

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



Progetto Definitivo

## Parco Eolico Abruzzo

Titolo elaborato:

### Studio degli effetti dello shadow flickering

CC	GD	GD	EMISSIONE	07/12/23	0	0
REDATTO	CONTR.	APPROV.	DESCRIZIONE REVISIONE DOCUMENTO	DATA	REV	

#### PROPONENTE



#### SVILUPPO PRIME SRL

Via A. De Gasperi n. 8  
74023 Grottaglie (TA)

#### CONSULENZA



#### GECODOR SRL

Via A. De Gasperi n. 8  
74023 Grottaglie (TA)

#### PROGETTISTA

Ing. Gaetano D'Oronzio

Codice  
**ABSA095**

Formato A4

Scala

Foglio 1 di 296

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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 "Abruzzo" 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 66 MWp ed è costituito da 11 aerogeneratori, di potenza nominale pari a 6 MW, altezza della torre pari a 135 m e rotore pari a 170 m. Gli aerogeneratori sono collegati tra loro mediante un cavidotto interrato in media tensione 33 kV che convoglia l'elettricità presso una Stazione Elettrica Utente (SEU) di trasformazione 36/33 kV, al fine di collegarsi alla Stazione Elettrica (SE) 380/150/36 kV della Rete di Trasmissione Nazionale (RTN) Terna di Fresagrandinaria attraverso un cavidotto interrato a 36 kV.

L'impianto interessa prevalentemente i Comuni di Cupello (CH), dove ricadono 3 aerogeneratori, Fresagrandinaria (CH), dove ricadono 2 aerogeneratore, la SEU e SE RTN Terna 380/150/36 kV, Palmoli (CH), dove ricadono 2 aerogeneratori, Tuffillo (CH), dove ricadono 2 aerogeneratori, e Furci (CH), dove ricadono 2 aerogeneratori (Figura 2.1).

