15:53 (MA11)	16:57
2	05:55	06:20	06:50	07:20	16:09 (MA11) 06:54	07:15 (MA08)	07:28
	20:58	20:39	19:55	19:05	85 17:34 (MA11) 17:19	85 15:51 (MA11)	16:56
3	05:56	06:21	06:51	07:21	16:08 (MA11) 06:55	07:16 (MA08)	07:29
	20:58	20:38	19:54	19:04	86 17:34 (MA11) 17:18	82 15:50 (MA11)	16:56
4	05:57	06:22	06:52	07:22	16:07 (MA11) 06:56	07:18 (MA08)	07:30
	20:58	20:36	19:52	19:02	87 17:34 (MA11) 17:17	79 15:50 (MA11)	16:56
5	05:57	06:23	06:53	07:23	16:06 (MA11) 06:57	07:19 (MA08)	07:31
	20:58	20:35	19:50	19:00	88 17:34 (MA11) 17:16	75 15:48 (MA11)	16:56
6	05:58	06:23	06:54	07:24	16:05 (MA11) 06:58	07:20 (MA08)	07:32
	20:58	20:34	19:49	18:59	89 17:34 (MA11) 17:15	73 15:47 (MA11)	16:56
7	05:58	06:24	06:55	07:25	16:04 (MA11) 06:59	07:21 (MA08)	07:33
	20:57	20:33	19:47	18:57	90 17:34 (MA11) 17:14	69 15:46 (MA11)	16:55
8	05:59	06:25	06:56	07:26	16:03 (MA11) 07:01	07:23 (MA08)	07:34
	20:57	20:32	19:46	18:55	91 17:34 (MA11) 17:13	66 15:47 (MA11)	16:55
9	06:00	06:26	06:57	07:27	16:02 (MA11) 07:02	07:24 (MA08)	07:35
	20:57	20:30	19:44	18:54	92 17:34 (MA11) 17:12	62 15:46 (MA11)	16:55
10	06:00	06:27	06:58	07:28	16:02 (MA11) 07:03	07:25 (MA08)	07:36
	20:56	20:29	19:42	18:52	92 17:34 (MA11) 17:11	59 15:45 (MA11)	16:55
11	06:01	06:28	06:59	07:29	16:01 (MA11) 07:04	07:26 (MA08)	07:36
	20:56	20:28	19:41	18:51	90 17:31 (MA11) 17:10	56 15:45 (MA11)	16:56
12	06:02	06:29	07:00	07:30	16:00 (MA11) 07:05	07:28 (MA08)	07:37
	20:55	20:27	19:39	18:49	89 17:29 (MA11) 17:09	51 15:45 (MA11)	16:56
13	06:02	06:30	07:01	16:53 (MA11) 07:31	16:00 (MA11) 07:07	07:29 (MA08)	07:38
	20:55	20:25	19:37	19 17:12 (MA11) 18:47	86 17:26 (MA11) 17:08	47 15:44 (MA11)	16:56
14	06:03	06:31	07:02	16:48 (MA11) 07:32	15:59 (MA11) 07:08	07:30 (MA08)	07:39
	20:54	20:24	19:35	29 17:17 (MA11) 18:46	84 17:23 (MA11) 17:07	41 15:44 (MA11)	16:56
15	06:04	06:32	07:03	16:44 (MA11) 07:33	16:00 (MA11) 07:09	07:31 (MA08)	07:39
	20:54	20:22	19:34	35 17:19 (MA11) 18:44	81 17:21 (MA11) 17:06	35 15:43 (MA11)	16:56
16	06:05	06:33	07:04	16:41 (MA11) 07:34	16:00 (MA11) 07:10	07:33 (MA08)	07:40
	20:53	20:21	19:32	41 17:22 (MA11) 18:43	79 17:19 (MA11) 17:05	25 07:58 (MA08)	16:56
17	06:05	06:34	07:05	16:38 (MA11) 07:35	15:59 (MA11) 07:11	07:34 (MA08)	07:41
	20:53	20:20	19:30	46 17:17 (MA11) 18:41	78 17:17 (MA11) 17:04	24 07:58 (MA08)	16:57
18	06:06	06:35	07:06	16:35 (MA11) 07:37	15:59 (MA11) 07:12	07:35 (MA08)	07:42
	20:52	20:18	19:29	50 17:25 (MA11) 18:40	76 17:15 (MA11) 17:03	23 07:58 (MA08)	16:57
19	06:07	06:36	07:07	16:32 (MA11) 07:38	15:59 (MA11) 07:14	07:36 (MA08)	07:42
	20:51	20:17	19:27	55 17:27 (MA11) 18:38	73 17:12 (MA11) 17:03	21 07:57 (MA08)	16:57
20	06:08	06:37	07:08	16:30 (MA11) 07:39	15:59 (MA11) 07:15	07:38 (MA08)	07:43
	20:50	20:15	19:25	58 17:28 (MA11) 18:37	71 17:10 (MA11) 17:02	20 07:58 (MA08)	16:58
21	06:09	06:38	07:09	16:28 (MA11) 07:40	15:59 (MA11) 07:16	07:39 (MA08)	07:43
	20:50	20:14	19:24	61 17:29 (MA11) 18:35	69 17:08 (MA11) 17:01	18 07:57 (MA08)	16:58
22	06:10	06:39	07:10	16:25 (MA11) 07:41	16:00 (MA11) 07:17	07:40 (MA08)	07:44
	20:49	20:12	19:22	65 17:30 (MA11) 18:34	67 17:07 (MA11) 17:01	17 07:57 (MA08)	16:59
23	06:10	06:40	07:11	16:23 (MA11) 07:42	08:27 (MA08) 07:18	07:41 (MA08)	07:44
	20:48	20:11	19:20	68 17:31 (MA11) 18:33	79 17:05 (MA11) 17:00	15 07:56 (MA08)	16:59
24	06:11	06:41	07:12	16:21 (MA11) 07:43	08:24 (MA08) 07:19	07:43 (MA08)	07:45
	20:47	20:09	19:19	70 17:31 (MA11) 18:31	84 17:03 (MA11) 17:00	13 07:56 (MA08)	17:00
25	06:12	06:42	07:13	16:20 (MA11) 06:44	07:21 (MA08) 07:20	07:44 (MA08)	07:45
	20:46	20:08	19:17	72 17:32 (MA11) 17:30	87 16:02 (MA11) 16:59	12 07:56 (MA08)	17:00
26	06:13	06:43	07:14	16:18 (MA11) 06:45	07:19 (MA08) 07:22	07:45 (MA08)	07:46
	20:46	20:06	19:15	75 17:33 (MA11) 17:28	88 16:00 (MA11) 16:59	10 07:55 (MA08)	17:01
27	06:14	06:44	07:15	16:16 (MA11) 06:47	07:18 (MA08) 07:23	07:46 (MA08)	07:46
	20:45	20:05	19:14	77 17:33 (MA11) 17:27	90 15:59 (MA11) 16:58	9 07:55 (MA08)	17:02
28	06:15	06:45	07:16	16:15 (MA11) 06:48	07:16 (MA08) 07:24	07:47 (MA08)	07:46
	20:44	20:03	19:12	78 17:33 (MA11) 17:26	91 15:58 (MA11) 16:58	7 07:54 (MA08)	17:02
29	06:16	06:46	07:17	16:13 (MA11) 06:49	07:15 (MA08) 07:25	07:48 (MA08)	07:47
	20:43	20:02	19:10	81 17:34 (MA11) 17:24	91 15:56 (MA11) 16:57	5 07:53 (MA08)	17:03
30	06:17	06:47	07:18	16:12 (MA11) 06:50	07:14 (MA08) 07:26	07:49 (MA08)	07:47
	20:42	20:00	19:08	82 17:34 (MA11) 17:23	90 15:55 (MA11) 16:57	3 07:52 (MA08)	17:04
31	06:18	06:48		06:51	07:13 (MA08)		07:47
	20:41	19:59		17:22	91 15:54 (MA11)		17:05
Potential sun hours	458	427	375	346	299	289	
Total, worst case			1062	2617	1190		2
Sun reduction			0,64	0,56	0,48		0,42
Oper. time red.			0,89	0,89	0,89		0,89
Wind dir. red.			0,69	0,68	0,64		0,60
Total reduction			0,40	0,34	0,27		0,22
Total, real			421	888	326		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, graphical

Calculation: SHADOW\_Real case\_Map



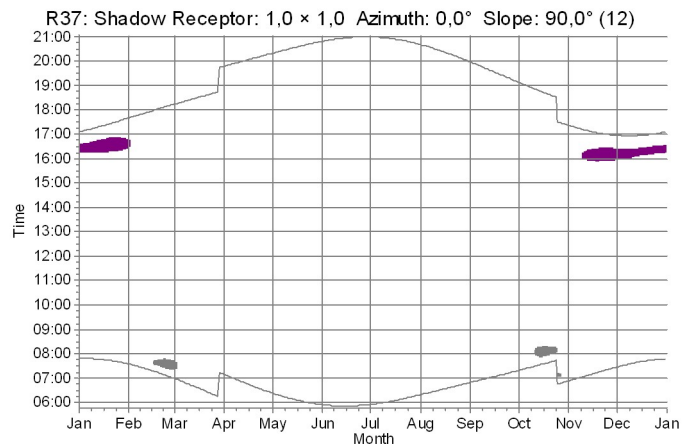
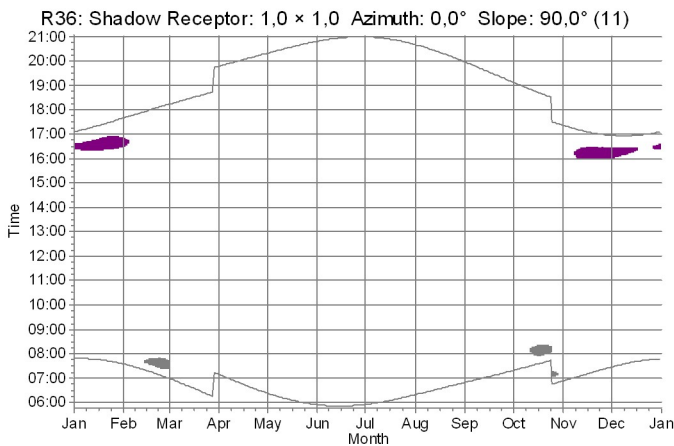
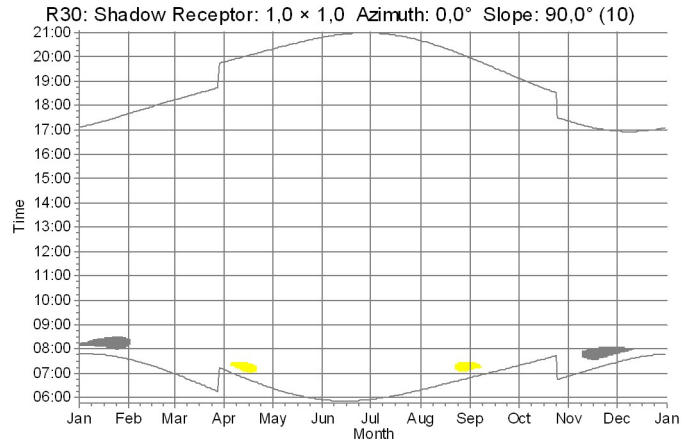
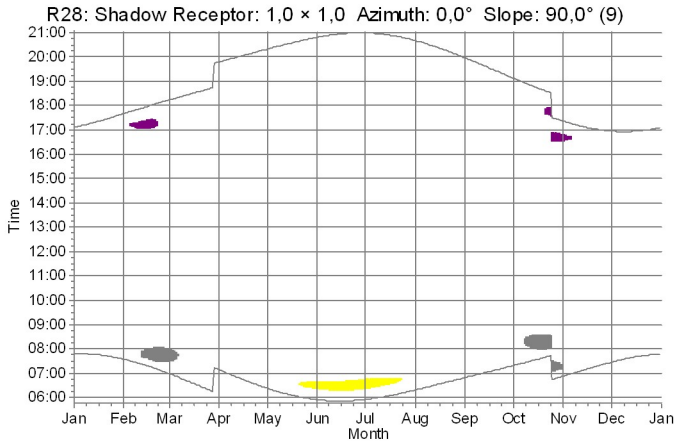
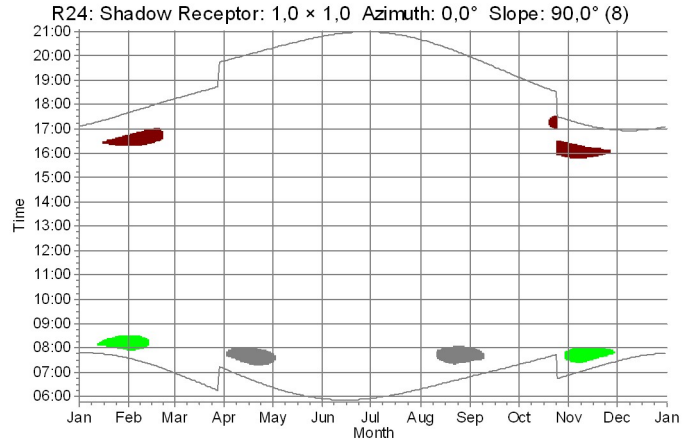
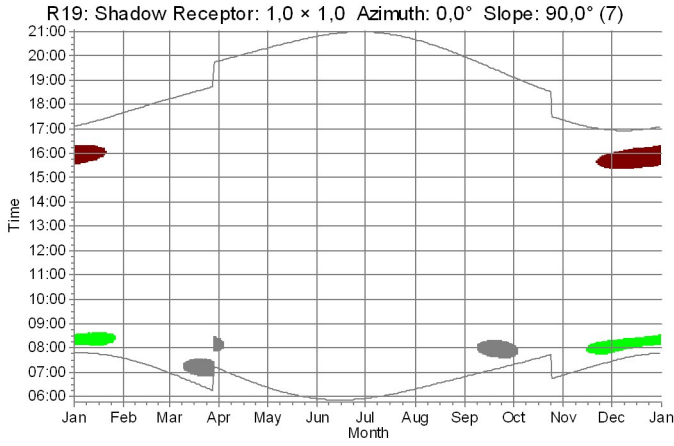
### WTGs

MA02: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (2)  
MA03: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (3)  
MA04: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (4)

MA08: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (8)  
MA09: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (9)

## SHADOW - Calendar, graphical

Calculation: SHADOW\_Real case\_Map



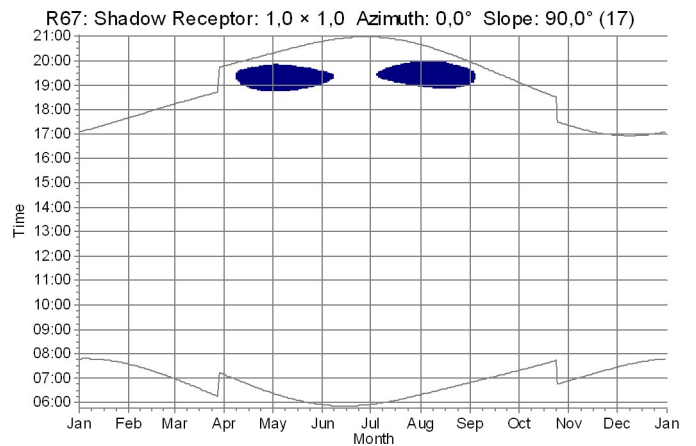
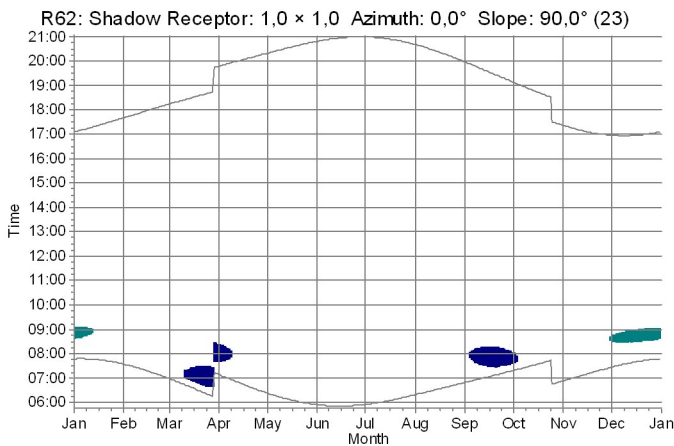
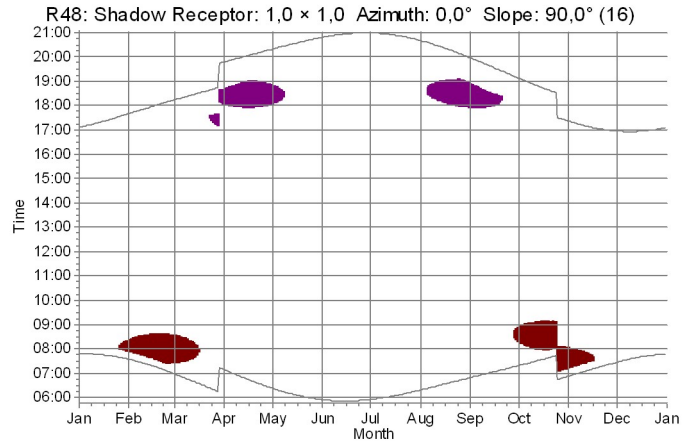
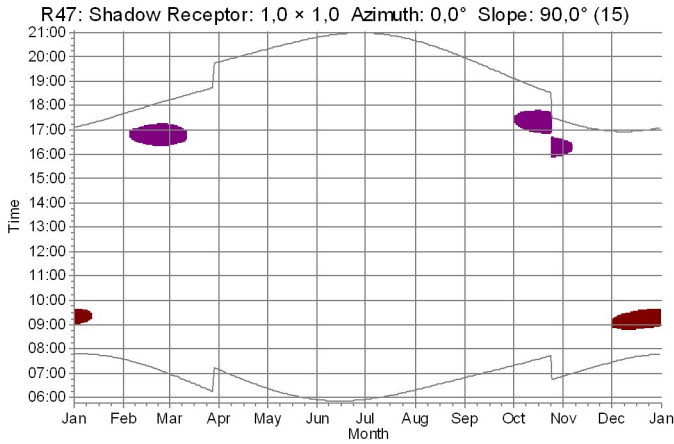
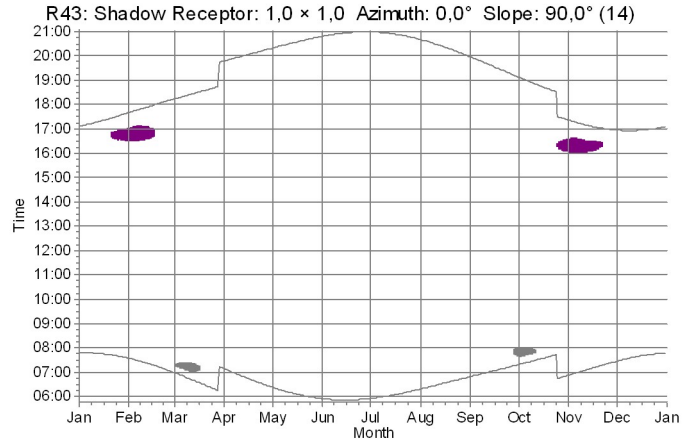
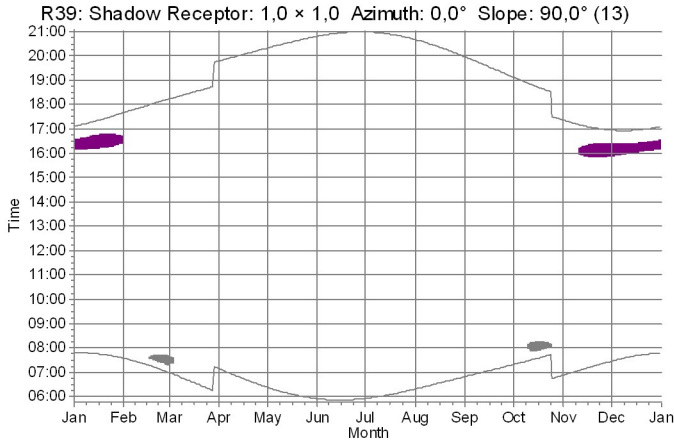
### WTGs

- MA02: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (2)
- MA04: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (4)
- MA08: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (8)

- MA09: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (9)
- MA11: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (11)