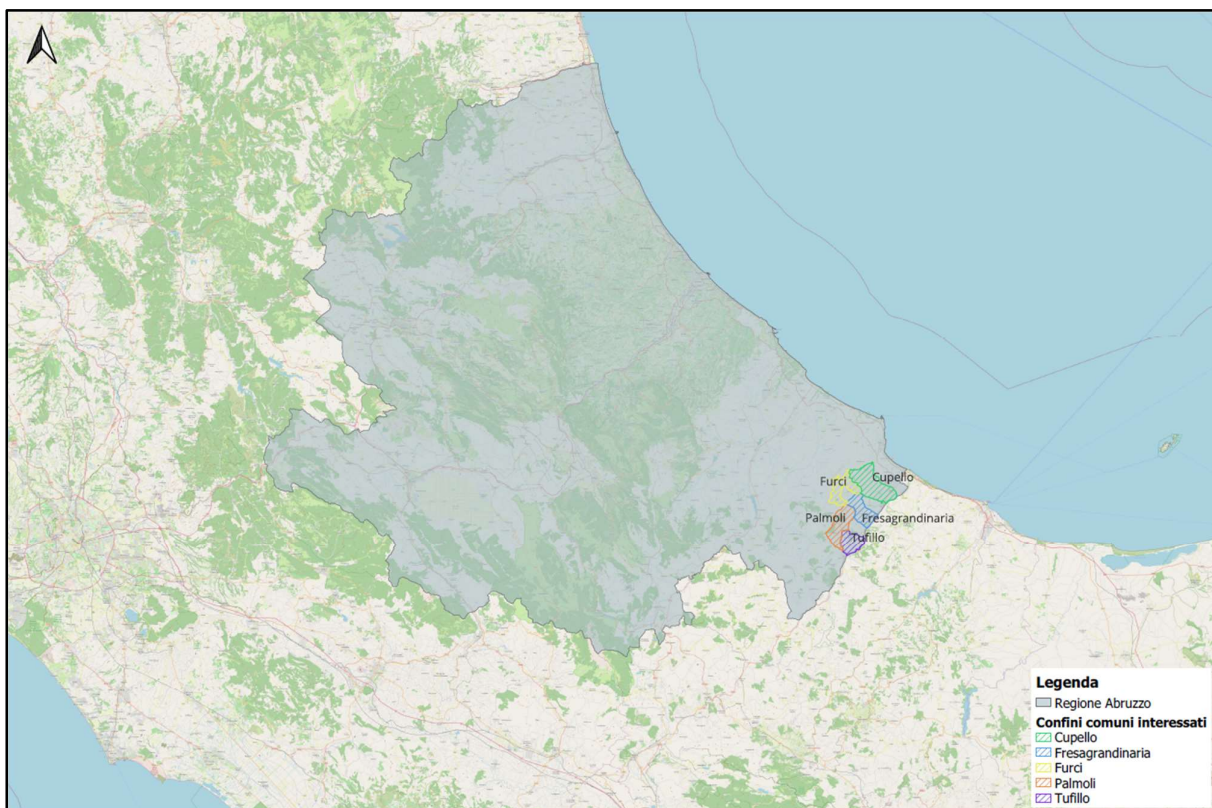
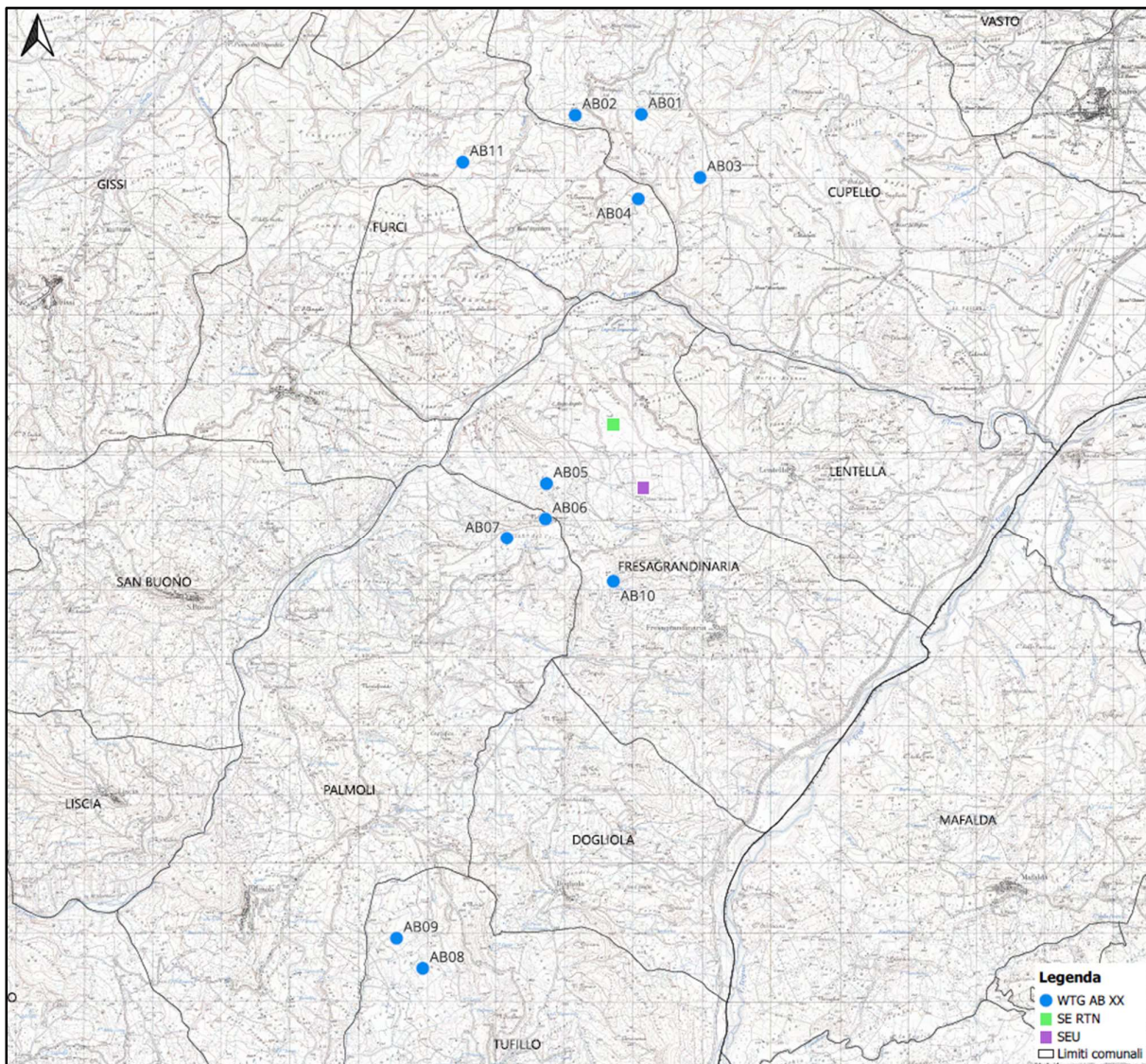
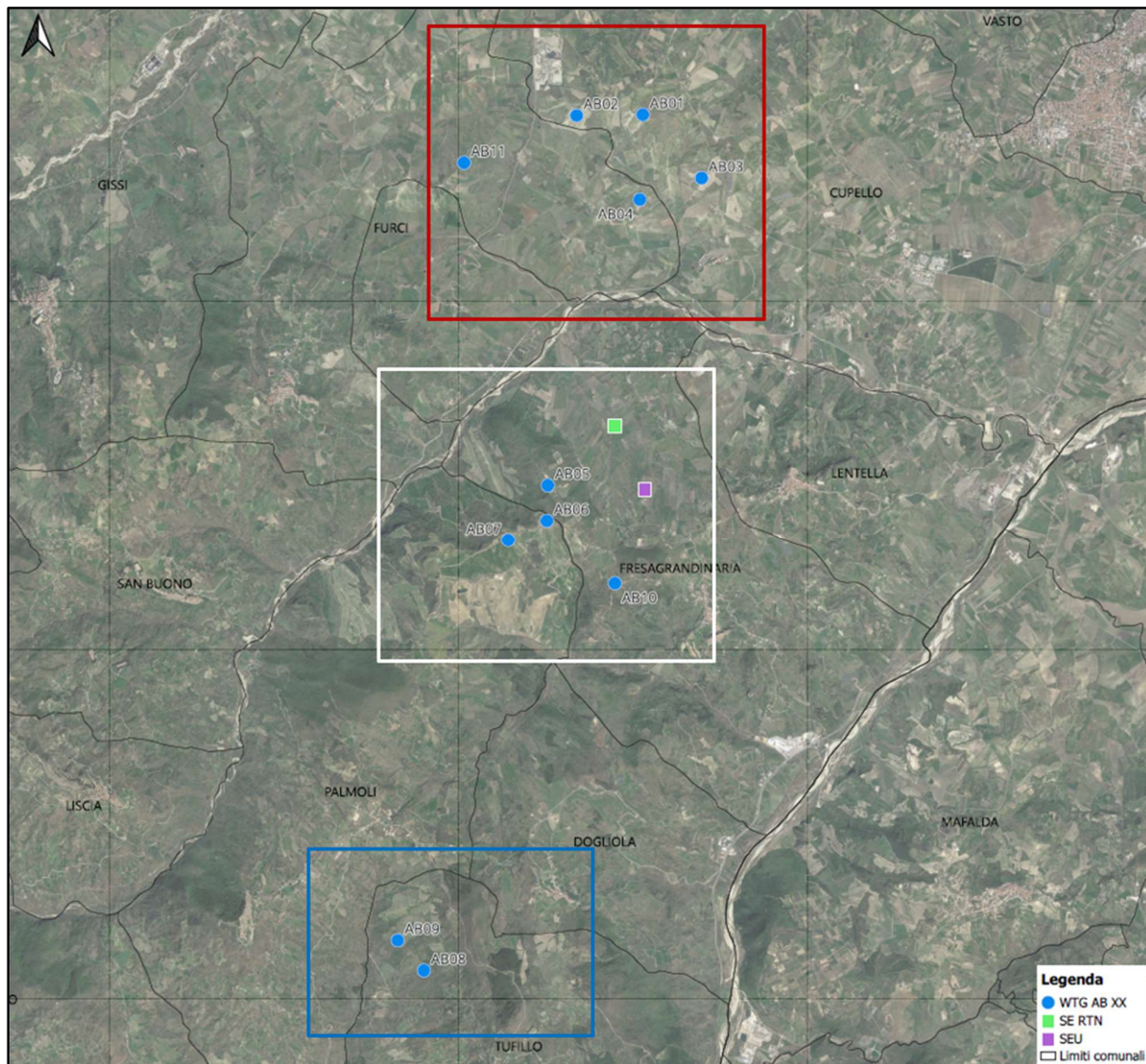


Figura 2.1: Inquadramento territoriale - Limiti amministrativi comuni interessati



**Figura 2.2:** Layout d'impianto su IGM con i limiti amministrativi dei comuni interessati

Il parco eolico può essere inteso come suddiviso in tre parti (**Figura 2.3**): quella ricadente a sud-ovest del centro abitato di Cupello (Zona 1), costituita da 5 WTG, quella ricadente a nord-ovest del centro abitato di Fresagrandinaria (Zona 2), costituita da 4 WTG, e quella ricadente a nord-ovest del centro abitato di Tuffillo, costituita da 2 WTG (Zona 3).



**Figura 2.3:** Layout d’impianto su ortofoto suddiviso in zone: Zona 1 (rettangolo rosso), Zona 2 (rettangolo bianco) e Zona 3 (rettangolo blu)

Le turbine eoliche sono collegate mediante un sistema di linee elettriche interrato di Media Tensione a 33 kV allocate prevalentemente in corrispondenza del sistema di viabilità interna, necessario alla costruzione e alla gestione futura dell’impianto e realizzato prevalentemente adeguando il sistema viario esistente e realizzando nuovi tratti di raccordo per consentire il transito dei mezzi eccezionali.

Le linee elettriche in Media Tensione vengono collegate alla SEU 36/33 kV, posizionata in posizione baricentrica rispetto agli aerogeneratori di progetto e a sua volta collegata, mediante un sistema di 2 linee elettriche interrato a 36 kV, alla Stazione Elettrica (SE) di trasformazione 380/150/36 kV, da inserire in entrata - uscita alla linea 380 kV “Larino-Gissi”.