## SHADOW - Calendar, graphical

Calculation: SHADOW\_Real case\_Map



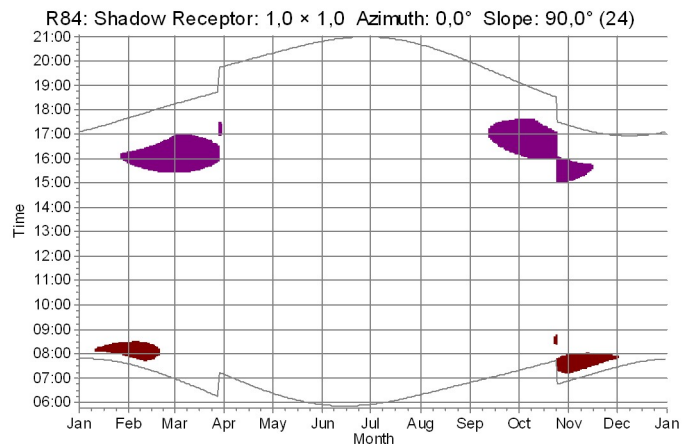
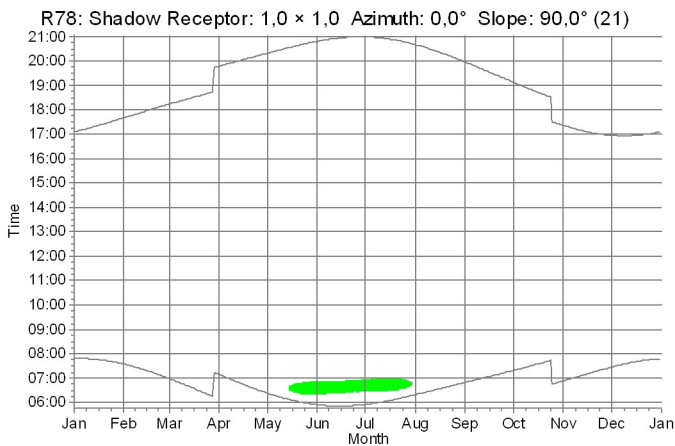
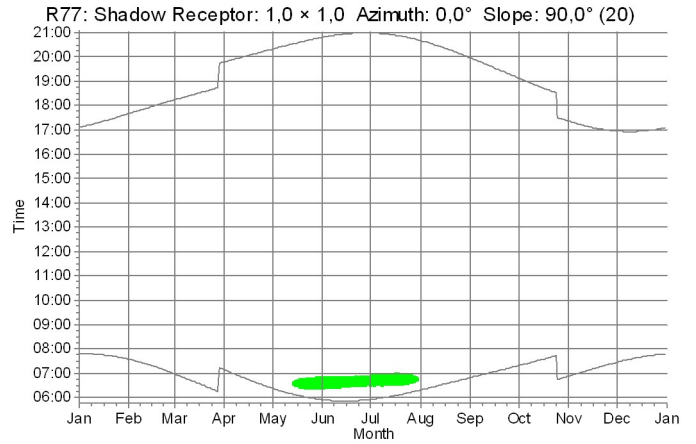
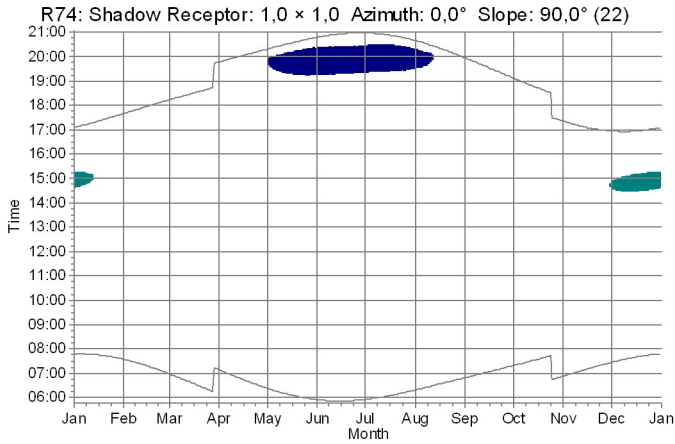
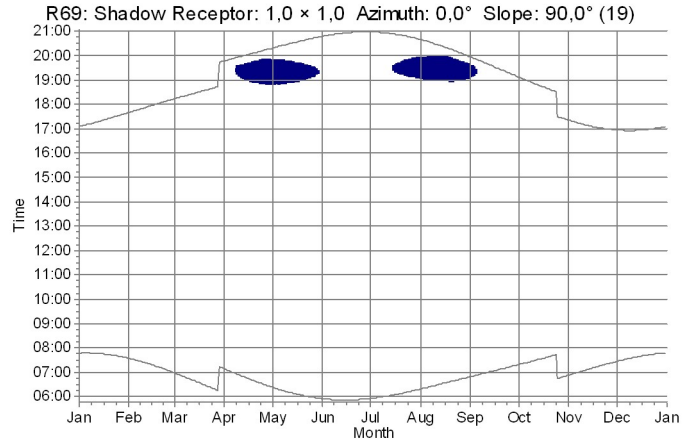
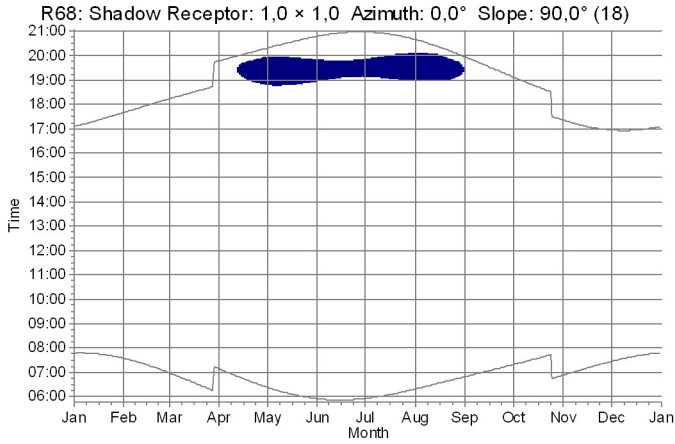
### WTGs

- MA04: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (4)
- MA06: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (6)
- MA07: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (7)

- MA08: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (8)
- MA11: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (11)

## SHADOW - Calendar, graphical

Calculation: SHADOW\_Real case\_Map



### WTGs

- MA06: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (6)
- MA07: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (7)
- MA08: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (8)

- MA09: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (9)
- MA11: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (11)



## SHADOW - Calendar per WTG

Calculation: SHADOW\_Real case\_MapWTG: MA01 - VESTAS V172-7.2 7200 172.0 !OI! hub: 114,0 m (TOT: 200,0 m) (1)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47 17:05	07:34 17:39	06:58 18:13	07:08 19:47	06:23 20:18	05:54 20:47	05:55 20:58	06:18 20:40	06:49 19:57	07:18 19:07	06:52 17:20	07:27 16:56
2	07:47 17:06	07:33 17:41	06:57 18:14	07:06 19:48	06:21 20:19	05:54 20:48	05:55 20:58	06:19 20:38	06:50 19:55	07:19 19:05	06:53 17:19	07:28 16:56
3	07:47 17:07	07:32 17:42	06:55 18:15	07:05 19:49	06:20 20:20	05:53 20:49	05:56 20:58	06:20 20:37	06:51 19:54	07:20 19:03	06:55 17:18	07:29 16:56
4	07:47 17:08	07:31 17:43	06:54 18:17	07:03 19:50	06:19 20:21	05:53 20:50	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02	06:56 17:17	07:30 16:56
5	07:47 17:09	07:30 17:44	06:52 18:18	07:02 19:51	06:18 20:22	05:53 20:50	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00	06:57 17:16	07:31 16:55
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 19:52	06:16 20:23	05:52 20:51	05:57 20:57	06:23 20:34	06:54 19:49	07:24 18:58	06:58 17:15	07:32 16:55
7	07:47 17:11	07:28 17:47	06:49 18:20	06:58 19:53	06:15 20:24	05:52 20:52	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	06:59 17:13	07:33 16:55
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	06:14 20:25	05:52 20:52	05:59 20:57	06:25 20:31	06:56 19:45	07:26 18:55	07:01 17:12	07:34 16:55
9	07:47 17:13	07:26 17:49	06:46 18:22	06:55 19:55	06:13 20:26	05:52 20:53	05:59 20:56	06:26 20:30	06:57 19:44	07:27 18:54	07:02 17:11	07:35 16:55
10	07:47 17:14	07:24 17:51	06:44 18:23	06:54 19:56	06:12 20:27	05:51 20:53	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:03 17:10	07:35 16:55
11	07:47 17:15	07:23 17:52	06:43 18:24	06:52 19:57	06:11 20:29	05:51 20:54	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:50	07:04 17:09	07:36 16:55
12	07:47 17:16	07:22 17:53	06:41 18:25	06:50 19:58	06:10 20:30	05:51 20:54	06:01 20:55	06:29 20:26	07:00 19:39	07:30 18:49	07:05 17:08	07:37 16:55
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	06:09 20:31	05:51 20:55	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	07:06 17:07	07:38 16:56
14	07:46 17:18	07:20 17:55	06:38 18:28	06:47 20:00	06:08 20:31	05:51 20:55	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	07:08 17:07	07:39 16:56
15	07:46 17:19	07:18 17:57	06:36 18:29	06:46 20:01	06:07 20:32	05:51 20:56	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	07:09 17:06	07:39 16:56
16	07:45 17:20	07:17 17:58	06:35 18:30	06:44 20:02	06:06 20:33	05:51 20:56	06:04 20:53	06:33 20:21	07:04 19:32	07:34 18:43	07:10 17:05	07:40 16:56
17	07:45 17:21	07:16 17:59	06:33 18:31	06:43 20:04	06:05 20:34	05:51 20:56	06:05 20:52	06:34 20:20	07:04 19:30	07:35 18:41	07:11 17:04	07:41 16:57
18	07:44 17:23	07:14 18:00	06:31 18:32	06:41 20:05	06:04 20:35	05:51 20:57	06:06 20:52	06:35 20:18	07:05 19:29	07:36 18:40	07:12 17:03	07:41 16:57
19	07:44 17:24	07:13 18:01	06:30 18:33	06:40 20:06	06:03 20:36	05:51 20:57	06:07 20:51	06:36 20:17	07:06 19:27	07:37 18:38	07:13 17:02	07:42 16:57
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	06:02 20:37	05:51 20:57	06:08 20:50	06:37 20:15	07:07 19:25	07:39 18:37	07:15 17:02	07:43 16:58
21	07:43 17:26	07:10 18:04	06:26 18:35	06:37 20:08	06:01 20:38	05:51 20:58	06:08 20:50	06:38 20:14	07:08 19:23	07:40 18:35	07:16 17:01	07:43 16:58
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	06:01 20:39	05:52 20:58	06:09 20:49	06:39 20:12	07:09 19:22	07:41 18:34	07:17 17:00	07:44 16:59
23	07:41 17:28	07:07 18:06	06:23 18:37	06:34 20:10	06:00 20:40	05:52 20:58	06:10 20:48	06:40 20:11	07:10 19:20	07:42 18:32	07:18 17:00	07:44 16:59
24	07:41 17:30	07:06 18:07	06:21 18:38	06:32 20:11	05:59 20:41	05:52 20:58	06:11 20:47	06:41 20:09	07:11 19:18	07:43 18:31	07:19 16:59	07:45 17:00
25	07:40 17:31	07:04 18:09	06:20 18:39	06:31 20:12	05:58 20:42	05:52 20:58	06:12 20:46	06:42 20:08	07:12 19:17	06:44 17:30	07:20 16:59	07:45 17:00
26	07:39 17:32	07:03 18:10	06:18 18:40	06:29 20:13	05:58 20:43	05:53 20:58	06:13 20:45	06:43 20:06	07:13 19:15	06:45 17:28	07:21 16:58	07:46 17:01
27	07:38 17:33	07:02 18:11	06:16 18:41	06:28 20:14	05:57 20:43	05:53 20:58	06:14 20:45	06:44 20:05	07:14 19:13	06:46 17:27	07:23 16:58	07:46 17:01
28	07:38 17:34	07:00 18:12	06:15 18:43	06:27 20:15	05:56 20:44	05:53 20:58	06:15 20:44	06:45 20:03	07:15 19:12	06:48 17:25	07:24 16:57	07:46 17:02
29	07:37 17:36		07:13 19:44	06:25 20:16	05:56 20:45	05:54 20:58	06:16 20:43	06:46 20:02	07:16 19:10	06:49 17:24	07:25 16:57	07:46 17:03
30	07:36 17:37		07:11 19:45	06:24 20:17	05:55 20:46	05:54 20:58	06:17 20:42	06:47 20:00	07:17 19:08	06:50 17:23	07:26 16:57	07:47 17:04
31	07:35 17:38		07:10 19:46		05:55 20:47		06:17 20:41	06:48 19:58		06:51 17:22		07:47 17:04
Potential sun hours	298	298	370	398	448	451	458	427	375	346	299	289
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

Calculation: SHADOW\_Real case\_MapWTG: MA02 - VESTAS V172-7.2 7200 172.0 !OI! hub: 114,0 m (TOT: 200,0 m) (2)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June
1	07:47 17:06	07:34 17:39	06:59 18:13	07:08 07:45-08:11/26	06:23 19:47	05:54 06:24-06:38/14
2	07:47 17:06	07:33 17:41	06:57 18:14	07:07 07:43-08:11/28	06:22 19:48	05:54 06:22-06:38/16
3	07:47 17:07	07:32 17:42	06:55 18:15	07:05 07:40-08:10/30	06:20 19:49	05:53 06:22-06:38/16
4	07:47 17:08	07:31 17:43	06:54 18:17	07:03 07:39-08:11/32	06:19 19:50	05:53 06:22-06:39/17
5	07:48 17:09	07:30 17:44	06:52 18:18	07:02 07:20-07:21/1	06:18 19:51	05:53 06:21-06:38/17
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 07:14-07:24/5	06:17 19:52	05:52 06:21-06:38/17
7	07:47 17:11	07:28 17:47	06:49 18:20	06:58 07:17-07:24/7	06:15 19:53	05:52 06:21-06:39/18
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 07:15-07:25/10	06:14 19:54	05:52 06:21-06:39/18
9	07:47 17:13	07:26 17:49	06:46 18:22	06:55 07:14-07:26/12	06:13 19:55	05:52 06:20-06:38/18
10	07:47 17:14	07:25 17:51	06:44 18:23	06:54 07:12-07:26/14	06:12 19:56	05:51 06:20-06:38/18
11	07:47 17:15	07:23 17:52	06:43 18:24	06:52 07:11-07:26/15	06:11 19:57	05:51 06:20-06:39/19
12	07:47 17:16	07:22 17:53	06:41 18:25	06:50 07:09-07:26/17	06:10 19:58	05:51 06:20-06:39/19
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 07:07-07:25/18	06:09 19:59	05:51 06:19-06:39/20
14	07:46 17:18	07:20 17:55	06:38 18:28	06:47 07:06-07:25/19	06:08 20:00	05:51 06:19-06:39/20
15	07:46 17:19	07:18 17:57	06:36 18:29	06:46 07:04-07:24/20	06:07 20:01	05:51 06:19-06:39/20
16	07:45 17:20	07:17 17:58	06:35 18:30	06:44 07:03-07:23/20	06:06 20:03	05:51 06:19-06:39/20
17	07:45 17:21	07:16 17:59	06:33 18:31	06:43 07:02-07:22/20	06:05 20:04	05:51 06:19-06:39/20
18	07:44 17:23	07:14 18:00	06:31 18:32	06:41 07:03-07:21/18	06:04 20:05	05:51 06:19-06:39/20
19	07:44 17:24	07:13 18:01	06:30 18:33	06:40 07:04-07:18/14	06:03 20:06	05:51 06:20-06:40/20
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 07:07-07:16/9	06:02 20:07	05:51 06:20-06:40/20
21	07:43 17:26	07:10 18:04	06:26 18:35	06:37 20:08	06:01 06:33-06:34/1	05:52 06:20-06:40/20
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	06:01 06:32-06:35/3	05:52 06:20-06:40/20
23	07:41 17:28	07:07 18:06	06:23 18:37	06:34 20:10	06:00 06:31-06:36/5	05:52 06:20-06:40/20
24	07:41 17:30	07:06 18:07	06:21 18:38	06:32 20:11	05:59 06:29-06:36/7	05:52 06:21-06:41/20
25	07:40 17:31	07:05 18:09	06:20 18:39	06:31 20:12	05:58 06:27-06:36/9	05:52 06:21-06:41/20
26	07:39 17:32	07:03 18:10	06:18 18:40	06:30 20:13	05:58 06:27-06:37/10	05:53 06:21-06:41/20
27	07:38 17:33	07:02 18:11	06:16 18:42	06:28 20:14	05:57 06:26-06:37/11	05:53 06:22-06:42/20
28	07:38 17:35	07:00 18:12	06:15 18:43	06:27 20:15	05:56 06:26-06:38/12	05:54 06:22-06:42/20
29	07:37 17:36		07:13 19:44	06:25 20:16	05:56 06:25-06:37/12	05:54 06:22-06:42/20
30	07:36 17:37		07:11 19:45	06:24 20:17	05:55 06:25-06:38/13	05:54 06:24-06:43/19
31	07:35 17:38		07:10 19:46		05:55 06:24-06:38/14	05:54 20:58
Potential sun hours	298	298	370	398	448	451
Sum of minutes with flicker	0	0	103	856	97	566

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

Calculation: SHADOW\_Real case\_MapWTG: MA02 - VESTAS V172-7.2 7200 172.0 !0! hub: 114,0 m (TOT: 200,0 m) (2)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December
1	05:55 06:24-06:43/19 20:58	06:19 20:40	06:49 07:10-07:25/15 19:57 07:27-08:07/40	07:18 19:07	06:52 17:20	07:27 16:56
2	05:55 06:25-06:44/19 20:58	06:19 20:39	06:50 07:11-07:25/14 19:55 07:26-08:07/41	07:20 19:05	06:53 17:19	07:28 16:56
3	05:56 06:25-06:43/18 20:58	06:20 20:37	06:51 07:12-07:24/12 19:54 07:27-08:07/40	07:21 19:03	06:55 17:18	07:29 16:56
4	05:56 06:26-06:44/18 20:58	06:21 20:36	06:52 07:12-07:22/10 19:52 07:28-08:06/38	07:22 19:02	06:56 17:17	07:30 16:56
5	05:57 06:26-06:44/18 20:58	06:22 20:35	06:53 07:13-07:20/7 19:50 07:29-08:06/37	07:23 19:00	06:57 17:16	07:31 16:56
6	05:58 06:27-06:45/18 20:57	06:23 20:34	06:54 07:14-07:19/5 19:49 07:30-08:06/36	07:24 18:58	06:58 17:15	07:32 16:55
7	05:58 06:28-06:45/17 20:57	06:24 20:33	06:55 07:15-07:16/1 19:47 07:32-08:06/34	07:25 18:57	06:59 17:13	07:33 16:55
8	05:59 06:28-06:45/17 20:57	06:25 20:32	06:56 07:33-08:05/32 19:45	07:26 18:55	07:01 17:12	07:34 16:55
9	05:59 06:29-06:45/16 20:56	06:26 20:30	06:57 07:34-08:05/31 19:44	07:27 18:54	07:02 17:11	07:35 16:55
10	06:00 06:30-06:46/16 20:56	06:27 20:29	06:58 07:36-08:04/28 19:42	07:28 18:52	07:03 17:10	07:35 16:55
11	06:01 06:30-06:45/15 20:56	06:28 20:28	06:59 07:37-08:03/26 19:40	07:29 18:50	07:04 17:09	07:36 16:55
12	06:01 06:32-06:46/14 20:55	06:29 20:26	07:00 07:39-08:02/23 19:39	07:30 18:49	07:05 17:08	07:37 16:55
13	06:02 06:33-06:46/13 20:55	06:30 20:25	07:01 07:40-08:01/21 19:37	07:31 18:47	07:06 17:07	07:38 16:56
14	06:03 06:33-06:46/13 20:54	06:31 20:24	07:02 07:41-08:00/19 19:35	07:32 18:46	07:08 17:07	07:39 16:56
15	06:04 06:34-06:46/12 20:54	06:32 20:22	07:03 07:42-07:59/17 19:34	07:33 18:44	07:09 17:06	07:39 16:56
16	06:04 06:35-06:46/11 20:53	06:33 20:21	07:04 07:44-07:57/13 19:32	07:34 18:43	07:10 17:05	07:40 16:56
17	06:05 06:36-06:46/10 20:52	06:34 20:20	07:05 07:45-07:55/10 19:30	07:35 18:41	07:11 17:04	07:41 16:57
18	06:06 06:36-06:45/9 20:52	06:35 20:18	07:06 07:47-07:52/5 19:29	07:36 18:40	07:12 17:03	07:41 16:57
19	06:07 06:38-06:45/7 20:51	06:36 20:17	07:07 19:27	07:38 18:38	07:14 17:03	07:42 16:57
20	06:08 06:39-06:45/6 20:50	06:37 20:15	07:08 19:25	07:39 18:37	07:15 17:02	07:43 16:58
21	06:09 06:41-06:45/4 20:50	06:38 20:14	07:08 19:24	07:40 18:35	07:16 17:01	07:43 16:58
22	06:09 06:43-06:45/2 20:49	06:39 20:12	07:09 19:22	07:41 18:34	07:17 17:01	07:44 16:59
23	06:10 06:44-06:45/1 20:48	06:40 07:10-07:20/10 20:11 07:42-07:55/13	07:10 19:20	07:42 18:32	07:18 17:00	07:44 16:59
24	06:11 20:47	06:41 07:08-07:22/14 20:09 07:38-07:58/20	07:11 19:18	07:43 18:31	07:19 16:59	07:45 17:00
25	06:12 20:46	06:42 07:06-07:24/18 20:08 07:36-08:00/24	07:12 19:17	06:44 17:30	07:20 16:59	07:45 17:00
26	06:13 20:45	06:43 07:05-07:25/20 20:06 07:34-08:02/28	07:13 19:15	06:45 17:28	07:21 16:58	07:46 17:01
27	06:14 20:45	06:44 07:05-07:25/20 20:05 07:32-08:03/31	07:14 19:13	06:47 17:27	07:23 16:58	07:46 17:02
28	06:15 20:44	06:45 07:06-07:26/20 20:03 07:31-08:04/33	07:15 19:12	06:48 17:26	07:24 16:57	07:46 17:02
29	06:16 20:43	06:46 07:07-07:26/19 20:02 07:30-08:05/35	07:16 19:10	06:49 17:24	07:25 16:57	07:47 17:03
30	06:17 20:42	06:47 07:08-07:26/18 20:00 07:28-08:06/38	07:17 19:08	06:50 17:23	07:26 16:57	07:47 17:04
31	06:18 20:41	06:48 07:09-07:26/17 19:58 07:27-08:06/39		06:51 17:22		07:47 17:04
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	293	417	555	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