## 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 si prevede di installare un aerogeneratore modello Siemens Gamesa SG170, di potenza nominale pari a 6,0 MWp, altezza torre all'hub pari a 135 m e diametro del rotore pari a 170 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 ed è posto sopravvento al sostegno con mozzo rigido in acciaio.

Altre caratteristiche principali sono riassunte nella **Tabella 2.1.1** e in allegato alla presente.

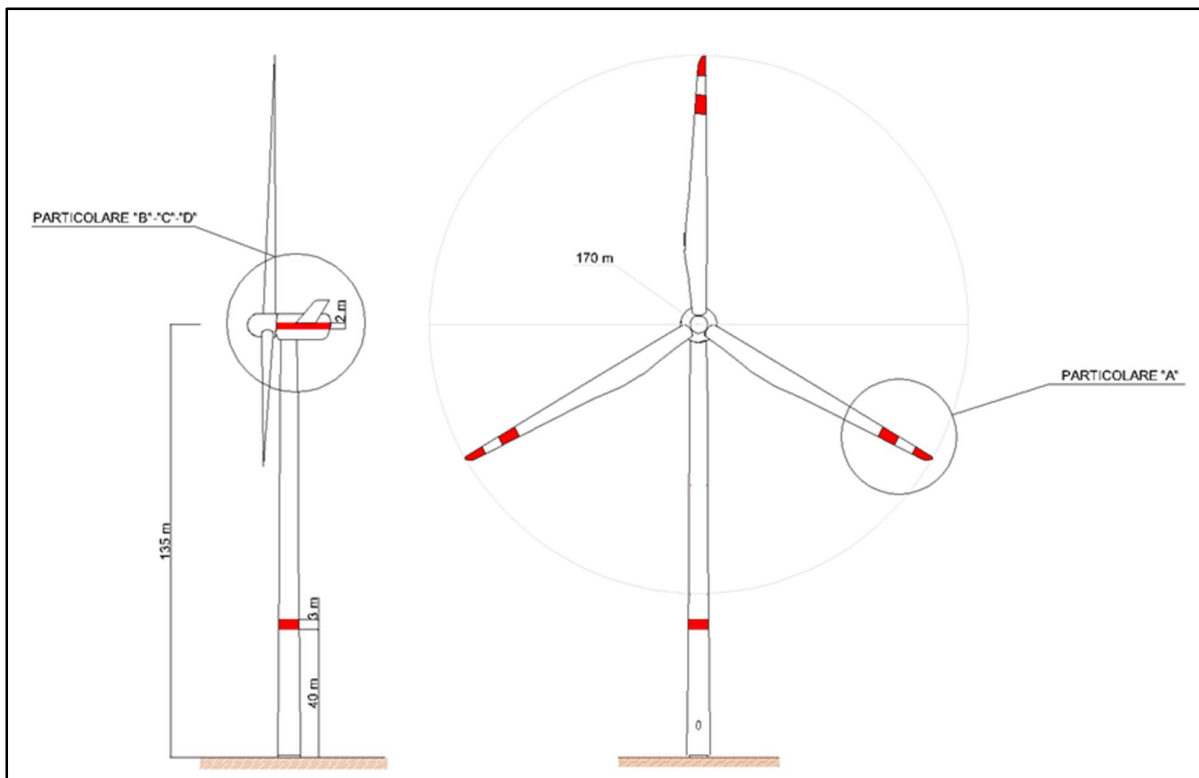


Figura 2.1.1: Profilo aerogeneratore SG170 – 6,0 MWp – HH = 135 m – D = 170 m

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

Tabella 2.1.1: Specifiche tecniche aerogeneratore di progetto

## 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 perseguibile sono stati progettati tratti di nuova viabilità seguendo il profilo naturale del terreno senza interferire con il reticolo idrografico presente in sito.