Calculation: SHADOW\_Real case\_MapWTG: MA03 - VESTAS V172-7.2 7200 172.0 !OI! hub: 114,0 m (TOT: 200,0 m) (3)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

#### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47 17:05	07:34 17:39	06:59 18:13	07:08 19:47	06:23 20:18	05:54 20:47	05:55 20:58	06:18 20:40	06:49 19:57	07:18 19:07	06:52 17:20	07:27 16:56
2	07:47 17:06	07:33 17:41	06:57 18:14	07:07 19:48	06:21 20:19	05:54 20:48	05:55 20:58	06:19 20:38	06:50 19:55	07:19 19:05	06:53 17:19	07:28 16:56
3	07:47 17:07	07:32 17:42	06:55 18:15	07:05 19:49	06:20 20:20	05:53 20:49	05:56 20:58	06:20 20:37	06:51 19:54	07:21 19:03	06:55 17:18	07:29 16:56
4	07:47 17:08	07:31 17:43	06:54 18:17	07:03 19:50	06:19 20:21	05:53 20:50	05:56 20:58	06:21 20:36	06:52 19:52	07:22 19:02	06:56 17:17	07:30 16:56
5	07:47 17:09	07:30 17:44	06:52 18:18	07:02 19:51	06:18 20:22	05:53 20:50	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00	06:57 17:16	07:31 16:56
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:23	05:52 20:51	05:57 20:57	06:23 20:34	06:54 19:49	07:24 18:58	06:58 17:15	07:32 16:55
7	07:47 17:11	07:28 17:47	06:49 18:20	06:58 19:53	06:15 20:24	05:52 20:52	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	06:59 17:13	07:33 16:55
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	06:14 20:25	05:52 20:52	05:59 20:57	06:25 20:31	06:56 19:45	07:26 18:55	07:01 17:12	07:34 16:55
9	07:47 17:13	07:26 17:49	06:46 18:22	06:55 19:55	06:13 20:26	05:52 20:53	05:59 20:56	06:26 20:30	06:57 19:44	07:27 18:54	07:02 17:11	07:35 16:55
10	07:47 17:14	07:24 17:51	06:44 18:23	06:54 19:56	06:12 20:27	05:51 20:53	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:03 17:10	07:35 16:55
11	07:47 17:15	07:23 17:52	06:43 18:24	06:52 19:57	06:11 20:29	05:51 20:54	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:50	07:04 17:09	07:36 16:55
12	07:47 17:16	07:22 17:53	06:41 18:25	06:50 19:58	06:10 20:30	05:51 20:54	06:01 20:55	06:29 20:26	07:00 19:39	07:44-07:54/10 18:49	07:30 17:08	07:37 16:55
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	06:09 20:30	05:51 20:55	06:02 20:55	06:30 20:25	07:01 19:37	07:42-07:56/14 18:47	07:31 17:07	07:38 16:56
14	07:46 17:18	07:20 17:55	06:38 18:28	06:47 20:00	06:08 20:31	05:51 20:55	06:03 20:54	06:31 20:24	07:02 19:35	07:41-07:57/16 18:46	07:32 17:07	07:39 16:56
15	07:46 17:19	07:18 17:57	06:36 18:29	06:46 20:01	06:07 20:32	05:51 20:56	06:04 20:54	06:32 20:22	07:03 19:34	07:42-07:58/16 18:44	07:33 17:06	07:39 16:56
16	07:45 17:20	07:17 17:58	06:35 18:30	06:44 20:03	06:06 20:33	05:51 20:56	06:04 20:53	06:33 20:21	07:04 19:32	07:44-07:58/14 18:43	07:34 17:05	07:40 16:56
17	07:45 17:21	07:16 17:59	06:33 18:31	06:43 20:04	06:05 20:34	05:51 20:56	06:05 20:52	06:34 20:20	07:05 19:30	07:45-07:59/14 18:41	07:35 17:04	07:41 16:57
18	07:44 17:23	07:14 18:00	06:31 18:32	06:41 20:05	06:04 20:35	05:51 20:57	06:06 20:52	06:35 20:18	07:05 19:29	07:47-07:58/11 18:40	07:36 17:03	07:41 16:57
19	07:44 17:24	07:13 18:01	06:30 18:33	06:40 20:06	06:03 20:36	05:51 20:57	06:07 20:51	06:36 20:17	07:06 19:27	07:49-07:58/9 18:38	07:37 17:03	07:42 16:57
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	06:02 20:37	05:51 20:57	06:08 20:50	06:37 20:15	07:07 19:25	07:50-07:58/8 18:37	07:39 17:02	07:43 16:58
21	07:43 17:26	07:10 18:04	06:26 18:35	06:26 20:08	07:09-07:10/1 20:38	06:37 20:58	06:01 20:50	05:51 20:14	06:08 19:23	07:52-07:57/5 18:35	07:40 17:01	07:43 16:58
22	07:42 17:27	07:09 18:05	06:25 18:36	06:25 20:09	07:06-07:10/4 20:39	06:35 20:58	06:01 20:49	05:52 20:12	06:09 19:22	07:53-07:56/3 18:34	07:41 17:01	07:44 16:59
23	07:41 17:28	07:07 18:06	06:23 18:37	06:23 20:10	07:04-07:11/7 20:40	06:34 20:58	06:00 20:48	05:52 20:11	06:10 19:20	07:42 18:32	07:38 17:00	07:44 16:59
24	07:41 17:30	07:06 18:07	06:21 18:38	06:21 20:11	07:02-07:11/9 20:41	06:32 20:58	05:59 20:47	05:52 20:09	06:11 19:18	07:43 18:31	07:19 16:59	07:45 17:00
25	07:40 17:31	07:04 18:09	06:20 18:39	06:20 20:12	06:59-07:10/11 20:42	06:31 20:58	05:58 20:46	05:52 20:08	06:12 19:17	07:12 17:30	06:44 16:59	07:45 17:00
26	07:39 17:32	07:03 18:10	06:18 18:40	06:18 20:13	06:58-07:10/12 20:43	06:30 20:58	05:58 20:45	05:53 20:06	06:13 19:15	06:43 17:28	07:13 16:58	07:45 17:01
27	07:38 17:33	07:02 18:11	06:16 18:42	06:16 20:14	06:55-07:09/14 20:43	06:28 20:58	05:57 20:45	05:53 20:05	06:14 19:13	06:44 17:27	07:14 16:58	07:46 17:02
28	07:38 17:34	07:00 18:12	06:15 18:43	06:15 20:15	06:53-07:08/15 20:44	06:27 20:58	05:56 20:44	05:54 20:03	06:15 19:12	06:45 17:26	07:15 16:57	07:46 17:02
29	07:37 17:36	07:07 18:12	06:14 18:42	06:14 20:16	07:51-08:07/16 20:45	06:25 20:58	05:56 20:43	05:54 20:02	06:16 19:10	06:46 17:24	07:16 16:57	07:46 17:03
30	07:36 17:37	07:06 18:13	06:13 18:43	06:13 20:17	07:50-08:05/15 20:46	06:24 20:58	05:55 20:42	05:54 20:00	06:17 19:08	06:47 17:23	07:17 16:57	07:47 17:04
31	07:35 17:38	07:05 18:14	06:12 18:44	06:12 20:18	07:51-08:03/12 20:47	06:23 20:57	05:54 20:41	05:53 20:18	06:18 19:58	06:51 17:22	07:18 16:57	07:47 17:04
Potential sun hours	298	298	370	398	448	451	458	427	375	346	299	289
Sum of minutes with flicker	0	0	0	116	0	0	0	0	120	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

Calculation: SHADOW\_Real case\_MapWTG: MA04 - VESTAS V172-7.2 7200 172.0 IOI hub: 114,0 m (TOT: 200,0 m) (4)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June
1	07:47 17:06	07:34 08:05-08:47/42 17:39	06:59 07:21-08:19/58 18:13	07:08 07:56-08:25/29 19:47	06:23 07:27-07:43/16 20:18	05:54 20:47
2	07:47 08:10-08:11/1 17:06	07:33 08:04-08:48/44 17:41	06:57 07:16-07:18/2 18:14 07:22-08:18/56	07:07 07:58-08:22/24 19:48	06:22 07:31-07:39/8 20:19	05:54 20:48
3	07:47 08:10-08:13/3 17:07	07:32 08:02-08:48/46 17:42	06:55 07:14-08:17/63 18:15	07:05 07:41-07:49/8 19:49 08:00-08:19/19	06:20 20:20	05:53 20:49
4	07:47 08:10-08:14/4 17:08	07:31 08:01-08:49/48 17:43	06:54 07:13-08:17/64 18:17	07:03 07:40-07:53/13 19:50 08:05-08:16/11	06:19 20:21	05:53 20:50
5	07:47 08:10-08:15/5 17:09	07:30 08:00-08:49/49 17:44	06:52 07:11-08:16/65 18:18	07:02 07:38-07:54/16 19:51	06:18 20:22	05:53 20:50
6	07:47 08:09-08:15/6 17:10	07:29 07:59-08:50/51 17:46	06:51 07:10-08:16/66 18:19	07:00 07:37-07:57/20 19:52	06:17 20:23	05:52 20:51
7	07:47 08:09-08:17/8 17:11	07:28 07:58-08:50/52 17:47	06:49 07:08-08:14/66 18:20	06:58 07:36-07:57/21 19:53	06:15 20:24	05:52 20:52
8	07:47 08:09-08:18/9 17:12	07:27 07:56-08:49/53 17:48	06:48 07:06-08:13/67 18:21	06:57 07:34-07:58/24 19:54	06:14 20:25	05:52 20:52
9	07:47 08:09-08:19/10 17:13	07:26 07:56-08:49/53 17:49	06:46 07:05-08:12/67 18:22	06:55 07:33-07:59/26 19:55	06:13 20:27	05:52 20:53
10	07:47 08:09-08:20/11 17:14	07:25 07:57-08:49/52 17:51	06:44 07:03-08:10/67 18:23	06:54 07:31-07:59/28 19:56	06:12 20:28	05:51 20:53
11	07:47 08:08-08:20/12 17:15	07:23 07:57-08:49/52 17:52	06:43 07:02-08:09/67 18:24	06:52 07:30-08:00/30 19:57	06:11 20:29	05:51 20:54
12	07:47 08:08-08:22/14 17:16	07:22 07:42-07:52/10 17:53 07:58-08:49/51	06:41 07:00-08:06/66 18:26	06:50 07:28-08:00/32 19:58	06:10 20:30	05:51 20:54
13	07:46 08:08-08:23/15 17:17	07:21 07:40-07:54/14 17:54 07:57-08:48/51	06:40 07:00-08:03/63 18:27	06:49 07:27-07:59/32 19:59	06:09 20:31	05:51 20:55
14	07:46 08:07-08:23/16 17:18	07:20 07:39-08:48/69 17:56	06:38 06:59-08:00/61 18:28	06:47 07:26-08:00/34 20:00	06:08 20:32	05:51 20:55
15	07:46 08:07-08:25/18 17:19	07:18 07:38-08:48/70 17:57	06:36 06:57-07:54/57 18:29	06:46 07:24-07:59/35 20:01	06:07 20:32	05:51 20:56
16	07:45 08:06-08:27/21 17:20	07:17 07:36-08:47/71 17:58	06:35 06:56-07:53/57 18:30	06:44 07:23-08:00/37 20:03	06:06 20:33	05:51 20:56
17	07:45 08:06-08:30/24 17:22	07:16 07:35-08:46/71 17:59	06:33 06:55-07:52/57 18:31	06:43 07:21-07:59/38 20:04	06:05 20:34	05:51 20:56
18	07:44 08:05-08:31/26 17:23	07:14 07:34-08:46/72 18:00	06:31 06:54-07:51/57 18:32	06:41 07:21-07:59/38 20:05	06:04 20:35	05:51 20:57
19	07:44 08:05-08:34/29 17:24	07:13 07:32-08:44/72 18:02	06:30 06:53-07:49/56 18:33	06:40 07:19-07:58/39 20:06	06:03 20:36	05:51 20:57
20	07:43 08:04-08:35/31 17:25	07:12 07:31-08:43/72 18:03	06:28 06:53-07:48/55 18:34	06:38 07:18-07:58/40 20:07	06:02 20:37	05:51 20:57
21	07:43 08:03-08:36/33 17:26	07:10 07:29-08:41/72 18:04	06:26 06:52-07:45/53 18:35	06:37 07:17-07:58/41 20:08	06:01 20:38	05:52 20:58
22	07:42 08:03-08:38/35 17:27	07:09 07:28-08:40/72 18:05	06:25 06:51-07:42/51 18:36	06:35 07:17-07:56/39 20:09	06:01 20:39	05:52 20:58
23	07:41 08:02-08:39/37 17:29	07:07 07:27-08:38/71 18:06	06:23 06:52-07:40/48 18:37	06:34 07:18-07:56/38 20:10	06:00 20:40	05:52 20:58
24	07:41 08:01-08:40/39 17:30	07:06 07:25-08:36/71 18:07	06:21 06:51-07:34/43 18:38	06:32 07:18-07:54/36 20:11	05:59 20:41	05:52 20:58
25	07:40 08:01-08:41/40 17:31	07:05 07:24-08:33/69 18:09	06:20 06:51-07:33/42 18:39	06:31 07:19-07:54/35 20:12	05:58 20:42	05:53 20:58
26	07:39 08:03-08:43/40 17:32	07:03 07:22-08:28/66 18:10	06:18 06:52-07:33/41 18:41	06:30 07:20-07:53/33 20:13	05:58 20:43	05:53 20:58
27	07:38 08:03-08:44/41 17:33	07:02 07:21-08:19/58 18:11	06:16 06:52-07:32/40 18:42	06:28 07:20-07:51/31 20:14	05:57 20:43	05:53 20:58
28	07:38 08:04-08:45/41 17:35	07:00 07:19-08:19/60 18:12	06:15 06:52-07:31/39 18:43	06:27 07:21-07:49/28 20:15	05:56 20:44	05:54 20:58
29	07:37 08:05-08:45/40 17:36		07:13 07:53-08:30/37 19:44	06:25 07:23-07:48/25 20:16	05:56 20:45	05:54 20:58
30	07:36 08:07-08:46/39 17:37		07:12 07:53-08:28/35 19:45	06:24 07:24-07:45/21 20:17	05:55 20:46	05:54 20:58
31	07:35 08:06-08:47/41 17:38		07:10 07:54-08:26/32 19:46		05:55 20:47	
Potential sun hours	298	298	370	398	448	451
Sum of minutes with flicker	689	1704	1698	921	24	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

Calculation: SHADOW\_Real case\_MapWTG: MA04 - VESTAS V172-7.2 7200 172.0 !OI! hub: 114,0 m (TOT: 200,0 m) (4)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December
1	05:55 20:58	06:19 20:40	06:49 07:29-07:59/30 19:57	07:19 07:40-08:44/64 19:07	06:52 07:26-08:19/53 17:20	07:27 07:50-08:02/12 16:56
2	05:55 20:58	06:20 20:38	06:50 07:30-07:58/28 19:55	07:20 07:40-08:46/66 19:05	06:53 07:26-08:19/53 17:19	07:28 07:51-08:02/11 16:56
3	05:56 20:58	06:20 20:37	06:51 07:31-07:57/26 19:54	07:21 07:41-08:48/67 19:03	06:55 07:26-08:19/53 17:18	07:29 07:52-08:02/10 16:56
4	05:56 20:58	06:21 20:36	06:52 07:31-07:55/24 19:52	07:22 07:42-08:49/67 19:02	06:56 07:28-08:20/52 17:17	07:30 07:53-08:02/9 16:56
5	05:57 20:58	06:22 20:35	06:53 07:32-07:53/21 19:50	07:23 07:43-08:50/67 19:00	06:57 07:29-08:19/50 17:16	07:31 07:54-08:02/8 16:56
6	05:58 20:57	06:23 20:34	06:54 07:32-07:52/20 19:49	07:24 07:44-08:50/66 18:58	06:58 07:30-08:19/49 17:15	07:32 07:55-08:01/6 16:55
7	05:58 20:57	06:24 20:33	06:55 07:33-07:50/17 19:47	07:25 07:45-08:51/66 18:57	06:59 07:31-08:19/48 17:14	07:33 07:56-08:01/5 16:55
8	05:59 20:57	06:25 20:32	06:56 07:34-07:47/13 19:45	07:26 07:46-08:51/65 18:55	07:01 07:33-08:19/46 17:12	07:34 07:57-08:01/4 16:55
9	05:59 20:56	06:26 20:30	06:57 07:35-07:44/9 19:44	07:27 07:47-08:52/65 18:54	07:02 07:35-08:19/44 17:11	07:35 07:58-08:01/3 16:55
10	06:00 20:56	06:27 20:29	06:58 07:51-08:15/24 19:42	07:28 07:48-08:52/64 18:52	07:03 07:36-08:18/42 17:10	07:35 07:59-08:00/1 16:55
11	06:01 20:56	06:28 07:38-07:49/11 20:28	06:59 07:49-08:17/28 19:40	07:29 07:49-07:53/4 18:50	07:04 07:37-08:18/41 17:09	07:36 16:55
12	06:01 20:55	06:29 07:35-07:52/17 20:26	07:00 07:47-08:18/31 19:39	07:30 07:54-08:52/58 18:49	07:05 07:38-08:18/40 17:08	07:37 16:56
13	06:02 20:55	06:30 07:32-07:54/22 20:25	07:01 07:45-08:19/34 19:37	07:31 07:53-08:52/59 18:47	07:06 07:37-08:17/40 17:08	07:38 16:56
14	06:03 20:54	06:31 07:30-07:56/26 20:24	07:02 07:43-08:20/37 19:35	07:32 07:52-08:51/59 18:46	07:08 07:36-08:17/41 17:07	07:39 16:56
15	06:04 20:54	06:32 07:29-07:58/29 20:22	07:03 07:42-08:21/39 19:34	07:33 07:54-08:51/57 18:44	07:09 07:35-08:16/41 17:06	07:39 16:56
16	06:04 20:53	06:33 07:28-07:59/31 20:21	07:04 07:41-08:21/40 19:32	07:34 07:55-09:03/68 18:43	07:10 07:36-08:16/40 17:05	07:40 16:56
17	06:05 20:52	06:34 07:26-08:00/34 20:20	07:05 07:40-08:21/41 19:30	07:35 07:56-09:06/70 18:41	07:11 07:35-08:15/40 17:04	07:41 16:57
18	06:06 20:52	06:35 07:24-07:59/35 20:18	07:06 07:39-08:22/43 19:29	07:36 07:57-09:08/71 18:40	07:12 07:35-08:14/39 17:03	07:41 16:57
19	06:07 20:51	06:36 07:23-08:00/37 20:17	07:07 07:39-08:22/43 19:27	07:38 07:58-09:10/72 18:38	07:13 07:36-08:13/37 17:03	07:42 16:57
20	06:08 20:50	06:37 07:22-08:01/39 20:15	07:08 07:38-08:25/47 19:25	07:39 07:59-09:11/72 18:37	07:15 07:38-08:13/35 17:02	07:43 16:58
21	06:09 20:50	06:38 07:22-08:01/39 20:14	07:09 07:38-08:28/50 19:24	07:40 08:00-09:12/72 18:35	07:16 07:39-08:12/33 17:01	07:43 16:58
22	06:09 20:49	06:39 07:21-08:02/41 20:12	07:09 07:37-08:30/53 19:22	07:41 08:02-09:14/72 18:34	07:17 07:40-08:11/31 17:01	07:44 16:59
23	06:10 20:48	06:40 07:22-08:02/40 20:11	07:10 07:37-08:31/54 19:20	07:42 08:03-09:15/72 18:32	07:18 07:41-08:10/29 17:00	07:44 16:59
24	06:11 20:47	06:41 07:23-08:02/39 20:09	07:11 07:36-08:32/56 19:18	07:43 08:04-09:16/72 18:31	07:19 07:42-08:09/27 16:59	07:45 17:00
25	06:12 20:46	06:42 07:24-08:02/38 20:08	07:12 07:36-08:33/57 19:17	06:44 07:05-08:16/71 17:30	07:20 07:44-08:08/24 16:59	07:45 17:00
26	06:13 20:45	06:43 07:24-08:02/38 20:06	07:13 07:36-08:33/57 19:15	06:45 07:06-08:16/70 17:28	07:21 07:45-08:06/21 16:58	07:46 17:01
27	06:14 20:45	06:44 07:25-08:02/37 20:05	07:14 07:37-08:34/57 19:13	06:47 07:08-08:18/70 17:27	07:23 07:46-08:04/18 16:58	07:46 17:02
28	06:15 20:44	06:45 07:26-08:01/35 20:03	07:15 07:37-08:34/57 19:12	06:48 07:09-08:18/69 17:26	07:24 07:47-08:03/16 16:58	07:46 17:02
29	06:16 20:43	06:46 07:27-08:01/34 20:02	07:16 07:38-08:37/59 19:10	06:49 07:10-07:24/14 17:24	07:25 07:48-08:03/15 16:57	07:46 17:03
30	06:17 20:42	06:47 07:28-08:00/32 20:00	07:17 07:39-08:41/62 19:08	06:50 07:11-07:20/9 17:23	07:26 07:49-08:03/14 16:57	07:47 17:04
31	06:18 20:41	06:48 07:28-08:00/32 19:58		06:51 07:27-08:19/52 17:22		07:47 17:04
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	0	686	1185	2053	1112	69

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

Calculation: SHADOW\_Real case\_MapWTG: MA05 - VESTAS V172-7.2 7200 172.0 !OI! hub: 114,0 m (TOT: 200,0 m) (5)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47 17:06	07:34 17:40	06:59 18:13	07:08 19:47	06:23 20:18	05:55 20:47	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	06:52 17:21	07:27 16:57
2	07:47 17:07	07:33 17:41	06:57 18:15	07:07 19:48	06:22 20:19	05:54 20:48	05:56 20:58	06:20 20:39	06:50 19:55	07:20 19:05	06:54 17:19	07:28 16:56
3	07:47 17:07	07:32 17:42	06:56 18:16	07:05 19:49	06:20 20:20	05:54 20:49	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:04	06:55 17:18	07:29 16:56
4	07:48 17:08	07:31 17:43	06:54 18:17	07:03 19:50	06:19 20:21	05:53 20:50	05:57 20:58	06:22 20:36	06:52 19:52	07:22 19:02	06:56 17:17	07:30 16:56
5	07:48 17:09	07:30 17:45	06:53 18:18	07:02 19:51	06:18 20:22	05:53 20:50	05:57 20:58	06:23 20:35	06:53 19:50	07:23 19:00	06:57 17:16	07:31 16:56
6	07:48 17:10	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:24	05:53 20:51	05:58 20:57	06:24 20:34	06:54 19:49	07:24 18:59	06:58 17:15	07:32 16:56
7	07:47 17:11	07:28 17:47	06:49 18:20	06:59 19:53	06:16 20:25	05:52 20:52	05:58 20:57	06:25 20:33	06:55 19:47	07:25 18:57	06:59 17:14	07:33 16:56
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	06:14 20:26	05:52 20:52	05:59 20:57	06:26 20:32	06:56 19:46	07:26 18:55	07:01 17:13	07:34 16:56
9	07:47 17:13	07:26 17:50	06:46 18:22	06:55 19:55	06:13 20:27	05:52 20:53	06:00 20:56	06:26 20:30	06:57 19:44	07:27 18:54	07:02 17:12	07:35 16:56
10	07:47 17:14	07:25 17:51	06:45 18:23	06:54 19:56	06:12 20:28	05:52 20:53	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:03 17:11	07:35 16:56
11	07:47 17:15	07:23 17:52	06:43 18:25	06:52 19:57	06:11 20:29	05:52 20:54	06:01 20:56	06:28 20:28	06:59 19:41	07:29 18:51	07:04 17:10	07:36 16:56
12	07:47 17:16	07:22 17:53	06:41 18:26	06:51 19:58	06:10 20:30	05:51 20:54	06:02 20:55	06:29 20:27	07:00 19:39	07:30 18:49	07:05 17:09	07:37 16:56
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 20:00	06:09 20:31	05:51 20:55	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	07:07 17:08	07:38 16:56
14	07:46 17:18	07:20 17:56	06:38 18:28	06:48 20:01	06:08 20:32	05:51 20:55	06:03 20:54	06:31 20:24	07:02 19:36	07:32 18:46	07:08 17:07	07:39 16:56
15	07:46 17:19	07:18 17:57	06:36 18:29	06:46 20:02	06:07 20:33	05:51 20:56	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	07:09 17:06	07:39 16:56
16	07:45 17:21	07:17 17:58	06:35 18:30	06:44 20:03	06:06 20:34	05:51 20:56	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	07:10 17:05	07:40 16:57
17	07:45 17:22	07:16 17:59	06:33 18:31	06:43 20:04	06:05 20:34	05:51 20:56	06:06 20:52	06:34 20:20	07:05 19:30	07:35 18:41	07:11 17:04	07:41 16:57
18	07:44 17:23	07:14 18:01	06:32 18:32	06:41 20:05	06:04 20:35	05:51 20:57	06:06 20:52	06:35 20:18	07:06 19:29	07:37 18:40	07:12 17:04	07:41 16:57
19	07:44 17:24	07:13 18:02	06:30 18:33	06:40 20:06	06:03 20:36	05:51 20:57	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	07:14 17:03	07:42 16:58
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	06:02 20:37	05:52 20:57	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	07:15 17:02	07:43 16:58
21	07:43 17:26	07:10 18:04	06:27 18:35	06:37 20:08	06:02 20:38	05:52 20:58	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	07:16 17:01	07:43 16:58
22	07:42 17:28	07:09 18:05	06:25 18:36	06:35 20:09	06:01 20:39	05:52 20:58	06:10 20:49	06:39 20:12	07:10 19:22	07:41 18:34	07:17 17:01	07:44 16:59
23	07:41 17:29	07:08 18:06	06:23 18:37	06:34 20:10	06:00 20:40	05:52 20:58	06:11 20:48	06:40 20:11	07:11 19:20	07:42 18:33	07:18 17:00	07:44 16:59
24	07:41 17:30	07:06 18:08	06:22 18:39	06:33 20:11	05:59 20:41	05:52 20:58	06:11 20:47	06:41 20:09	07:12 19:19	07:43 18:31	07:19 17:00	07:45 17:00
25	07:40 17:31	07:05 18:09	06:20 18:40	06:31 20:12	05:59 20:42	05:53 20:58	06:12 20:46	06:42 20:08	07:13 19:17	06:44 17:30	07:20 16:59	07:45 17:01
26	07:39 17:32	07:03 18:10	06:18 18:41	06:30 20:13	05:58 20:43	05:53 20:58	06:13 20:46	06:43 20:06	07:14 19:15	06:45 17:28	07:22 16:59	07:46 17:01
27	07:39 17:34	07:02 18:11	06:17 18:42	06:28 20:14	05:57 20:44	05:53 20:58	06:14 20:45	06:44 20:05	07:15 19:14	06:47 17:27	07:23 16:58	07:46 17:02
28	07:38 17:35	07:00 18:12	06:15 18:43	06:27 20:15	05:57 20:44	05:54 20:58	06:15 20:44	06:45 20:03	07:16 19:12	06:48 17:26	07:24 16:58	07:46 17:03
29	07:37 17:36		07:13 19:44	06:26 20:16	05:56 20:45	05:54 20:58	06:16 20:43	06:46 20:02	07:17 19:10	06:49 17:24	07:25 16:57	07:47 17:03
30	07:36 17:37		07:12 19:45	06:24 20:17	05:56 20:46	05:55 20:58	06:17 20:42	06:47 20:00	07:18 19:09	06:50 17:23	07:26 16:57	07:47 17:04
31	07:35 17:38		07:10 19:46		05:55 20:47		06:18 20:41	06:48 19:59		06:51 17:22		07:47 17:05
Potential sun hours	298	298	370	398	447	451	458	427	375	346	299	289
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

Project:

WF\_Monti\_Alà

Licensed user:

Ge.co.Dor srl  
Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
09/05/2023 18:53/3.6.361

### SHADOW - Calendar per WTG

Calculation: SHADOW\_Real case\_MapWTG: MA06 - VESTAS V172-7.2 7200 172.0 !OI! hub: 114,0 m (TOT: 200,0 m) (6)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

#### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47 14:39-15:14/35 17:06 08:38-09:03/25	07:34 06:59 17:40 18:13	07:08 06:23 19:47 20:18	06:23 05:55 20:18 20:47	06:23 05:55 20:18 20:47	05:55 05:55 20:18 20:47	05:55 05:55 20:18 20:47	06:19 06:49 20:39 19:57	06:49 07:19 19:57 17:21	06:52 07:21 17:21 17:18	06:52 07:21 17:21 17:18	07:27 14:36-14:50/14 16:57 08:32-08:42/10
2	07:47 14:40-15:14/34 17:07 08:40-09:04/24	07:33 06:57 17:41 18:14	07:07 06:22 19:48 20:19	06:22 05:54 20:19 20:48	06:22 05:54 20:19 20:48	05:54 05:56 20:19 20:48	05:54 05:56 20:19 20:48	06:20 06:50 20:38 19:55	06:50 07:20 19:55 17:19	06:53 07:21 17:19 17:18	06:53 07:21 17:19 17:18	07:28 14:34-14:53/19 16:56 08:30-08:44/14
3	07:47 14:41-15:14/33 17:07 08:41-09:04/23	07:32 06:55 17:42 18:16	07:05 06:20 19:49 20:20	06:20 05:54 20:20 20:49	06:20 05:54 20:20 20:49	05:54 05:56 20:20 20:49	05:54 05:56 20:20 20:49	06:21 06:51 20:37 19:54	06:51 07:21 19:54 17:19	06:55 07:21 17:19 17:18	06:55 07:21 17:19 17:18	07:29 14:33-14:55/22 16:56 08:30-08:45/15
4	07:47 14:42-15:14/32 17:08 08:41-09:04/23	07:31 06:54 17:43 18:17	07:03 06:19 19:50 20:21	06:19 05:53 20:21 20:49	06:19 05:53 20:21 20:49	05:53 05:57 20:21 20:49	05:53 05:57 20:21 20:49	06:22 06:52 20:36 19:52	06:52 07:22 19:52 17:17	06:56 07:22 17:17 17:17	06:56 07:22 17:17 17:17	07:30 14:32-14:56/24 16:56 08:29-08:47/18
5	07:47 14:43-15:13/30 17:09 08:41-09:03/22	07:30 06:52 17:45 18:18	07:02 06:18 19:51 20:22	06:18 05:53 20:22 20:50	06:18 05:53 20:22 20:50	05:53 05:57 20:22 20:50	05:53 05:57 20:22 20:50	06:23 06:53 20:35 19:50	06:53 07:23 19:50 17:16	06:57 07:23 17:16 17:16	06:57 07:23 17:16 17:16	07:31 14:31-14:58/27 16:56 08:29-08:48/19
6	07:47 14:45-15:13/28 17:10 08:42-09:03/21	07:29 06:51 17:46 18:19	07:00 06:17 19:52 20:23	06:17 05:53 20:23 20:51	06:17 05:53 20:23 20:51	05:53 05:58 20:23 20:51	05:53 05:58 20:23 20:51	06:24 06:54 20:34 19:49	06:54 07:24 19:49 17:15	06:58 07:24 17:15 17:15	06:58 07:24 17:15 17:15	07:32 14:31-14:59/28 16:56 08:29-08:49/20
7	07:47 14:46-15:13/27 17:11 08:44-09:03/19	07:28 06:49 17:47 18:20	06:59 06:16 19:53 20:24	06:16 05:52 20:24 20:51	06:16 05:52 20:24 20:51	05:52 05:58 20:24 20:51	05:52 05:58 20:24 20:51	06:25 06:55 20:33 19:47	06:55 07:25 19:47 17:14	06:59 07:25 17:14 17:14	06:59 07:25 17:14 17:14	07:33 14:30-15:00/30 16:56 08:29-08:50/22
8	07:47 14:48-15:12/24 17:12 08:45-09:03/18	07:27 06:48 17:48 18:21	06:57 06:14 19:54 20:25	06:14 05:52 20:25 20:52	06:14 05:52 20:25 20:52	05:52 05:59 20:25 20:52	05:52 05:59 20:25 20:52	06:25 06:56 20:31 19:45	06:56 07:26 19:45 17:13	07:00 07:26 17:13 17:13	07:00 07:26 17:13 17:13	07:34 14:30-15:02/32 16:56 08:29-08:51/22
9	07:47 14:50-15:12/22 17:13 08:46-09:02/16	07:26 06:46 17:50 18:22	06:55 06:13 19:55 20:26	06:13 05:52 20:26 20:53	06:13 05:52 20:26 20:53	05:52 06:00 20:26 20:53	05:52 06:00 20:26 20:53	06:26 06:57 20:30 19:44	06:57 07:27 19:44 17:12	07:02 07:27 17:12 17:12	07:02 07:27 17:12 17:12	07:34 14:30-15:03/33 16:56 08:29-08:52/23
10	07:47 14:51-15:10/19 17:14 08:48-09:02/14	07:24 06:44 17:51 18:23	06:54 06:12 19:56 20:27	06:12 05:52 20:27 20:53	06:12 05:52 20:27 20:53	05:52 06:00 20:27 20:53	05:52 06:00 20:27 20:53	06:27 06:58 20:29 19:42	06:58 07:28 19:42 17:11	07:03 07:28 17:11 17:11	07:03 07:28 17:11 17:11	07:35 14:30-15:04/34 16:56 08:29-08:53/24
11	07:47 14:54-15:08/14 17:15 08:49-09:00/11	07:23 06:43 17:52 18:24	06:52 06:11 19:57 20:28	06:11 05:52 20:28 20:54	06:11 05:52 20:28 20:54	05:52 06:01 20:28 20:54	05:52 06:01 20:28 20:54	06:28 06:59 20:28 19:40	06:59 07:29 19:40 17:10	07:04 07:29 17:10 17:10	07:04 07:29 17:10 17:10	07:36 14:30-15:05/35 16:56 08:29-08:54/25
12	07:46 14:58-15:06/8 17:16 08:52-08:58/6	07:22 06:41 17:53 18:26	06:51 06:10 19:58 20:29	06:10 05:51 20:29 20:54	06:10 05:51 20:29 20:54	05:51 06:02 20:29 20:54	05:51 06:02 20:29 20:54	06:29 07:00 20:39 19:49	07:00 07:30 19:49 17:09	07:05 07:30 17:09 17:09	07:05 07:30 17:09 17:09	07:37 14:29-15:05/36 16:56 08:30-08:54/24
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17	07:45 17:22 17:22 17:22	07:16 06:33 17:59 18:31	06:43 06:05 20:04 20:34	06:05 05:51 20:34 20:56	06:05 05:51 20:34 20:56	06:05 06:06 20:34 20:56	06:05 06:06 20:34 20:56	06:34 07:05 20:20 19:30	07:05 07:35 19:30 17:04	07:11 07:35 17:04 17:04	07:11 07:35 17:04 17:04	07:41 14:30-15:09/39 16:57 08:30-08:57/27
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21	07:43 17:26 17:26 17:26	07:10 06:26 18:04 18:35	06:37 06:02 20:08 20:38	06:02 05:52 20:38 20:57	06:02 05:52 20:38 20:57	06:09 06:09 20:38 20:57	06:09 06:09 20:38 20:57	06:38 07:09 20:14 19:24	07:09 07:40 19:24 17:01	07:16 07:40 17:01 17:01	07:16 07:40 17:01 17:01	07:43 14:31-15:11/40 16:58 08:32-08:59/27
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28	07:38 17:35 17:35 17:35	07:00 06:15 18:12 18:43	06:27 06:05 20:15 20:44	06:05 05:54 20:44 20:58	06:05 05:54 20:44 20:58	06:15 06:15 20:44 20:58	06:15 06:15 20:44 20:58	06:45 07:16 20:03 19:12	07:16 07:47 19:12 17:26	07:24 07:47 17:26 16:58	07:24 07:47 17:26 16:58	07:46 14:36-15:14/38 17:02 08:36-09:02/26
29	07:37 17:36 17:36 17:36	07:13 06:26 19:44 20:16	06:26 06:05 20:16 20:45	06:05 05:54 20:45 20:58	06:05 05:54 20:45 20:58	06:16 06:16 20:45 20:58	06:16 06:16 20:45 20:58	06:46 07:17 20:02 19:10	07:17 07:48 19:10 17:24	07:25 07:48 17:24 16:57	07:25 07:48 17:24 16:57	07:46 14:36-15:14/38 17:03 08:36-09:02/26



## SHADOW - Calendar per WTG

Calculation: SHADOW\_Real case\_MapWTG: MA07 - VESTAS V172-7.2 7200 172.0 !OI! hub: 114,0 m (TOT: 200,0 m) (7)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June			
1	07:47 17:06	07:34 17:40	06:59 18:13	07:08 19:47	07:42-08:22/40 19:47	06:23 20:18	18:46-19:54/68 20:47	05:55 20:47	18:58-20:20/82 20:47
2	07:47 17:07	07:33 17:41	06:57 18:14	07:07 19:48	07:42-08:20/38 19:48	06:22 20:19	18:46-19:54/68 20:19	05:54 20:48	18:58-20:20/82 20:48
3	07:47 17:07	07:32 17:42	06:56 18:16	07:05 19:49	07:43-08:18/35 19:49	06:20 20:20	18:46-19:58/72 20:20	05:54 20:49	19:00-20:20/80 20:49
4	07:47 17:08	07:31 17:43	06:54 18:17	07:03 19:50	07:44-08:17/33 19:50	06:19 20:21	18:47-19:59/72 20:21	05:53 20:49	19:00-20:21/81 20:49
5	07:47 17:09	07:30 17:45	06:52 18:18	07:02 19:51	07:45-08:15/30 19:51	06:18 20:22	18:46-19:59/73 20:22	05:53 20:50	19:00-20:20/80 20:50
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 19:52	07:47-08:13/26 19:52	06:17 20:23	18:46-20:00/74 20:23	05:53 20:51	19:01-20:21/80 20:51
7	07:47 17:11	07:28 17:47	06:49 18:20	06:59 19:53	07:49-08:10/21 19:53	06:16 20:24	18:47-20:01/74 20:24	05:52 20:51	19:02-20:21/79 20:51
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	19:22-19:27/5 19:54	06:14 20:25	18:47-20:02/75 20:25	05:52 20:52	19:03-20:21/78 20:52
9	07:47 17:13	07:26 17:50	06:46 18:22	06:55 19:55	19:15-19:34/19 19:55	06:13 20:26	18:47-20:03/76 20:26	05:52 20:53	19:04-20:22/78 20:53
10	07:47 17:14	07:24 17:51	06:44 18:23	06:54 19:56	19:10-19:35/25 19:56	06:12 20:27	18:48-20:04/76 20:27	05:52 20:53	19:04-20:21/77 20:53
11	07:47 17:15	07:23 17:52	06:43 18:24	06:52 19:57	19:07-19:36/29 19:57	06:11 20:28	18:48-20:05/77 20:28	05:52 20:54	19:04-20:21/77 20:54
12	07:46 17:16	07:22 17:53	06:41 18:26	06:51 19:58	19:04-19:37/33 19:58	06:10 20:29	18:49-20:06/77 20:29	05:51 20:54	19:05-20:22/77 20:54
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	19:01-19:37/36 19:59	06:09 20:30	18:49-20:07/78 20:30	05:51 20:55	19:05-20:22/77 20:55
14	07:46 17:18	07:20 17:56	06:38 18:28	06:47 20:00	19:00-19:39/39 20:00	06:08 20:31	18:49-20:08/79 20:31	05:51 20:55	19:06-20:22/76 20:55
15	07:45 17:19	07:18 17:57	06:36 18:29	06:46 20:01	18:58-19:39/41 20:01	06:07 20:32	18:49-20:09/80 20:32	05:51 20:56	19:06-20:22/76 20:56
16	07:45 17:21	07:17 17:58	06:35 18:30	06:44 20:03	18:57-19:41/44 20:03	06:06 20:33	18:50-20:09/79 20:33	05:51 20:56	19:07-20:22/75 20:56
17	07:45 17:22	07:16 17:59	06:33 18:31	06:43 20:04	18:55-19:41/46 20:04	06:05 20:34	18:50-20:10/80 20:34	05:51 20:56	19:07-20:22/75 20:56
18	07:44 17:23	07:14 18:00	06:31 18:32	06:41 20:05	18:54-19:43/49 20:05	06:04 20:35	18:50-20:11/81 20:35	05:51 20:57	19:07-20:24/77 20:57
19	07:44 17:24	07:13 18:02	06:30 18:33	06:40 20:06	18:52-19:43/51 20:06	06:03 20:36	18:51-20:13/82 20:36	05:51 20:57	19:09-20:24/75 20:57
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	18:52-19:45/53 20:07	06:02 20:37	18:51-20:13/82 20:37	05:52 20:57	19:09-20:24/75 20:57
21	07:43 17:26	07:10 18:04	06:27 18:35	06:37 20:08	18:51-19:46/55 20:08	06:02 20:38	18:52-20:14/82 20:38	05:52 20:58	19:09-20:24/75 20:58
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	18:50-19:46/56 20:09	06:01 20:39	18:52-20:14/82 20:39	05:52 20:58	19:09-20:24/75 20:58
23	07:41 17:29	07:07 18:06	06:23 18:37	06:34 20:10	18:49-19:48/59 20:10	06:00 20:40	18:53-20:16/83 20:40	05:52 20:58	19:09-20:24/75 20:58
24	07:41 17:30	07:06 18:08	06:22 18:38	06:33 20:11	18:48-19:48/60 20:11	05:59 20:41	18:53-20:16/83 20:41	05:52 20:58	19:09-20:25/76 20:58
25	07:40 17:31	07:05 18:09	06:20 18:39	06:31 20:12	18:48-19:50/62 20:12	05:59 20:42	18:54-20:17/83 20:42	05:53 20:58	19:09-20:24/75 20:58
26	07:39 17:32	07:03 18:10	06:18 18:41	06:30 20:13	18:48-19:51/63 20:13	05:58 20:43	18:55-20:18/83 20:43	05:53 20:58	19:09-20:24/75 20:58
27	07:38 17:34	07:02 18:11	06:17 18:42	06:28 20:14	18:47-19:51/64 20:14	05:57 20:43	18:55-20:18/83 20:43	05:53 20:58	19:10-20:25/75 20:58
28	07:38 17:35	07:00 18:12	06:15 18:43	06:27 20:15	18:47-19:52/65 20:15	05:57 20:44	18:56-20:19/83 20:44	05:54 20:58	19:09-20:25/76 20:58
29	07:37 17:36		07:13 19:44	06:26 20:16	18:47-19:54/67 20:16	05:56 20:45	18:56-20:19/83 20:45	05:54 20:58	19:10-20:26/76 20:58
30	07:36 17:37		07:12 19:45	06:24 20:17	18:46-19:53/67 20:17	05:56 20:46	18:57-20:20/83 20:46	05:55 20:58	19:09-20:26/77 20:58
31	07:35 17:38		07:10 19:46			05:55 20:47	18:57-20:19/82 20:47		
Potential sun hours	298	298	370	398	447	451			
Sum of minutes with flicker	0	0	783	1324	2433	2312			