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



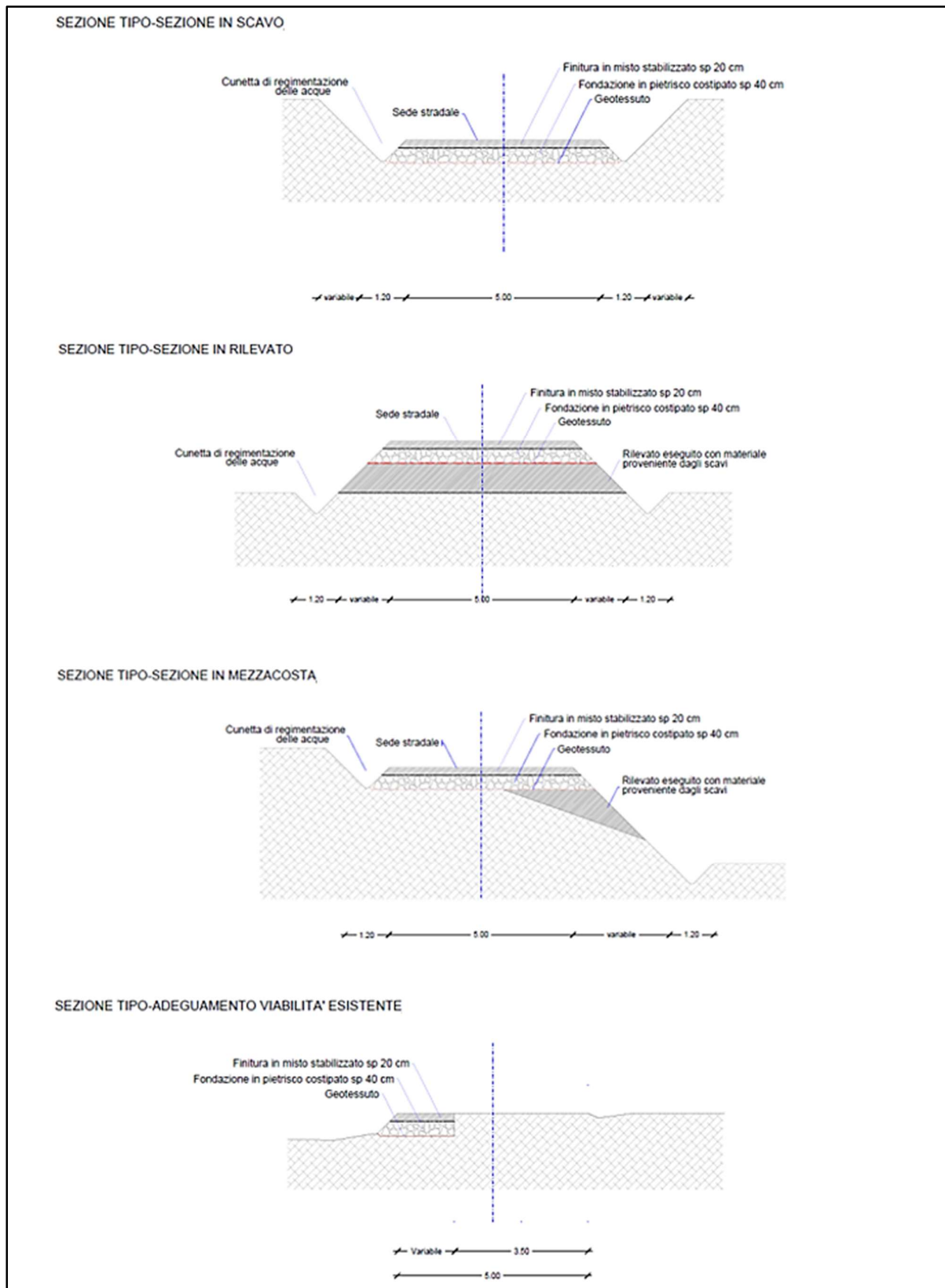
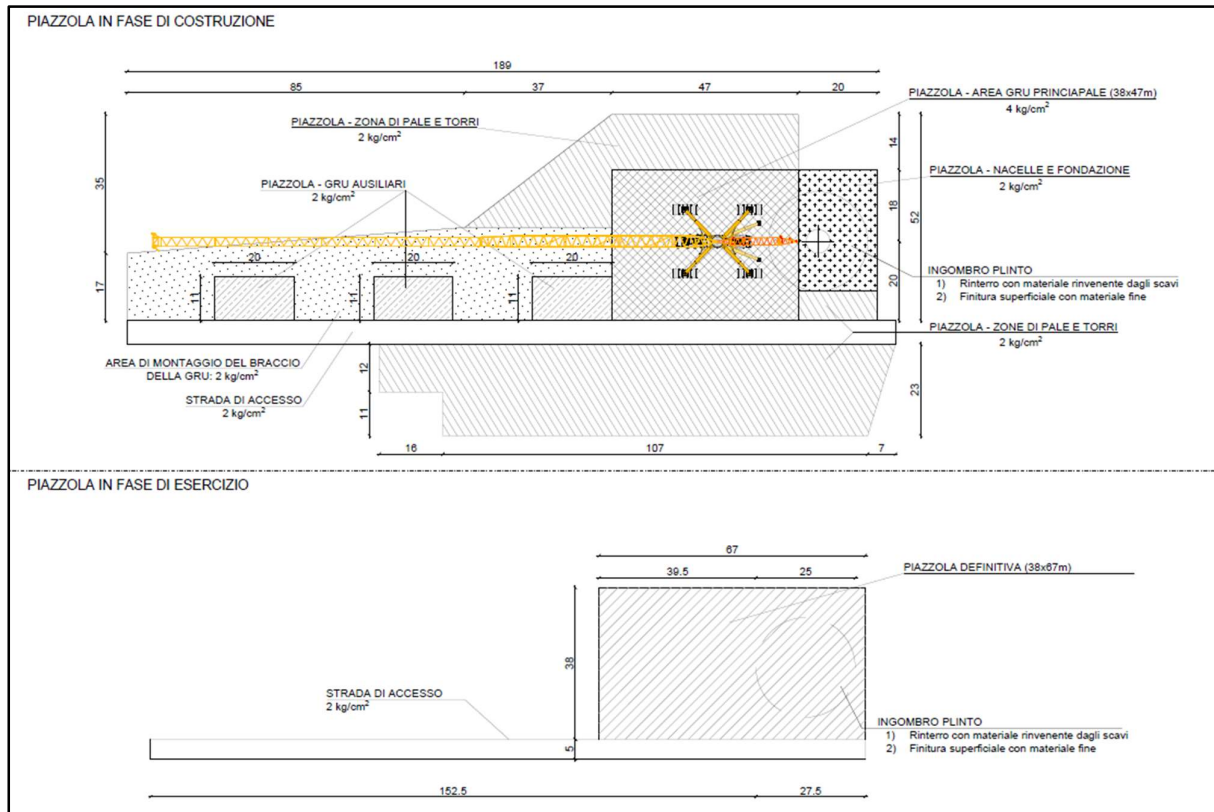