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

Calculation: SHADOW\_Real case\_MapWTG: MA07 - VESTAS V172-7.2 7200 172.0 !OI hub: 114,0 m (TOT: 200,0 m) (7)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December
1	05:55 19:10-20:26/76	06:19 18:59-20:16/77	06:49 19:07-19:35/28	07:19 07:39-08:00/21	06:52	07:27
	20:58	20:40	19:57	19:07	17:21	16:57
2	05:56 19:09-20:26/77	06:20 18:59-20:15/76	06:50 19:09-19:34/25	07:20 07:40-07:57/17	06:53	07:28
	20:58	20:38	19:55	19:05	17:19	16:56
3	05:56 19:09-20:27/78	06:21 18:57-20:13/76	06:51 19:13-19:32/19	07:21 07:42-07:52/10	06:55	07:29
	20:58	20:37	19:54	19:03	17:18	16:56
4	05:57 19:08-20:26/78	06:22 18:57-20:12/75	06:52 19:18-19:24/6	07:22	06:56	07:30
	20:58	20:36	19:52 07:50-08:03/13	19:02	17:17	16:56
5	05:57 19:09-20:27/78	06:23 18:56-20:11/75	06:53 07:45-08:06/21	07:23	06:57	07:31
	20:58	20:35	19:50	19:00	17:16	16:56
6	05:58 19:08-20:27/79	06:24 18:56-20:10/74	06:54 07:43-08:08/25	07:24	06:58	07:32
	20:57	20:34	19:49	18:59	17:15	16:56
7	05:58 19:08-20:27/79	06:24 18:56-20:09/73	06:55 07:40-08:10/30	07:25	06:59	07:33
	20:57	20:33	19:47	18:57	17:14	16:56
8	05:59 19:07-20:27/80	06:25 18:56-20:08/72	06:56 07:38-08:11/33	07:26	07:01	07:34
	20:57	20:31	19:45	18:55	17:13	16:56
9	06:00 19:07-20:27/80	06:26 18:55-20:07/72	06:57 07:37-08:12/35	07:27	07:02	07:34
	20:56	20:30	19:44	18:54	17:12	16:56
10	06:00 19:07-20:28/81	06:27 18:55-20:06/71	06:58 07:35-08:13/38	07:28	07:03	07:35
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11	06:01 19:06-20:27/81	06:28 18:55-20:03/68	06:59 07:34-08:14/40	07:29	07:04	07:36
	20:56	20:28	19:40	18:51	17:10	16:56
12	06:02 19:06-20:28/82	06:29 18:55-20:02/67	07:00 07:33-08:14/41	07:30	07:05	07:37
	20:55	20:26	19:39	18:49	17:09	16:56
13	06:02 19:06-20:28/82	06:30 18:55-20:02/67	07:01 07:32-08:15/43	07:31	07:06	07:38
	20:55	20:25	19:37	18:47	17:08	16:56
14	06:03 19:06-20:28/82	06:31 18:55-20:01/66	07:02 07:31-08:15/44	07:32	07:08	07:39
	20:54	20:24	19:35	18:46	17:07	16:56
15	06:04 19:05-20:28/83	06:32 18:55-20:00/65	07:03 07:30-08:15/45	07:33	07:09	07:39
	20:54	20:22	19:34	18:44	17:06	16:56
16	06:05 19:04-20:28/84	06:33 18:55-19:59/64	07:04 07:30-08:15/45	07:34	07:10	07:40
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17	06:05 19:04-20:28/84	06:34 18:55-19:57/62	07:05 07:29-08:15/46	07:35	07:11	07:41
	20:52	20:20	19:30	18:41	17:04	16:57
18	06:06 19:04-20:28/84	06:35 18:55-19:56/61	07:06 07:29-08:15/46	07:36	07:12	07:41
	20:52	20:18	19:29	18:40	17:04	16:57
19	06:07 19:03-20:26/83	06:36 18:54-19:54/60	07:07 07:29-08:15/46	07:38	07:13	07:42
	20:51	20:17	19:27	18:38	17:03	16:58
20	06:08 19:03-20:26/83	06:37 18:54-19:52/58	07:08 07:28-08:14/46	07:39	07:15	07:43
	20:50	20:15	19:25	18:37	17:02	16:58
21	06:09 19:03-20:25/82	06:38 18:55-19:51/56	07:09 07:29-08:14/45	07:40	07:16	07:43
	20:50	20:14	19:24	18:35	17:01	16:58
22	06:10 19:02-20:25/83	06:39 18:55-19:50/55	07:10 07:30-08:13/43	07:41	07:17	07:44
	20:49	20:12	19:22	18:34	17:01	16:59
23	06:10 19:02-20:24/82	06:40 18:56-19:48/52	07:11 07:31-08:12/41	07:42	07:18	07:44
	20:48	20:11	19:20	18:33	17:00	16:59
24	06:11 19:02-20:23/81	06:41 18:56-19:47/51	07:12 07:32-08:11/39	07:43	07:19	07:45
	20:47	20:09	19:19	18:31	17:00	17:00
25	06:12 19:01-20:22/81	06:42 18:57-19:45/48	07:13 07:33-08:10/37	06:44	07:20	07:45
	20:46	20:08	19:17	17:30	16:59	17:01
26	06:13 19:01-20:21/80	06:43 18:58-19:44/46	07:14 07:33-08:08/35	06:45	07:21	07:45
	20:45	20:06	19:15	17:28	16:59	17:01
27	06:14 19:00-20:20/80	06:44 18:59-19:43/44	07:15 07:34-08:07/33	06:47	07:22	07:46
	20:44	20:05	19:13	17:27	16:58	17:02
28	06:15 19:00-20:20/80	06:45 19:00-19:41/41	07:16 07:35-08:05/30	06:48	07:24	07:46
	20:44	20:03	19:12	17:26	16:58	17:02
29	06:16 19:00-20:19/79	06:46 19:01-19:40/39	07:17 07:36-08:04/28	06:49	07:25	07:46
	20:43	20:02	19:10	17:24	16:57	17:03
30	06:17 19:00-20:18/78	06:47 19:02-19:38/36	07:18 07:37-08:01/24	06:50	07:26	07:47
	20:42	20:00	19:08	17:23	16:57	17:04
31	06:18 18:59-20:17/78	06:48 19:04-19:37/33		06:51		07:47
	20:41	19:58		17:22		17:05
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	2498	1880	1070	48	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

Calculation: SHADOW\_Real case\_MapWTG: MA08 - VESTAS V172-7.2 7200 172.0 !OI! hub: 114,0 m (TOT: 200,0 m) (8)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June
1	07:47 09:00-09:37/37 17:06 15:34-16:21/47	07:34 07:54-08:27/33 17:40 16:19-16:44/25	06:59 07:27-08:33/66 18:13	07:08 19:47	06:23 20:18	05:54 20:47
2	07:47 09:01-09:37/36 17:06 15:34-16:22/48	07:33 07:53-08:27/34 17:41 16:19-16:45/26	06:57 07:27-08:32/65 18:14	07:07 19:48	06:22 20:19	05:54 20:48
3	07:47 09:02-09:37/35 17:07 15:35-16:23/48	07:32 07:52-08:28/36 17:42 16:19-16:46/27	06:56 07:27-08:30/63 18:16	07:05 19:49	06:20 20:20	05:54 20:49
4	07:48 09:03-09:37/34 17:08 15:36-16:24/48	07:31 07:51-08:28/37 17:43 16:19-16:47/28	06:54 07:28-08:30/62 18:17	07:03 19:50	06:19 20:21	05:53 20:50
5	07:48 09:05-09:36/31 17:09 15:37-16:25/48	07:30 07:50-08:28/38 17:45 16:20-16:48/28	06:52 07:29-08:28/59 18:18	07:02 19:51	06:18 20:22	05:53 20:50
6	07:48 09:05-09:35/30 17:10 15:37-16:26/49	07:29 07:49-08:29/40 17:46 16:20-16:49/29	06:51 07:30-08:27/57 18:19	07:00 19:52	06:17 20:24	05:53 20:51
7	07:47 09:07-09:34/27 17:11 15:38-16:27/49	07:28 07:48-08:30/42 17:47 16:20-16:50/30	06:49 07:30-08:26/56 18:20	06:59 19:53	06:16 20:25	05:52 20:52
8	07:47 09:09-09:33/24 17:12 15:39-16:27/48	07:27 07:47-08:31/44 17:48 16:20-16:50/30	06:48 07:32-08:25/53 18:21	06:57 19:54	06:14 20:26	05:52 20:52
9	07:47 09:11-09:32/21 17:13 15:40-16:28/48	07:26 07:45-08:31/46 17:49 16:21-16:52/31	06:46 07:33-08:23/50 18:22	06:55 19:55	06:13 20:27	05:52 20:53
10	07:47 09:13-09:31/18 17:14 15:41-16:28/47	07:25 07:44-08:32/48 17:51 16:21-16:53/32	06:45 07:34-08:20/46 18:23	06:54 19:56	06:12 20:28	05:52 20:53
11	07:47 08:08-08:10/2 15:42-16:27/45 17:15 09:16-09:28/12	07:23 07:43-08:33/50 17:52 16:22-16:54/32	06:43 07:36-08:19/43 18:24	06:52 19:57	06:11 20:29	05:51 20:54
12	07:47 08:08-08:11/3 17:16 15:43-16:28/45	07:22 07:42-08:34/52 17:53 16:23-16:55/32	06:41 07:37-08:16/39 18:26	06:51 19:58	06:10 20:30	05:51 20:54
13	07:46 08:08-08:13/5 17:17 15:45-16:28/43	07:21 07:40-08:34/54 17:54 16:23-16:55/32	06:40 07:39-08:13/34 18:27	06:49 19:59	06:09 20:31	05:51 20:55
14	07:46 08:07-08:14/7 17:18 15:45-16:27/42	07:20 07:39-08:35/56 17:56 16:24-16:57/33	06:38 07:42-08:10/28 18:28	06:47 20:01	06:08 20:32	05:51 20:55
15	07:46 08:07-08:15/8 17:19 15:47-16:28/41	07:18 07:38-08:36/58 17:57 16:26-16:58/32	06:36 07:45-08:06/21 18:29	06:46 20:02	06:07 20:33	05:51 20:56
16	07:45 08:06-08:16/10 17:20 15:48-16:27/39	07:17 07:36-08:35/59 17:58 16:26-16:58/32	06:35 07:52-07:57/5 18:30	06:44 20:03	06:06 20:34	05:51 20:56
17	07:45 08:06-08:18/12 17:22 15:51-16:27/36	07:16 07:35-08:36/61 17:59 16:28-16:59/31	06:33 07:52-07:57/5 18:31	06:43 20:04	06:05 20:34	05:51 20:57
18	07:44 08:05-08:18/13 17:23 15:52-16:28/36	07:14 07:34-08:36/62 18:00 16:30-17:00/30	06:31 07:52-07:57/5 18:32	06:41 20:05	06:04 20:35	05:51 20:57
19	07:44 08:05-08:20/15 17:24 15:56-16:30/34	07:13 07:32-08:36/64 18:02 16:31-16:59/28	06:30 07:52-07:57/5 18:33	06:40 20:06	06:03 20:36	05:51 20:57
20	07:43 08:04-08:21/17 17:25 15:58-16:31/33	07:12 07:31-08:36/65 18:03 16:34-16:57/23	06:28 07:52-07:57/5 18:34	06:38 20:07	06:02 20:37	05:51 20:57
21	07:43 08:03-08:21/18 17:26 15:59-16:32/33	07:10 07:29-08:35/66 18:04 16:36-16:53/17	06:27 07:52-07:57/5 18:35	06:37 20:08	06:01 20:38	05:52 20:58
22	07:42 08:03-08:23/20 17:27 16:02-16:34/32	07:09 07:28-08:36/68 18:05	06:25 07:52-07:57/5 18:36	06:35 20:09	06:01 20:39	05:52 20:58
23	07:41 08:02-08:23/21 16:04-16:20/16 17:29 16:21-16:34/13	07:07 07:27-08:36/69 18:06	06:23 07:52-07:57/5 18:37	06:34 20:10	06:00 20:40	05:52 20:58
24	07:41 08:01-08:24/23 16:07-16:17/10 17:30 16:20-16:35/15	07:06 07:26-08:35/69 18:08	06:22 07:52-07:57/5 18:38	06:32 20:11	05:59 20:41	05:52 20:58
25	07:40 08:00-08:24/24 17:31 16:20-16:36/16	07:05 07:26-08:35/69 18:09	06:20 07:52-07:57/5 18:40	06:31 20:12	05:58 20:42	05:53 20:58
26	07:39 08:00-08:26/26 17:32 16:20-16:38/18	07:03 07:26-08:34/68 18:10	06:18 07:52-07:57/5 18:41	06:30 20:13	05:58 20:43	05:53 20:58
27	07:39 07:59-08:26/27 17:33 16:20-16:39/19	07:02 07:27-08:34/67 18:11	06:17 07:52-07:57/5 18:42	06:28 20:14	05:57 20:44	05:53 20:58
28	07:38 07:58-08:26/28 17:35 16:20-16:40/20	07:00 07:27-08:33/66 18:12	06:15 07:52-07:57/5 18:43	06:27 20:15	05:57 20:44	05:54 20:59
29	07:37 07:57-08:27/30 17:36 16:19-16:41/22	07:00 07:27-08:33/66 18:13	06:14 07:52-07:57/5 18:44	06:26 20:16	05:56 20:45	05:54 20:58
30	07:36 07:56-08:27/31 17:37 16:19-16:42/23	07:00 07:27-08:33/66 18:14	06:13 07:52-07:57/5 18:45	06:24 20:17	05:55 20:46	05:55 20:58
31	07:35 07:55-08:27/32 17:38 16:19-16:43/24	07:00 07:27-08:33/66 18:15	06:12 07:52-07:57/5 18:46	06:23 20:18	05:54 20:47	05:54 20:58
Potential sun hours	298	298	370	398	448	451
Sum of minutes with flicker	1812	2129	747	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

Calculation: SHADOW\_Real case\_MapWTG: MA08 - VESTAS V172-7.2 7200 172.0 IOI hub: 114,0 m (TOT: 200,0 m) (8)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December				
1	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	08:17-08:55/38 19:07	06:52 17:21	07:14-08:02/48 15:51-16:22/31	07:27 16:57	07:50-07:52/2 08:58-09:10/12	15:24-16:09/45
2	05:55 20:58	06:20 20:39	06:50 19:55	07:20 19:05	08:15-08:57/42 19:05	06:54 17:19	07:15-08:01/46 15:50-16:21/31	07:28 16:56	08:55-09:13/18 15:23-16:10/47	
3	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:03	08:13-08:58/45 19:03	06:55 17:18	07:16-08:00/44 15:50-16:20/30	07:29 16:56	08:54-09:15/21 15:23-16:11/48	
4	05:57 20:58	06:22 20:36	06:52 19:52	07:22 19:02	08:11-08:59/48 19:02	06:56 17:17	07:18-08:00/42 15:50-16:20/30	07:30 16:56	08:53-09:17/24 15:23-16:11/48	
5	05:57 20:58	06:22 20:35	06:53 19:50	07:23 19:00	08:09-09:01/52 19:00	06:57 17:16	07:19-07:59/40 15:50-16:19/29	07:31 16:56	08:52-09:19/27 15:23-16:12/49	
6	05:58 20:57	06:23 20:34	06:54 19:49	07:24 18:59	08:08-09:02/54 18:59	06:58 17:15	07:20-07:58/38 15:49-16:18/29	07:32 16:56	08:51-09:21/30 15:23-16:12/49	
7	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	08:06-09:03/57 18:57	06:59 17:14	07:21-07:58/37 15:49-16:16/27	07:33 16:55	08:51-09:22/31 15:23-16:11/48	
8	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55	08:05-09:03/58 18:55	07:01 17:13	07:23-07:58/35 15:50-16:16/26	07:34 16:55	08:50-09:24/34 15:23-16:11/48	
9	06:00 20:57	06:26 20:30	06:57 19:44	07:27 18:54	08:04-09:04/60 18:54	07:02 17:11	07:24-07:58/34 15:50-16:15/25	07:35 16:55	08:50-09:25/35 15:23-16:11/48	
10	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	08:02-09:04/62 18:52	07:03 17:10	07:25-07:58/33 15:50-16:14/24	07:35 16:55	08:50-09:26/36 15:24-16:11/47	
11	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:51	08:01-09:05/64 18:51	07:04 17:09	07:26-07:58/32 15:50-16:13/23	07:36 16:56	08:50-09:27/37 15:24-16:11/47	
12	06:02 20:55	06:29 20:26	07:00 19:39	07:30 18:49	08:00-09:05/65 18:49	07:05 17:09	07:28-07:59/31 15:51-16:13/22	07:37 16:56	08:50-09:28/38 15:24-16:12/48	
13	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	08:00-09:06/66 18:47	07:07 17:08	07:29-07:59/30 15:51-16:13/22	07:38 16:56	08:50-09:29/39 15:24-16:11/47	
14	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	07:59-09:06/67 18:46	07:08 17:07	07:30-07:58/28 15:52-16:12/20	07:39 16:56	08:50-09:30/40 15:24-16:11/47	
15	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	07:59-09:07/68 18:44	07:09 17:06	07:31-07:58/27 15:52-16:11/19	07:39 16:56	08:50-09:31/41 15:25-16:12/47	
16	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	07:58-09:07/69 18:43	07:10 17:05	07:33-07:58/25 15:53-16:11/18	07:40 16:56	08:51-09:32/41 15:26-16:12/46	
17	06:05 20:52	06:34 20:20	07:05 19:30	07:35 18:41	07:58-09:07/69 18:41	07:11 17:04	07:34-07:58/24 15:54-16:10/16	07:41 16:57	08:51-09:32/41 15:25-16:12/47	
18	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	07:57-09:07/70 18:40	07:12 17:03	07:35-07:58/23 15:41-15:51/10	07:42 16:57	08:51-09:33/42 15:26-16:12/46	
19	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	07:58-09:07/69 18:38	07:14 17:03	07:36-07:57/21 15:55-16:08/13	07:42 16:57	08:51-09:33/42 15:26-16:12/46	
20	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	07:59-09:06/67 17:11-17:20/9	07:15 17:02	07:38-07:58/20 15:37-16:09/32	07:43 16:58	08:52-09:34/42 15:27-16:13/46	
21	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	08:00-09:06/66 17:06-17:24/18	07:16 17:01	07:39-07:57/18 15:35-16:08/33	07:43 16:58	08:53-09:35/42 15:27-16:13/46	
22	06:10 20:49	06:39 20:12	07:10 19:22	07:41 18:34	08:02-09:07/65 17:04-17:28/24	07:17 17:01	07:40-07:57/17 15:34-16:07/33	07:44 16:59	08:53-09:35/42 15:28-16:14/46	
23	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:32	08:03-09:06/63 17:01-17:30/29	07:18 17:00	07:41-07:56/15 15:32-16:06/34	07:44 16:59	08:53-09:35/42 15:28-16:14/46	
24	06:11 20:47	06:41 20:09	07:12 19:19	07:43 18:31	08:04-09:06/62 16:59-17:30/31	07:19 17:00	07:43-07:56/13 15:30-16:05/35	07:45 17:00	08:54-09:36/42 15:29-16:15/46	
25	06:12 20:46	06:42 20:08	07:13 19:17	06:44 17:30	07:05-08:05/60 15:57-16:29/32	07:20 16:59	07:44-07:56/12 15:29-16:05/36	07:45 17:00	08:54-09:36/42 15:29-16:15/46	
26	06:13 20:46	06:43 20:06	07:14 19:15	06:45 17:28	07:06-08:05/59 15:55-16:28/33	07:22 16:58	07:45-07:55/10 15:27-16:06/39	07:46 17:01	08:55-09:37/42 15:29-16:16/47	
27	06:14 20:45	06:44 20:05	07:15 19:13	06:47 17:27	07:08-08:05/57 15:55-16:27/32	07:23 16:58	07:46-07:55/9 15:26-16:07/41	07:46 17:02	08:56-09:37/41 15:31-16:17/46	
28	06:15 20:44	06:45 20:03	07:16 19:12	06:48 17:26	07:09-08:04/55 15:54-16:26/32	07:24 16:58	07:47-07:54/7 15:25-16:07/42	07:46 17:02	08:56-09:37/41 15:31-16:17/46	
29	06:16 20:43	06:46 20:02	07:17 19:10	06:49 17:24	07:10-08:04/54 15:53-16:25/32	07:25 16:57	07:48-07:53/5 15:25-16:08/43	07:47 17:03	08:57-09:37/40 15:31-16:18/47	
30	06:17 20:42	06:47 20:00	07:18 19:08	06:50 17:23	07:11-08:03/52 15:52-16:24/32	07:26 16:57	07:49-07:52/3 15:24-16:09/45	07:47 17:04	08:57-09:37/40 15:32-16:19/47	
31	06:18 20:41	06:48 19:59		06:51 17:22	07:13-08:03/50 15:52-16:24/32			07:47 17:05	08:59-09:37/38 15:33-16:19/46	
Potential sun hours	458	427	375	346	299	289				
Sum of minutes with flicker	0	0	74	2169	1656	2578				