Figura 2.2.1: Sezioni tipo viabilità parco eolico

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, necessaria alla fase di esercizio e manutenzione dell'impianto (**Figura 2.2.2**).



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

### 3. CARATTERISTICHE PRINCIPALI DEL PARCO EOLICO

L'impianto eolico sarà costituito essenzialmente da 11 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.

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 "ABEG011 Piano Particolare 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 allorquando 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 ricevitore; 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.

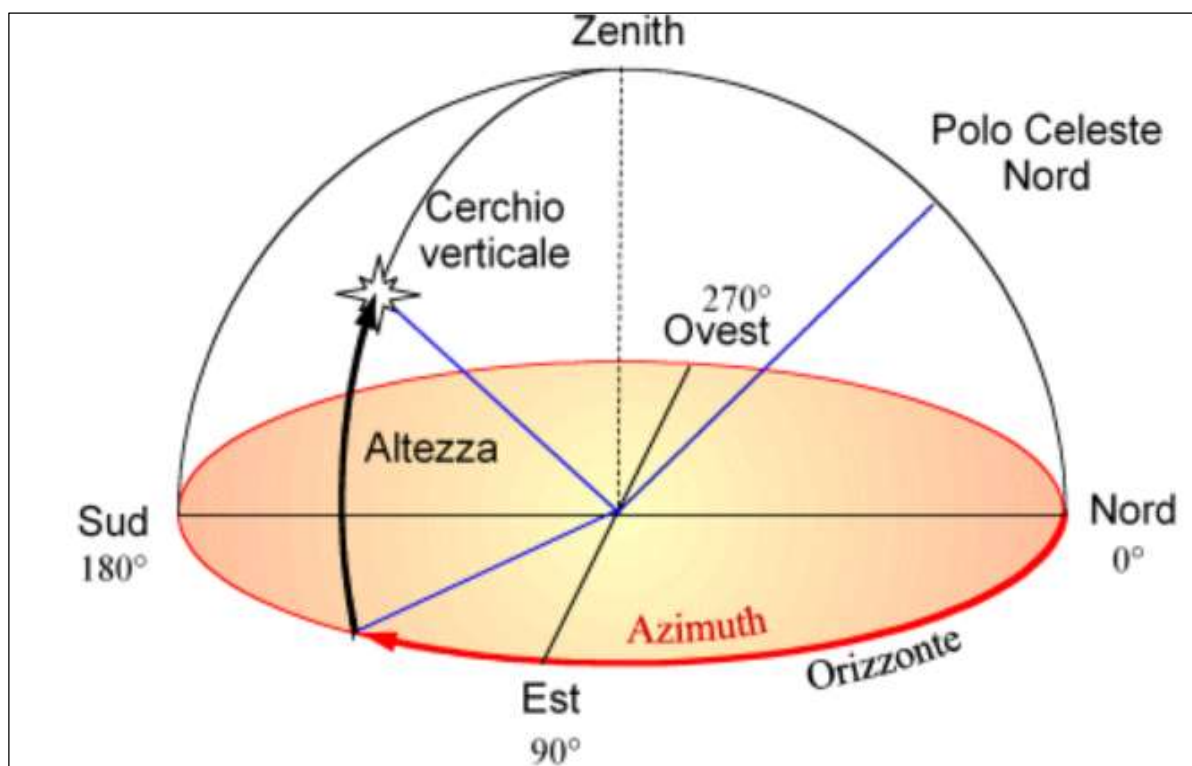
In linea di massima, si può ritenere che l'area soggetta al fenomeno in questione non si estenda oltre i 500 ÷ 1000 m dall'aerogeneratore e le zone a maggiore impatto ricadono entro i 300 m di distanza dalle turbine.