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

Calculation: SHADOW\_Real case\_MapWTG: MA09 - VESTAS V172-7.2 7200 172.0 !OI! hub: 114,0 m (TOT: 200,0 m) (9)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June	
1	07:47 08:10-08:44/34 17:06	07:34 07:56-08:28/32 17:40	06:59 18:13	07:08 19:47	06:23 20:18	05:54 06:22-06:49/27 20:47	
2	07:47 08:10-08:43/33 17:06	07:33 07:55-08:28/33 17:41	06:57 18:14	07:07 19:48	06:22 20:19	05:54 06:21-06:49/28 20:48	
3	07:47 08:10-08:43/33 17:07	07:32 07:55-08:28/33 17:42	06:55 18:15	07:05 19:49	06:20 20:20	05:53 06:22-06:49/27 20:49	
4	07:47 08:10-08:42/32 17:08	07:31 07:56-08:28/32 17:43	06:54 18:17	07:03 19:50	06:19 20:21	05:53 06:22-06:50/28 20:50	
5	07:47 08:10-08:41/31 17:09	07:30 07:57-08:28/31 17:44	06:52 18:18	07:02 19:51	06:18 20:22	05:53 06:22-06:49/27 20:50	
6	07:47 08:09-08:38/29 17:10	07:29 07:58-08:27/29 17:46	06:51 18:19	07:00 19:52	06:17 20:23	05:52 06:22-06:49/27 20:51	
7	07:47 08:09-08:39/30 17:11	07:28 07:59-08:27/28 17:47	06:49 18:20	06:58 19:53	06:15 20:24	05:52 06:23-06:50/27 20:52	
8	07:47 08:09-08:39/30 17:12	07:27 07:59-08:25/26 17:48	06:48 18:21	06:57 19:54	06:14 20:25	05:52 06:23-06:50/27 20:52	
9	07:47 08:09-08:40/31 17:13	07:26 08:00-08:24/24 17:49	06:46 18:22	06:55 19:55	06:13 20:26	05:52 06:24-06:50/26 20:53	
10	07:47 08:09-08:40/31 17:14	07:25 08:02-08:23/21 17:51	06:44 18:23	06:54 19:56	06:12 20:28	05:51 06:23-06:49/26 20:53	
11	07:47 08:08-08:40/32 17:15	07:23 08:04-08:21/17 17:52	06:43 18:24	06:52 19:57	06:11 20:29	05:51 06:24-06:50/26 20:54	
12	07:47 08:08-08:40/32 17:16	07:22 08:07-08:18/11 17:53	06:41 18:26	06:50 19:58	06:10 20:30	05:51 06:24-06:50/26 20:54	
13	07:46 08:08-08:41/33 17:17	07:21 17:54	06:40 18:27	06:49 19:59	06:09 20:31	05:51 06:24-06:50/26 20:55	
14	07:46 08:07-08:40/33 17:18	07:20 17:56	06:38 18:28	06:47 20:00	06:08 20:31	06:31-06:38/7 20:55	05:51 06:25-06:50/25
15	07:46 08:07-08:40/33 17:19	07:18 17:57	06:36 18:29	06:46 20:01	06:07 20:32	06:29-06:41/12 20:56	05:51 06:25-06:50/25
16	07:45 08:06-08:40/34 17:20	07:17 17:58	06:35 18:30	06:44 20:03	06:06 20:33	06:28-06:42/14 20:56	05:51 06:25-06:50/25
17	07:45 08:06-08:40/34 17:22	07:16 17:59	06:33 18:31	06:43 20:04	06:05 20:34	06:27-06:43/16 20:56	05:51 06:25-06:50/25
18	07:44 08:05-08:39/34 17:23	07:14 18:00	06:31 18:32	06:41 20:05	06:04 20:35	06:25-06:44/19 20:57	05:51 06:26-06:50/24
19	07:44 08:05-08:39/34 17:24	07:13 18:02	06:30 18:33	06:40 20:06	06:03 20:36	06:25-06:46/21 20:57	05:51 06:27-06:51/24
20	07:43 08:04-08:38/34 17:25	07:12 18:03	06:28 18:34	06:38 20:07	06:02 20:37	06:24-06:46/22 20:57	05:51 06:27-06:51/24
21	07:43 08:03-08:36/33 17:26	07:10 18:04	06:26 18:35	06:37 20:08	06:01 20:38	06:22-06:46/24 20:58	05:52 06:27-06:51/24
22	07:42 08:03-08:36/33 17:27	07:09 18:05	06:25 18:36	06:35 20:09	06:01 20:39	06:22-06:47/25 20:58	05:52 06:27-06:51/24
23	07:41 08:02-08:33/31 17:29	07:07 18:06	06:23 18:37	06:34 20:10	06:00 20:40	06:22-06:48/26 20:58	05:52 06:27-06:51/24
24	07:41 08:02-08:32/30 17:30	07:06 18:07	06:21 18:38	06:32 20:11	05:59 20:41	06:21-06:48/27 20:58	05:52 06:28-06:52/24
25	07:40 08:01-08:30/29 17:31	07:05 18:09	06:20 18:39	06:31 20:12	05:58 20:42	06:21-06:48/27 20:58	05:53 06:28-06:52/24
26	07:39 08:01-08:28/27 17:32	07:03 18:10	06:18 18:40	06:30 20:13	05:58 20:43	06:21-06:48/27 20:58	05:53 06:27-06:52/25
27	07:38 08:00-08:27/27 17:33	07:02 18:11	06:16 18:42	06:28 20:14	05:57 20:43	06:21-06:48/27 20:58	05:53 06:28-06:53/25
28	07:38 07:59-08:28/29 17:35	07:00 18:12	06:15 18:43	06:27 20:15	05:56 20:44	06:21-06:49/28 20:58	05:54 06:28-06:53/25
29	07:37 07:58-08:28/30 17:36		06:13 19:44	06:25 20:16	05:56 20:45	06:21-06:49/28 20:58	05:54 06:29-06:54/25
30	07:36 07:57-08:28/31 17:37		06:12 19:45	06:24 20:17	05:55 20:46	06:21-06:49/28 20:58	05:54 06:28-06:54/26
31	07:35 07:56-08:28/32 17:38		06:10 19:46		05:55 20:47	06:21-06:49/28 20:58	
Potential sun hours	298	298	370	398	448	451	
Sum of minutes with flicker	979	317	0	0	406	766	

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

Calculation: SHADOW\_Real case\_MapWTG: MA09 - VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (9)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December
1	05:55 06:28-06:54/26 20:58	06:19 06:49 20:40 19:07	06:49 07:19 19:57 19:07	07:19 19:07	06:52 07:31-07:53/22 17:20 16:56	07:27 07:50-08:22/32 16:56
2	05:55 06:28-06:54/26 20:58	06:20 06:50 20:38 19:55	06:50 07:20 19:05	07:20 19:05	06:53 07:30-07:54/24 17:19 16:56	07:28 07:51-08:22/31 16:56
3	05:56 06:28-06:54/26 20:58	06:20 06:51 20:37 19:54	06:51 07:21 19:03	07:21 19:03	06:55 07:28-07:55/27 17:18 16:56	07:29 07:52-08:23/31 16:56
4	05:56 06:29-06:55/26 20:58	06:21 06:52 20:36 19:52	06:52 07:22 19:02	07:22 19:02	06:56 07:28-07:57/29 17:17 16:56	07:30 07:53-08:23/30 16:56
5	05:57 06:29-06:56/27 20:58	06:22 06:53 20:35 19:50	06:53 07:23 19:00	07:23 19:00	06:57 07:27-07:57/30 17:16 16:56	07:31 07:54-08:24/30 16:56
6	05:58 06:29-06:55/26 20:57	06:23 06:54 20:34 19:49	06:54 07:24 18:58	07:24 18:58	06:58 07:26-07:58/32 17:15 16:55	07:32 07:55-08:24/29 16:55
7	05:58 06:29-06:56/27 20:57	06:24 06:55 20:33 19:47	06:55 07:25 18:57	07:25 18:57	06:59 07:26-07:58/32 17:14 16:55	07:33 07:56-08:27/31 16:55
8	05:59 06:29-06:56/27 20:57	06:25 06:56 20:31 19:45	06:56 07:26 18:55	07:26 18:55	07:01 07:26-07:59/33 17:12 16:55	07:34 07:57-08:29/32 16:55
9	05:59 06:29-06:56/27 20:56	06:26 06:57 20:30 19:44	06:57 07:27 18:54	07:27 18:54	07:02 07:26-07:59/33 17:11 16:55	07:35 07:58-08:31/33 16:55
10	06:00 06:29-06:57/28 20:56	06:27 06:58 20:29 19:42	06:58 07:28 18:52	07:28 18:52	07:03 07:27-07:59/32 17:10 16:55	07:35 07:59-08:32/33 16:55
11	06:01 06:29-06:56/27 20:56	06:28 06:59 20:28 19:40	06:59 07:29 18:50	07:29 18:50	07:04 07:27-07:59/32 17:09 16:55	07:36 08:00-08:34/34 16:55
12	06:02 06:29-06:57/28 20:55	06:29 07:00 20:26 19:39	07:00 07:30 18:49	07:30 18:49	07:05 07:29-08:00/31 17:08 16:56	07:37 08:01-08:35/34 16:56
13	06:02 06:30-06:57/27 20:55	06:30 07:01 20:25 19:37	07:01 07:31 18:47	07:31 18:47	07:06 07:30-08:00/30 17:08 16:56	07:38 08:01-08:35/34 16:56
14	06:03 06:29-06:57/28 20:54	06:31 07:02 20:24 19:35	07:02 07:32 18:46	07:32 18:46	07:08 07:31-08:00/29 17:07 16:56	07:39 08:02-08:36/34 16:56
15	06:04 06:30-06:57/27 20:54	06:32 07:03 20:22 19:34	07:03 07:33 18:44	07:33 18:44	07:09 07:32-07:59/27 17:06 16:56	07:39 08:03-08:37/34 16:56
16	06:05 06:30-06:58/28 20:53	06:33 07:04 20:21 19:32	07:04 07:34 18:43	07:34 18:43	07:10 07:34-08:01/27 17:05 16:56	07:40 08:04-08:38/34 16:56
17	06:05 06:31-06:58/27 20:52	06:34 07:05 20:20 19:30	07:05 07:35 18:41	07:35 18:41	07:11 07:35-08:04/29 17:04 16:57	07:41 08:04-08:38/34 16:57
18	06:06 06:31-06:58/27 20:52	06:35 07:06 20:18 19:29	07:06 07:36 18:40	07:36 18:40	07:12 07:36-08:06/30 17:03 16:57	07:41 08:05-08:39/34 16:57
19	06:07 06:31-06:57/26 20:51	06:36 07:07 20:17 19:27	07:07 07:38 18:38	07:38 18:38	07:13 07:36-08:07/31 17:03 16:57	07:42 08:05-08:39/34 16:57
20	06:08 06:31-06:57/26 20:50	06:37 07:08 20:15 19:25	07:08 07:39 18:37	07:39 18:37	07:15 07:38-08:11/33 17:02 16:58	07:43 08:06-08:40/34 16:58
21	06:09 06:32-06:57/25 20:50	06:38 07:08 20:14 19:24	07:08 07:40 18:35	07:40 18:35	07:16 07:39-08:12/33 17:01 16:58	07:43 08:06-08:40/34 16:58
22	06:09 06:33-06:57/24 20:49	06:39 07:09 20:12 19:22	07:09 07:41 18:34	07:41 18:34	07:17 07:40-08:14/34 17:01 16:59	07:44 08:07-08:41/34 16:59
23	06:10 06:33-06:57/24 20:48	06:40 07:10 20:11 19:20	07:10 07:42 18:32	07:42 18:32	07:18 07:41-08:15/34 17:00 16:59	07:44 08:07-08:41/34 16:59
24	06:11 06:34-06:55/21 20:47	06:41 07:11 20:09 19:18	07:11 07:43 18:31	07:43 18:31	07:19 07:42-08:16/34 16:59 17:00	07:45 08:08-08:42/34 17:00
25	06:12 06:35-06:55/20 20:46	06:42 07:12 20:08 19:17	07:12 07:44 17:30	07:44 17:30	07:20 07:44-08:18/34 16:59 17:00	07:45 08:08-08:42/34 17:00
26	06:13 06:36-06:54/18 20:45	06:43 07:13 20:06 19:15	07:13 07:45 17:28	07:45 17:28	07:21 07:45-08:19/34 16:58 17:01	07:45 08:08-08:42/34 17:01
27	06:14 06:38-06:53/15 20:45	06:44 07:14 20:05 19:13	07:14 07:46 17:27	07:46 17:27	07:23 07:46-08:19/33 16:58 17:02	07:46 08:09-08:43/34 17:02
28	06:15 06:39-06:52/13 20:44	06:45 07:15 20:03 19:12	07:15 07:48 17:26	07:48 17:26	07:24 07:47-08:20/33 16:58 17:02	07:46 08:09-08:43/34 17:02
29	06:16 06:41-06:50/9 20:43	06:46 07:16 20:02 19:10	07:16 07:49 17:24	07:49 17:24	07:25 07:48-08:21/33 16:57 17:03	07:46 08:09-08:43/34 17:03
30	06:17 06:43-06:47/4 20:42	06:47 07:17 20:00 19:08	07:17 07:50 17:23	07:50 07:35-07:48/13 17:23	07:26 07:49-08:21/32 16:57	07:47 08:09-08:43/34 17:04
31	06:18 20:41	06:48 19:58	07:18 17:22	07:51 07:33-07:51/18 17:22		07:47 08:10-08:43/33 17:05
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	710	0	0	31	927	1025

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

Calculation: SHADOW\_Real case\_MapWTG: MA10 - VESTAS V172-7.2 7200 172.0 !OI! hub: 114,0 m (TOT: 200,0 m) (10)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [OLBIA]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time  
N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47 17:06	07:34 17:40	06:59 18:13	07:08 19:47	06:23 20:18	05:55 20:47	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	06:52 17:21	07:27 16:57
2	07:47 17:07	07:33 17:41	06:57 18:14	07:07 19:48	06:22 20:19	05:54 20:48	05:56 20:58	06:20 20:39	06:50 19:55	07:20 19:05	06:54 17:19	07:28 16:56
3	07:47 17:07	07:32 17:42	06:56 18:16	07:05 19:49	06:20 20:20	05:54 20:49	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:04	06:55 17:18	07:29 16:56
4	07:48 17:08	07:31 17:43	06:54 18:17	07:03 19:50	06:19 20:21	05:53 20:50	05:57 20:58	06:22 20:36	06:52 19:52	07:22 19:02	06:56 17:17	07:30 16:56
5	07:48 17:09	07:30 17:45	06:52 18:18	07:02 19:51	06:18 20:22	05:53 20:50	05:57 20:58	06:23 20:35	06:53 19:50	07:23 19:00	06:57 17:16	07:31 16:56
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:23	05:53 20:51	05:58 20:57	06:24 20:34	06:54 19:49	07:24 18:59	06:58 17:15	07:32 16:56
7	07:47 17:11	07:28 17:47	06:49 18:20	06:59 19:53	06:16 20:25	05:52 20:52	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	06:59 17:14	07:33 16:56
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	06:14 20:26	05:52 20:52	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55	07:01 17:13	07:34 16:55
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11	07:47 17:15	07:23 17:52	06:43 18:25	06:52 19:57	06:11 20:29	05:51 20:54	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:51	07:04 17:10	07:36 16:56
12	07:47 17:16	07:22 17:53	06:41 18:26	06:51 19:58	06:10 20:30	05:51 20:54	06:02 20:55	06:29 20:26	07:00 19:39	07:30 18:49	07:05 17:09	07:37 16:56
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	06:09 20:31	05:51 20:55	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	07:06 17:08	07:38 16:56
14	07:46 17:18	07:20 17:56	06:38 18:28	06:47 20:01	06:08 20:32	05:51 20:55	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	07:08 17:07	07:39 16:56
15	07:46 17:19	07:18 17:57	06:36 18:29	06:46 20:02	06:07 20:33	05:51 20:56	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	07:09 17:06	07:39 16:56
16	07:45 17:21	07:17 17:58	06:35 18:30	06:44 20:03	06:06 20:34	05:51 20:56	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	07:10 17:05	07:40 16:57
17	07:45 17:22	07:16 17:59	06:33 18:31	06:43 20:04	06:05 20:34	05:51 20:56	06:05 20:52	06:34 20:20	07:05 19:30	07:35 18:41	07:11 17:04	07:41 16:57
18	07:44 17:23	07:14 18:00	06:32 18:32	06:41 20:05	06:04 20:35	05:51 20:57	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	07:12 17:03	07:41 16:57
19	07:44 17:24	07:13 18:02	06:30 18:33	06:40 20:06	06:03 20:36	05:51 20:57	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	07:14 17:03	07:42 16:58
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	06:02 20:37	05:52 20:57	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	07:15 17:02	07:43 16:58
21	07:43 17:26	07:10 18:04	06:27 18:35	06:37 20:08	06:02 20:38	05:52 20:58	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	07:16 17:01	07:43 16:58
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	06:01 20:39	05:52 20:58	06:10 20:49	06:39 20:12	07:10 19:22	07:41 18:34	07:17 17:01	07:44 16:59
23	07:41 17:29	07:07 18:06	06:23 18:37	06:34 20:10	06:00 20:40	05:52 20:58	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:33	07:18 17:00	07:44 16:59
24	07:41 17:30	07:06 18:08	06:22 18:38	06:33 20:11	05:59 20:41	05:52 20:58	06:11 20:47	06:41 20:09	07:12 19:19	07:43 18:31	07:19 17:00	07:45 17:00
25	07:40 17:31	07:05 18:09	06:20 18:40	06:31 20:12	05:59 20:42	05:53 20:58	06:12 20:46	06:42 20:08	07:13 19:17	06:44 17:30	07:20 16:59	07:45 17:00
26	07:39 17:32	07:03 18:10	06:18 18:41	06:30 20:13	05:58 20:43	05:53 20:58	06:13 20:46	06:43 20:06	07:14 19:15	06:45 17:28	07:21 16:59	07:46 17:01
27	07:38 17:33	07:02 18:11	06:17 18:42	06:28 20:14	05:57 20:43	05:53 20:58	06:14 20:45	06:44 20:05	07:15 19:13	06:47 17:27	07:23 16:58	07:46 17:02
28	07:38 17:35	07:00 18:12	06:15 18:43	06:27 20:15	05:57 20:44	05:54 20:58	06:15 20:44	06:45 20:03	07:16 19:12	06:48 17:26	07:24 16:58	07:46 17:02
29	07:37 17:36		07:13 19:44	06:26 20:16	05:56 20:45	05:54 20:58	06:16 20:43	06:46 20:02	07:17 19:10	06:49 17:24	07:25 16:57	07:47 17:03
30	07:36 17:37		07:12 19:45	06:24 20:17	05:56 20:46	05:55 20:58	06:17 20:42	06:47 20:00	07:18 19:08	06:50 17:23	07:26 16:57	07:47 17:04
31	07:35 17:38		07:10 19:46		05:55 20:47		06:18 20:41	06:48 19:59		06:51 17:22		07:47 17:05
Potential sun hours	298	298	370	398	447	451	458	427	375	346	299	289
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

Calculation: SHADOW\_Real case\_MapWTG: MA11 - VESTAS V172-7.2 7200 172.0 !OI! hub: 114,0 m (TOT: 200,0 m) (11)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June
1	07:47 16:11-16:34/23 17:06	07:34 15:48-16:14/26 17:40 16:31-17:00/29	06:59 15:27-17:12/105 18:13	07:08 18:05-18:41/36 19:47	06:23 18:05-18:48/43 20:18	05:54 20:48
2	07:47 16:11-16:35/24 17:07	07:33 15:47-16:15/28 17:41 16:32-17:01/29	06:57 15:27-17:11/104 18:14	07:07 18:03-18:42/39 19:48	06:22 18:07-18:47/40 20:19	05:54 20:48
3	07:48 16:11-16:36/25 17:07	07:32 15:45-16:16/31 17:42 16:32-17:02/30	06:56 15:27-17:10/103 18:16	07:05 18:02-18:42/40 19:49	06:20 18:08-18:45/37 20:20	05:54 20:49
4	07:48 16:11-16:36/25 17:08	07:31 15:44-16:16/32 17:43 16:32-17:04/32	06:54 15:27-17:09/102 18:17	07:03 18:01-18:44/43 19:50	06:19 18:10-18:44/34 20:22	05:53 20:50
5	07:48 16:12-16:37/25 17:09	07:30 15:42-16:17/35 17:12-17:13/1 17:45 16:32-17:05/33	06:53 15:27-17:08/101 18:18	07:02 18:00-18:45/45 19:51	06:18 18:11-18:41/30 20:23	05:53 20:50
6	07:48 16:11-16:37/26 17:10	07:29 15:41-16:19/38 17:09-17:14/5 17:46 16:32-17:06/34	06:51 15:28-17:07/99 18:19	07:00 18:00-18:47/47 19:52	06:17 18:14-18:39/25 20:24	05:53 20:51
7	07:48 16:11-16:38/27 17:11	07:28 15:40-16:20/40 17:08-17:15/7 17:47 16:33-17:06/33	06:49 15:28-17:05/97 18:20	06:59 17:59-18:48/49 19:53	06:16 18:17-18:36/19 20:25	05:52 20:52
8	07:47 16:11-16:39/28 17:12	07:27 15:39-16:21/42 17:07-17:16/9 17:48 16:33-17:06/33	06:48 15:29-17:03/94 18:21	06:57 17:58-18:49/51 19:54	06:14 18:21-18:32/11 20:26	05:52 20:52
9	07:47 16:12-16:40/28 17:13	07:26 15:37-16:22/45 17:50 16:31-17:16/45	06:46 15:29-17:01/92 18:22	06:55 17:58-18:50/52 19:55	06:13 18:05-18:35/10 20:27	05:52 20:53
10	07:47 16:12-16:41/29 17:14	07:25 15:36-16:23/47 17:51 16:30-17:17/47	06:45 15:29-16:58/89 18:23	06:54 17:57-18:51/54 19:56	06:12 18:06-18:36/11 20:28	05:52 20:53
11	07:47 16:12-16:41/29 17:15	07:23 15:36-16:25/49 17:52 16:29-17:18/49	06:43 15:30-16:56/86 18:25	06:52 17:57-18:53/56 19:57	06:11 18:07-18:37/12 20:29	05:51 20:54
12	07:47 16:12-16:43/31 17:16	07:22 15:35-16:26/51 17:53 16:28-17:20/52	06:41 15:31-16:55/84 18:26	06:51 17:57-18:54/57 19:58	06:10 18:08-18:38/13 20:30	05:51 20:54
13	07:46 16:13-16:44/31 17:17	07:21 15:33-17:20/107 17:54	06:40 15:31-16:54/83 18:27	06:49 17:56-18:54/58 20:00	06:09 18:09-18:39/14 20:31	05:51 20:55
14	07:46 16:13-16:44/31 17:18	07:20 15:33-17:21/108 17:56	06:38 15:32-16:53/81 18:28	06:47 17:56-18:56/60 20:01	06:08 18:10-18:40/15 20:32	05:51 20:55
15	07:46 16:13-16:46/33 17:19	07:18 15:32-17:22/110 17:57	06:36 15:33-16:52/79 18:29	06:46 17:56-18:57/61 20:02	06:07 18:11-18:41/16 20:33	05:51 20:56
16	07:45 16:13-16:46/33 17:21	07:17 15:31-17:22/111 17:58	06:35 15:33-16:51/78 18:30	06:44 17:56-18:59/63 20:03	06:06 18:12-18:42/17 20:34	05:51 20:56
17	07:45 16:14-16:48/34 17:22	07:16 15:31-17:23/112 17:59	06:33 15:35-16:50/75 18:31	06:43 17:56-19:00/64 20:04	06:05 18:13-18:43/18 20:35	05:51 20:57
18	07:44 16:14-16:48/34 17:23	07:15 15:31-17:25/114 18:00	06:32 15:36-16:49/73 18:32	06:41 17:57-19:00/63 20:05	06:04 18:14-18:44/19 20:36	05:51 20:57
19	07:44 16:15-16:49/34 17:24	07:13 15:29-17:23/114 18:02	06:30 15:37-16:47/70 18:33	06:40 17:56-18:59/63 20:06	06:03 18:15-18:45/20 20:36	05:51 20:57
20	07:43 16:15-16:50/35 17:25	07:12 15:29-17:22/113 18:03	06:28 15:39-16:47/68 18:34	06:38 17:57-18:58/61 20:07	06:02 18:16-18:46/21 20:37	05:52 20:57
21	07:43 16:15-16:50/35 17:26	07:10 15:29-17:18/109 18:04	06:27 15:40-16:45/65 18:35	06:37 17:58-18:58/60 20:08	06:02 18:17-18:47/22 20:38	05:52 20:58
22	07:42 16:17-16:52/35 17:27	07:09 15:28-17:13/105 18:05	06:25 15:41-16:43/62 18:36	06:35 17:58-18:57/59 20:09	06:01 18:18-18:48/23 20:39	05:52 20:58
23	07:41 16:17-16:52/35 17:29	07:08 15:28-17:14/106 18:06	06:23 15:43-16:42/59 18:37 17:31-17:34/3	06:34 17:59-18:57/58 20:10	06:00 18:19-18:49/24 20:40	05:52 20:58
24	07:41 16:18-16:53/35 17:30	07:06 15:28-17:14/106 18:08	06:22 15:44-16:40/56 18:39 17:23-17:35/12	06:33 17:59-18:55/56 20:11	05:59 18:20-18:50/25 20:41	05:52 20:58
25	07:40 16:18-16:54/36 17:31	07:05 15:28-17:14/106 18:09	06:20 15:46-16:37/51 18:40 17:19-17:35/16	06:31 18:00-18:55/55 20:12	05:59 18:21-18:51/26 20:42	05:53 20:58
26	07:39 16:20-16:56/36 17:32	07:03 15:27-17:13/106 18:10	06:18 15:49-16:36/47 18:41 17:16-17:36/20	06:30 18:01-18:54/53 20:13	05:58 18:22-18:52/27 20:43	05:53 20:58
27	07:39 16:03-16:11/8 17:33 16:21-16:57/36	07:02 15:28-17:13/105 18:11	06:17 15:51-16:33/42 18:42 17:13-17:37/24	06:28 18:01-18:52/51 20:14	05:57 18:23-18:53/28 20:44	05:53 20:59
28	07:38 15:58-16:12/14 17:35 16:22-16:57/35	07:00 15:27-17:12/105 18:12	06:15 15:53-16:30/37 18:43 17:11-17:37/26	06:27 18:02-18:52/50 20:15	05:57 18:24-18:54/29 20:44	05:54 20:59
29	07:37 15:55-16:13/18 17:36 16:24-16:58/34		07:13 16:57-17:27/30 19:44 18:10-18:38/28	06:26 18:03-18:51/48 20:16	05:56 18:25-18:55/30 20:45	05:54 20:59
30	07:36 15:53-16:13/20 17:37 16:25-16:58/33		07:12 17:01-17:22/21 19:45 18:07-18:39/32	06:24 18:04-18:49/45 20:17	05:55 18:26-18:56/31 20:46	05:55 20:59
31	07:35 15:50-16:14/24 17:38 16:28-16:59/31		07:10 18:06-18:39/33 19:46		05:55 18:27-18:57/32 20:47	
Potential sun hours	298	298	370	398	448	451
Sum of minutes with flicker	1050	2669	2427	1597	239	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

Calculation: SHADOW\_Real case\_MapWTG: MA11 - VESTAS V172-7.2 7200 172.0 IOI hub: 114,0 m (TOT: 200,0 m) (11)  
Sunshine probability S (Average daily sunshine hours) [OLBIA]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

### Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	July	August	September	October	November	December
1	05:55 20:58	06:19 20:40	06:49 17:56-18:52/56 19:57	07:19 16:11-17:34/83 19:07	06:52 15:06-15:53/47 17:21 16:00-16:47/47	07:27 15:54-16:23/29 16:57
2	05:56 20:58	06:20 20:39	06:50 17:56-18:50/54 19:55	07:20 16:09-17:34/85 19:05	06:54 15:07-15:51/44 16:35-16:45/10 17:19 16:01-16:34/33	07:28 15:54-16:23/29 16:56
3	05:56 20:58	06:21 20:38	06:51 17:56-18:48/52 19:54	07:21 16:08-17:35/87 19:04	06:55 15:08-15:50/42 16:36-16:44/8 17:18 16:02-16:35/33	07:29 15:55-16:23/28 16:56
4	05:57 20:58	06:22 20:36	06:52 17:56-18:47/51 19:52	07:22 16:07-17:38/91 19:02	06:56 15:10-15:50/40 16:38-16:44/6 17:17 16:03-16:36/33	07:30 15:55-16:23/28 16:56
5	05:57 20:58	06:23 18:29-18:43/14 20:35	06:53 17:55-18:44/49 19:50	07:23 16:06-17:39/93 19:00	06:57 15:11-15:48/37 16:39-16:43/4 17:16 16:02-16:35/33	07:31 15:56-16:23/27 16:56
6	05:58 20:58	06:23 18:25-18:47/22 20:34	06:54 17:55-18:42/47 19:49	07:24 16:05-17:41/96 18:59	06:58 15:12-15:47/35 17:15 16:02-16:34/32	07:32 15:57-16:23/26 16:56
7	05:58 20:57	06:24 18:23-18:49/26 20:33	06:55 17:55-18:40/45 19:47	07:25 16:04-17:42/98 18:57	06:59 15:14-15:46/32 17:14 16:02-16:33/31	07:33 15:58-16:23/25 16:56
8	05:59 20:57	06:25 18:20-18:51/31 20:32	06:56 17:55-18:39/44 19:46	07:26 16:03-17:43/100 18:55	07:01 15:16-15:47/31 17:13 16:02-16:33/31	07:34 15:58-16:23/25 16:55
9	06:00 20:57	06:26 18:18-18:53/35 20:30	06:57 17:56-18:37/41 19:44	07:27 16:02-17:43/101 18:54	07:02 15:18-15:46/28 17:12 16:02-16:32/30	07:35 15:59-16:24/25 16:55
10	06:00 20:56	06:27 18:17-18:54/37 20:29	06:58 17:56-18:35/39 19:42	07:28 16:02-17:44/102 18:52	07:03 15:19-15:45/26 17:11 16:02-16:31/29	07:36 16:00-16:24/24 16:55
11	06:01 20:56	06:28 18:15-18:56/41 20:28	06:59 17:57-18:33/36 19:41	07:29 16:01-17:44/103 18:51	07:04 15:21-15:45/24 17:10 15:59-16:30/31	07:36 16:01-16:24/23 16:56
12	06:02 20:55	06:29 18:13-18:57/44 20:27	07:00 17:58-18:31/33 19:39	07:30 16:00-17:45/105 18:49	07:05 15:25-15:45/20 17:09 15:57-16:30/33	07:37 16:02-16:25/23 16:56
13	06:02 20:55	06:30 18:12-18:58/46 20:25	07:01 16:53-17:12/19 19:37	07:31 16:00-17:45/105 18:47	07:07 15:27-15:44/17 17:08 15:55-16:30/35	07:38 16:02-16:25/23 16:56
14	06:03 20:54	06:31 18:11-18:59/48 20:24	07:02 16:48-17:17/29 19:36	07:32 15:59-17:45/106 18:46	07:08 15:31-15:44/13 17:07 15:54-16:29/35	07:39 16:03-16:25/22 16:56
15	06:04 20:54	06:32 18:09-19:00/51 20:23	07:03 16:44-17:19/35 19:34	07:33 16:00-17:46/106 18:44	07:09 15:35-15:43/8 17:06 15:53-16:28/35	07:40 16:04-16:25/21 16:56
16	06:05 20:53	06:33 18:08-19:00/52 20:21	07:04 16:41-17:22/41 19:32	07:34 16:00-17:46/106 18:43	07:10 15:53-16:29/36 17:05	07:40 16:04-16:25/21 16:56
17	06:05 20:53	06:34 18:07-19:01/54 20:20	07:05 16:38-17:24/46 19:30	07:35 15:59-17:46/107 18:41	07:11 15:52-16:28/36 17:04	07:41 16:04-16:24/20 16:57
18	06:06 20:52	06:35 18:06-19:02/56 20:18	07:06 16:35-17:25/50 19:29	07:37 15:59-17:45/106 18:40	07:12 15:51-16:27/36 17:03	07:42 16:05-16:25/20 16:57
19	06:07 20:51	06:36 18:05-19:02/57 20:17	07:07 16:32-17:27/55 19:27	07:38 15:59-17:44/105 18:38	07:14 15:51-16:26/35 17:03	07:42 16:05-16:25/20 16:57
20	06:08 20:50	06:37 18:03-19:02/59 20:15	07:08 16:30-17:28/58 19:25	07:39 15:59-17:43/104 18:37	07:15 15:52-16:27/35 17:02	07:43 16:06-16:26/20 16:58
21	06:09 20:50	06:38 18:02-19:02/60 20:14	07:09 16:28-17:29/61 19:24	07:40 15:59-17:50/111 18:35	07:16 15:51-16:26/35 17:01	07:43 16:07-16:27/20 16:58
22	06:10 20:49	06:39 18:02-19:02/60 20:12	07:10 16:25-17:30/65 19:22	07:41 16:00-17:53/113 18:34	07:17 15:51-16:26/35 17:01	07:44 16:07-16:27/20 16:59
23	06:10 20:48	06:40 18:01-19:02/61 20:11	07:11 16:23-17:31/68 19:20	07:42 16:00-17:54/114 18:33	07:18 15:51-16:25/34 17:00	07:44 16:07-16:27/20 16:59
24	06:11 20:47	06:41 18:00-19:03/63 20:09	07:12 16:21-17:31/70 19:19	07:43 16:00-17:54/114 18:31	07:19 15:51-16:25/34 17:00	07:45 16:08-16:28/20 17:00
25	06:12 20:46	06:42 17:59-19:03/64 20:08	07:13 16:20-17:32/72 19:17	06:44 15:01-16:53/112 17:30	07:20 15:52-16:26/34 16:59	07:45 16:08-16:28/20 17:00
26	06:13 20:46	06:43 17:59-19:02/63 20:06	07:14 16:18-17:33/75 19:15	06:45 15:01-16:51/110 17:28	07:22 15:52-16:25/33 16:59	07:46 16:08-16:28/20 17:01
27	06:14 20:45	06:44 17:58-19:01/63 20:05	07:15 16:16-17:33/77 19:14	06:47 15:02-16:52/110 17:27	07:23 15:52-16:25/33 16:58	07:46 16:09-16:30/21 17:02
28	06:15 20:44	06:45 17:58-18:59/61 20:03	07:16 16:15-17:33/78 19:12	06:48 15:03-16:51/108 17:26	07:24 15:53-16:25/32 16:58	07:46 16:09-16:30/21 17:02
29	06:16 20:43	06:46 17:57-18:57/60 20:02	07:17 16:13-17:34/81 19:10	06:49 15:03-16:50/107 17:24	07:25 15:53-16:24/31 16:57	07:47 16:10-16:32/22 17:03
30	06:17 20:42	06:47 17:57-18:55/58 20:00	07:18 16:12-17:34/82 19:09	06:50 15:04-15:55/51 17:23	07:26 15:53-16:24/31 16:57	07:47 16:10-16:32/22 17:04
31	06:18 20:41	06:48 17:56-18:53/57 19:59	07:19 16:11-17:34/83 19:07	06:51 15:05-15:54/49 17:22	07:27 15:53-16:24/31 16:57	07:47 16:11-16:34/23 17:05
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	0	1343	1777	3188	1483	708

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

Calculation: SHADOW\_Real case\_MapWTG: MA12 - VESTAS V172-7.2 7200 172.0 !OI! hub: 114,0 m (TOT: 200,0 m) (12) Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3,87 4,61 5,62 6,73 8,36 10,04 11,06 9,91 8,03 6,21 4,80 3,87

Operational time

N NE E SE S SW W NW Sum  
956 594 724 502 522 1.378 1.886 1.253 7.815

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:47 17:06	07:34 17:40	06:59 18:13	07:08 19:47	06:23 20:18	05:55 20:47	05:55 20:58	06:19 20:40	06:49 19:57	07:19 19:07	06:52 17:21	07:27 16:57
2	07:47 17:07	07:33 17:41	06:57 18:14	07:07 19:48	06:22 20:19	05:54 20:48	05:56 20:58	06:20 20:39	06:50 19:55	07:20 19:05	06:53 17:19	07:28 16:56
3	07:47 17:07	07:32 17:42	06:56 18:16	07:05 19:49	06:20 20:20	05:54 20:49	05:56 20:58	06:21 20:37	06:51 19:54	07:21 19:03	06:55 17:18	07:29 16:56
4	07:47 17:08	07:31 17:43	06:54 18:17	07:03 19:50	06:19 20:21	05:53 20:50	05:57 20:58	06:22 20:36	06:52 19:52	07:22 19:02	06:56 17:17	07:30 16:56
5	07:47 17:09	07:30 17:45	06:52 18:18	07:02 19:51	06:18 20:22	05:53 20:50	05:57 20:58	06:23 20:35	06:53 19:50	07:23 19:00	06:57 17:16	07:31 16:56
6	07:47 17:10	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:23	05:53 20:51	05:58 20:57	06:24 20:34	06:54 19:49	07:24 18:59	06:58 17:15	07:32 16:56
7	07:47 17:11	07:28 17:47	06:49 18:20	06:59 19:53	06:16 20:24	05:52 20:52	05:58 20:57	06:24 20:33	06:55 19:47	07:25 18:57	06:59 17:14	07:33 16:56
8	07:47 17:12	07:27 17:48	06:48 18:21	06:57 19:54	06:14 20:26	05:52 20:52	05:59 20:57	06:25 20:32	06:56 19:45	07:26 18:55	07:01 17:13	07:34 16:56
9	07:47 17:13	07:26 17:50	06:46 18:22	06:55 19:55	06:13 20:27	05:52 20:53	06:00 20:56	06:26 20:30	06:57 19:44	07:27 18:54	07:02 17:12	07:35 16:55
10	07:47 17:14	07:25 17:51	06:45 18:23	06:54 19:56	06:12 20:28	05:52 20:53	06:00 20:56	06:27 20:29	06:58 19:42	07:28 18:52	07:03 17:11	07:35 16:56
11	07:47 17:15	07:23 17:52	06:43 18:25	06:52 19:57	06:11 20:29	05:51 20:54	06:01 20:56	06:28 20:28	06:59 19:40	07:29 18:51	07:04 17:10	07:36 16:56
12	07:47 17:16	07:22 17:53	06:41 18:26	06:51 19:58	06:10 20:30	05:51 20:54	06:02 20:55	06:29 20:26	07:00 19:39	07:30 18:49	07:05 17:09	07:37 16:56
13	07:46 17:17	07:21 17:54	06:40 18:27	06:49 19:59	06:09 20:31	05:51 20:55	06:02 20:55	06:30 20:25	07:01 19:37	07:31 18:47	07:06 17:08	07:38 16:56
14	07:46 17:18	07:20 17:56	06:38 18:28	06:47 20:00	06:08 20:32	05:51 20:55	06:03 20:54	06:31 20:24	07:02 19:35	07:32 18:46	07:08 17:07	07:39 16:56
15	07:46 17:19	07:18 17:57	06:36 18:29	06:46 20:02	06:07 20:33	05:51 20:56	06:04 20:54	06:32 20:22	07:03 19:34	07:33 18:44	07:09 17:06	07:39 16:56
16	07:45 17:21	07:17 17:58	06:35 18:30	06:44 20:03	06:06 20:33	05:51 20:56	06:05 20:53	06:33 20:21	07:04 19:32	07:34 18:43	07:10 17:05	07:40 16:57
17	07:45 17:22	07:16 17:59	06:33 18:31	06:43 20:04	06:05 20:34	05:51 20:56	06:05 20:52	06:34 20:20	07:05 19:30	07:35 18:41	07:11 17:04	07:41 16:57
18	07:44 17:23	07:14 18:00	06:31 18:32	06:41 20:05	06:04 20:35	05:51 20:57	06:06 20:52	06:35 20:18	07:06 19:29	07:36 18:40	07:12 17:03	07:41 16:57
19	07:44 17:24	07:13 18:02	06:30 18:33	06:40 20:06	06:03 20:36	05:51 20:57	06:07 20:51	06:36 20:17	07:07 19:27	07:38 18:38	07:14 17:03	07:42 16:58
20	07:43 17:25	07:12 18:03	06:28 18:34	06:38 20:07	06:02 20:37	05:52 20:57	06:08 20:50	06:37 20:15	07:08 19:25	07:39 18:37	07:15 17:02	07:43 16:58
21	07:43 17:26	07:10 18:04	06:27 18:35	06:37 20:08	06:02 20:38	05:52 20:58	06:09 20:50	06:38 20:14	07:09 19:24	07:40 18:35	07:16 17:01	07:43 16:58
22	07:42 17:27	07:09 18:05	06:25 18:36	06:35 20:09	06:01 20:39	05:52 20:58	06:10 20:49	06:39 20:12	07:10 19:22	07:41 18:34	07:17 17:01	07:44 16:59
23	07:41 17:29	07:07 18:06	06:23 18:37	06:34 20:10	06:00 20:40	05:52 20:58	06:10 20:48	06:40 20:11	07:11 19:20	07:42 18:33	07:18 17:00	07:44 16:59
24	07:41 17:30	07:06 18:08	06:22 18:38	06:33 20:11	05:59 20:41	05:52 20:58	06:11 20:47	06:41 20:09	07:12 19:19	07:43 18:31	07:19 17:00	07:45 17:00
25	07:40 17:31	07:05 18:09	06:20 18:40	06:31 20:12	05:59 20:42	05:53 20:58	06:12 20:46	06:42 20:08	07:13 19:17	06:44 17:30	07:20 16:59	07:45 17:01
26	07:39 17:32	07:03 18:10	06:18 18:41	06:30 20:13	05:58 20:43	05:53 20:58	06:13 20:45	06:43 20:06	07:14 19:15	06:45 17:28	07:21 16:59	07:46 17:01
27	07:38 17:34	07:02 18:11	06:17 18:42	06:28 20:14	05:57 20:43	05:53 20:58	06:14 20:45	06:44 20:05	07:15 19:13	06:47 17:27	07:23 16:58	07:46 17:02
28	07:38 17:35	07:00 18:12	06:15 18:43	06:27 20:15	05:57 20:44	05:54 20:58	06:15 20:44	06:45 20:03	07:16 19:12	06:48 17:26	07:24 16:58	07:46 17:02
29	07:37 17:36		07:13 19:44	06:26 20:16	05:56 20:45	05:54 20:58	06:16 20:43	06:46 20:02	07:17 19:10	06:49 17:24	07:25 16:57	07:46 17:03
30	07:36 17:37		07:12 19:45	06:24 20:17	05:56 20:46	05:55 20:58	06:17 20:42	06:47 20:00	07:18 19:08	06:50 17:23	07:26 16:57	07:47 17:04
31	07:35 17:38		07:10 19:46		05:55 20:47		06:18 20:41	06:48 19:59		06:51 17:22		07:47 17:05
Potential sun hours	298	298	370	398	447	451	458	427	375	346	299	289
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