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 11 aerogeneratori di nuova realizzazione e relativi al progetto del Parco Eolico Abruzzo.

Gli aerogeneratori di progetto hanno un'altezza torre all'hub di 135 m, diametro del rotore di 170 m, potenza nominale di 6,0 MWp e 8,8 giri al minuto (RPM nominale).

La verifica è stata effettuata in corrispondenza di 70 ricettori, rappresentativi di fabbricati di "civile abitazione", riportati nella **Tabella 6.1**, sui quali l'effetto trattato potrebbe avere una certa rilevanza:

Ricettore	Coordinate UTM WGS 84, 33°		Comune	WTG più vicina	Distanza WTG più vicina	Foglio	Particella	Stato accatastamento
	Latitudine	Longitudine						
R2	41.983636°	14.625433°	Palmoli	AB07	533	8	103	A04
R3	41.983442°	14.624331°	Palmoli	AB07	582	8	105	A04
R8	41.987066°	14.643896°	Fresagrandinaria	AB06	946	7	4049	A04
R9	41.987427°	14.642686°	Fresagrandinaria	AB06	838	7	4195	A03
R10	41.987286°	14.642299°	Fresagrandinaria	AB06	822	7	4180; 4178	A03; A04
R11	41.987731°	14.640681°	Fresagrandinaria	AB06	684	7	4167	A04

Ricettore	Coordinate UTM WGS 84, 33°		Comune	WTG più vicina	Distanza WTG più vicina	Foglio	Particella	Stato accatastamento
	Latitudine	Longitudine						
R12	41.987540°	14.640287°	Fresagrandinaria	AB06	662	7	4136	A03
R13	41.987449°	14.640628°	Fresagrandinaria	AB06	693	7	4133	A02
R15	41.988662°	14.639136°	Fresagrandinaria	AB06	514	7	4068	A04
R16	41.988615°	14.638962°	Fresagrandinaria	AB06	505	7	4152	A03
R17	41.990911°	14.644418°	Fresagrandinaria	AB06	892	7	4189; 4191	A04
R20	41.997436°	14.639914°	Fresagrandinaria	AB05	543	3	4074; 4091	A03; A04
R23	41.998140°	14.639636°	Fresagrandinaria	AB05	558	3	4069	A03
R24	42.001586°	14.636895°	Fresagrandinaria	AB05	713	3	4083	A04
R25	41.995961°	14.641087°	Fresagrandinaria	AB05	605	7	4123	A04
R28	42.031269°	14.662139°	Cupello	AB03	522	22	4010	A03
R31	42.035948°	14.671140°	Cupello	AB03	870	19	4025	A03
R39	42.040012°	14.666310°	Cupello	AB03	653	19	4029	A03
R40	42.040130°	14.665851°	Cupello	AB03	640	19	4057	A04
R46	42.044233°	14.658523°	Cupello	AB01	682	14	4014	A04
R47	42.044524°	14.657223°	Cupello	AB01	578	14	4037	A04
R49	42.045782°	14.660730°	Cupello	AB01	886	15	4048	A04
R54	42.041098°	14.644394°	Cupello	AB02	576	13	4062	A07
R56	42.039399°	14.644462°	Cupello	AB02	704	13	4050	A07
R57	42.038917°	14.644123°	Cupello	AB02	725	13	4051	A03
R61	42.035670°	14.671785°	Cupello	AB03	920	19	4030	A04
R65	42.047864°	14.657427°	Cupello	AB01	716	10	4070; 4049	A04
R66	42.048506°	14.657048°	Cupello	AB01	739	10	4065	A04
R67	42.048381°	14.656532°	Cupello	AB01	690	10	418	A03