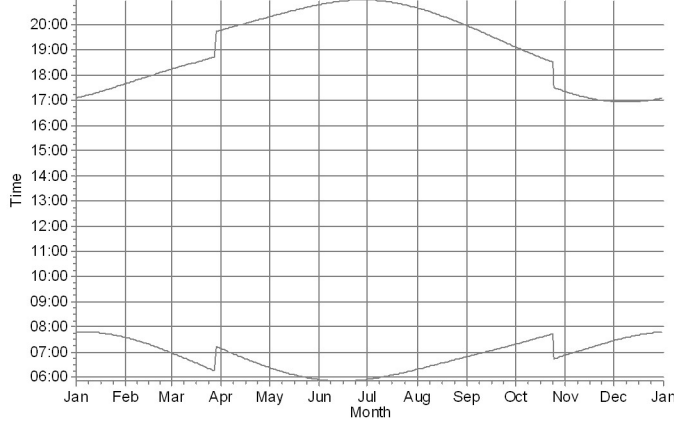
Table layout: For each day in each month the following matrix apply

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

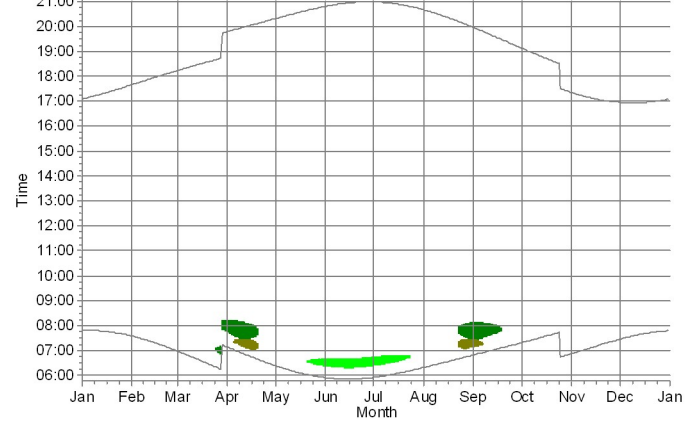
## SHADOW - Calendar per WTG, graphical

Calculation: SHADOW\_Real case\_Map

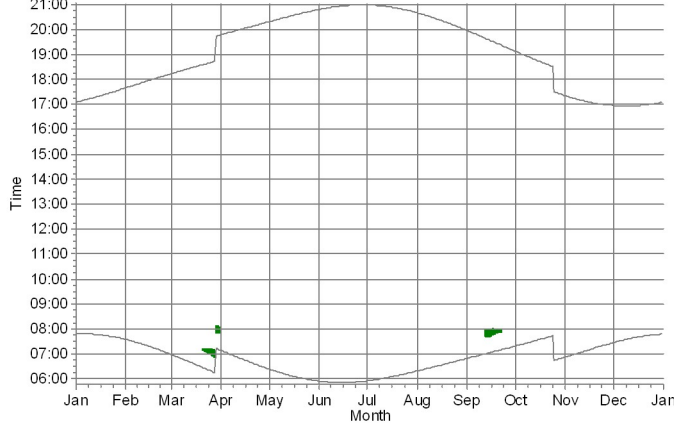
MA01: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (1)



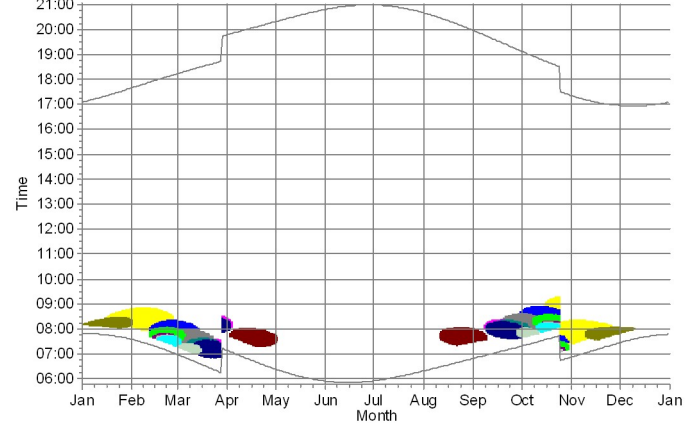
MA02: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (2)



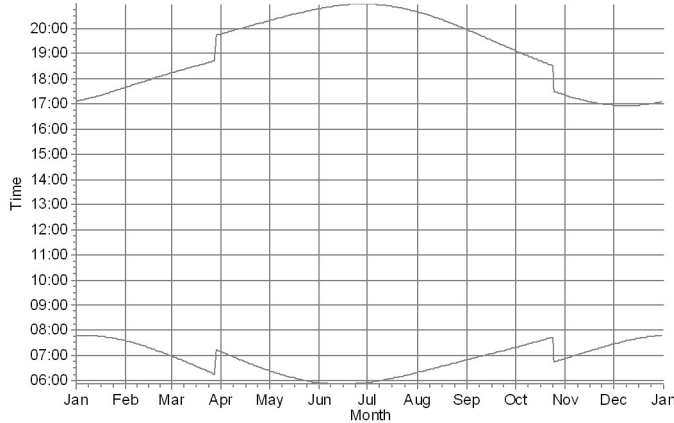
MA03: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (3)



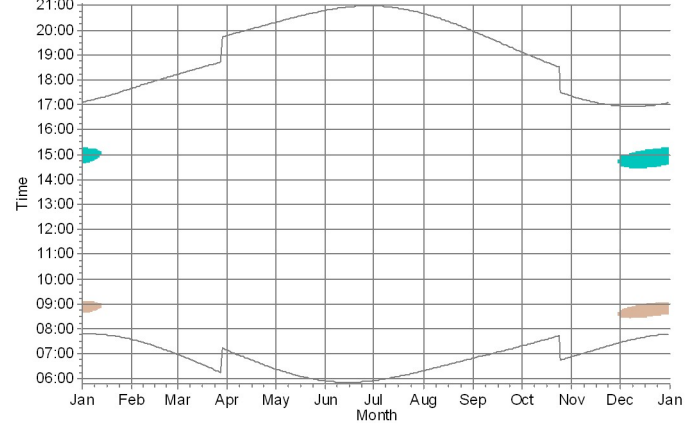
MA04: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (4)



















MA05: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (5)



MA06: VESTAS V172-7.2 7200 172.0 !O! hub: 114,0 m (TOT: 200,0 m) (6)



Shadow receptors

- |  |   |   |
|--|---|---|
|  R06: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (1) |  R19: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (7)  |  R39: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (13) |
|  R10: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (2) |  R24: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (8)  |  R43: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (14) |
|  R12: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (3) |  R28: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (9)  |  R62: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (23) |
|  R13: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (4) |  R30: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (10) |  R74: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (22) |
|  R16: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (5) |  R36: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (11) |   |
|  R18: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (6) |  R37: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (12) |   |

Project:

WF\_Monti\_Alà

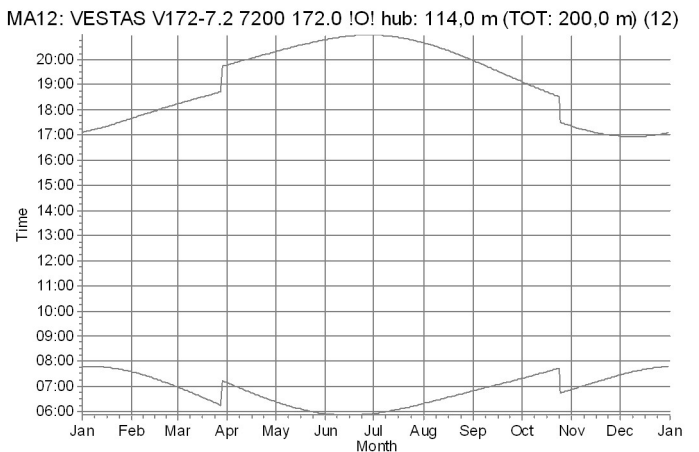
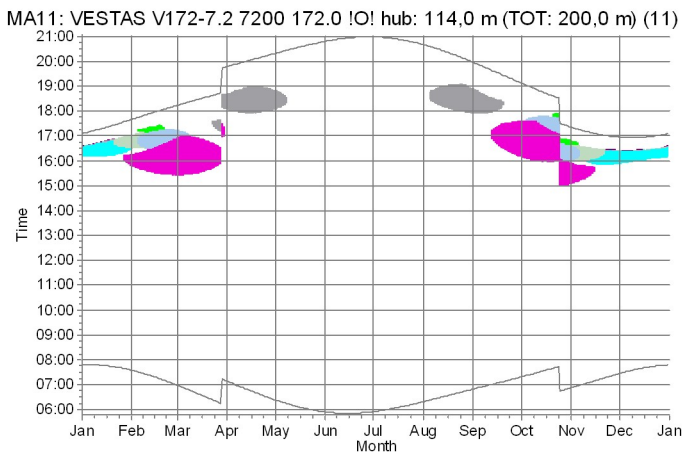
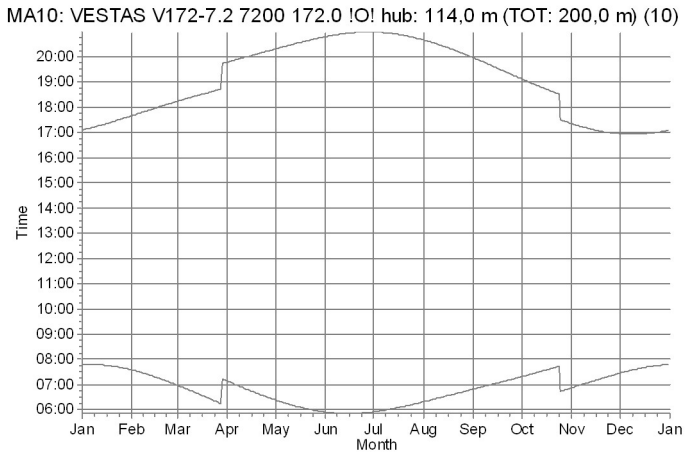
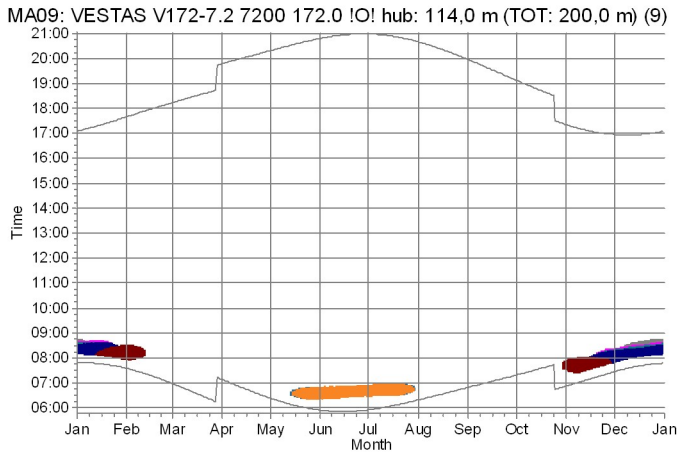
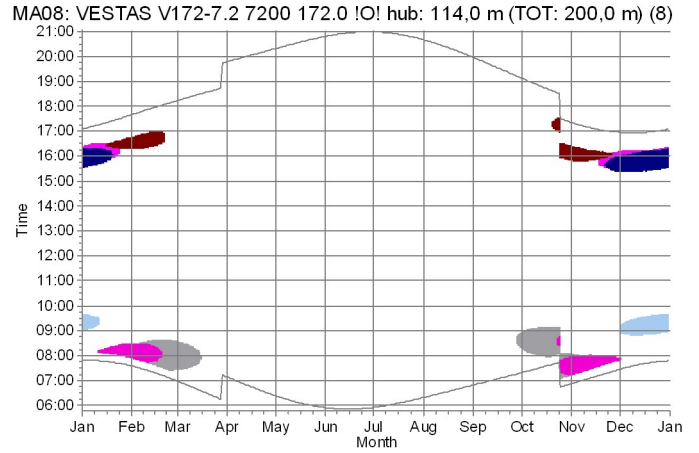
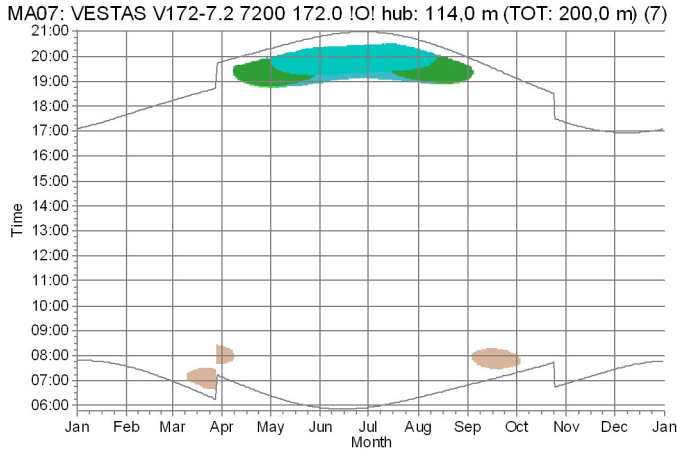
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Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
09/05/2023 18:53/3.6.361

## SHADOW - Calendar per WTG, graphical

Calculation: SHADOW\_Real case\_Map

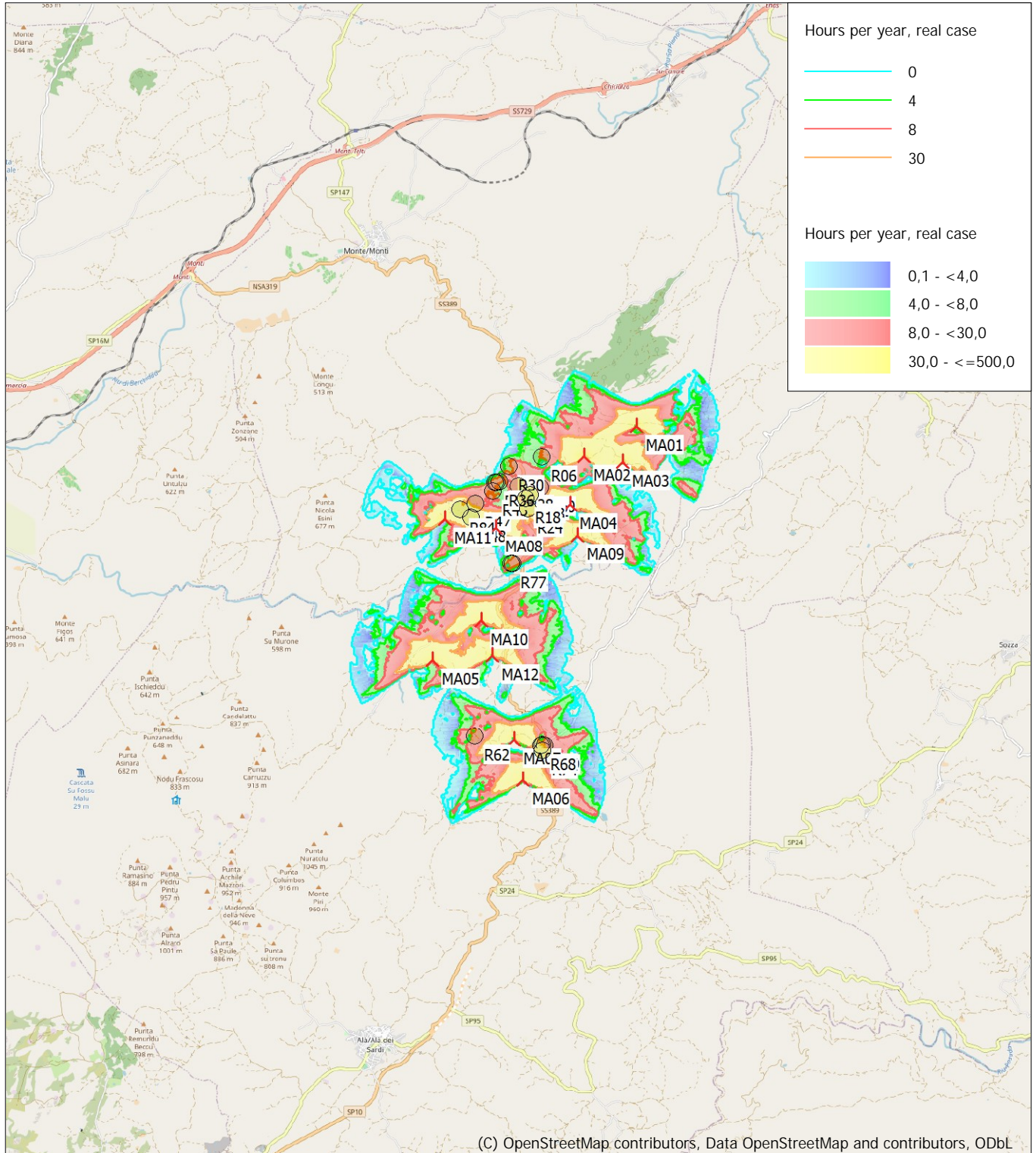


Shadow receptors

 R10: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (2)	 R36: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (11)	 R68: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (18)
 R12: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (3)	 R37: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (12)	 R69: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (19)
 R13: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (4)	 R39: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (13)	 R74: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (22)
 R16: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (5)	 R43: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (14)	 R77: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (20)
 R18: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (6)	 R47: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (15)	 R78: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (21)
 R19: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (7)	 R48: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (16)	 R84: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (24)
 R24: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (8)	 R62: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (23)	
 R28: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (9)	 R67: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (17)	

## SHADOW - Map

Calculation: SHADOW\_Real case\_Map



(C) OpenStreetMap contributors, Data OpenStreetMap and contributors, ODbL

0 2,5 5 7,5 10km

Map: EMD OpenStreetMap , Print scale 1:125.000, Map center Geo WGS84 East: 9,364131° E North: 40,741028° N

New WTG

Shadow receptor

Flicker map level: Elevation Grid Data Object: WF\_Monti\_Alà\_EMDGrid\_3.wpg (12)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m