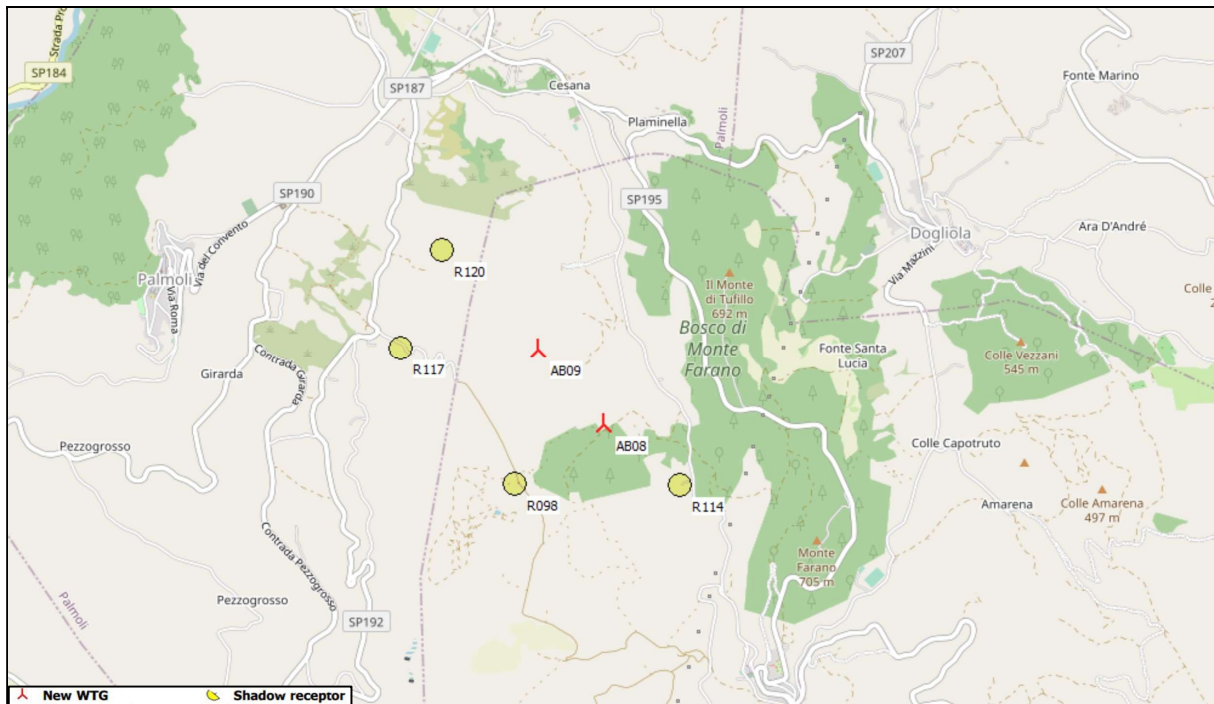
Ricettore	Coordinate UTM WGS 84, 33°		Comune	WTG più vicina	Distanza WTG più vicina	Foglio	Particella	Stato accatastamento
	Latitudine	Longitudine						
R79	42.048926°	14.647094°	Cupello	AB01	587	9	304	A03
R80	42.048766°	14.648893°	Cupello	AB01	516	9	4055	A07
R82	42.048841°	14.643026°	Cupello	AB02	648	8	4098	A04
R83	42.048328°	14.642009°	Cupello	AB02	555	13	4058	A04
R84	42.049016°	14.641252°	Cupello	AB02	593	8	4075	A04
R85	42.048901°	14.641124°	Cupello	AB02	583	8	4075	A03
R88	42.051456°	14.652681°	Cupello	AB01	831	9	456	A04
R89	42.051162°	14.653702°	Cupello	AB01	822	9	4078	A02
R90	42.051488°	14.653738°	Cupello	AB01	857	10	4102	A03
R94	42.052022°	14.655563°	Cupello	AB01	972	10	4120	A04
R95	42.052278°	14.655876°	Cupello	AB01	1012	10	485	A04
R98	41.928642°	14.606138°	Tufillo	AB08	622	3	302	A04
R114	41.928592°	14.617794°	Tufillo	AB08	569	4	4024	A04
R117	41.935825°	14.598114°	Palmoli	AB09	796	24	4055	A04
R120	41.940957°	14.600963°	Palmoli	AB09	804	23	4192	A04
R126	42.000061°	14.623734°	Fresagrandinaria	AB05	966	5	73	A04
R129	42.035642°	14.637925°	Furci	AB04	1017	9	4054	A04
R130	42.035136°	14.637950°	Furci	AB04	1001	9	4049	A03
R145	42.024789°	14.644979°	Furci	AB04	994	15	4064	A04
R146	42.026680°	14.645142°	Furci	AB04	797	15	4068	A04
R148	42.027676°	14.643251°	Furci	AB04	800	13	4032	A04
R149	42.027188°	14.642761°	Furci	AB04	865	14	4065	A04
R150	42.027291°	14.642068°	Furci	AB04	894	14	157	A03

Ricettore	Coordinate UTM WGS 84, 33°		Comune	WTG più vicina	Distanza WTG più vicina	Foglio	Particella	Stato accatastamento
	Latitudine	Longitudine						
R155	42.031596°	14.640354°	Furci	AB04	788	13	4022; 4034	A04
R159	42.029883°	14.644637°	Furci	AB04	542	15	4070	A03
R170	42.035425°	14.608684°	San Buono	AB11	874	1	4019	A04
R171	42.035085°	14.611822°	Furci	AB11	643	8	215	A03
R172	42.034678°	14.614006°	Furci	AB11	521	8	161	A03
R173	42.034665°	14.613615°	Furci	AB11	544	8	4034	A04
R178	41.981020°	14.656340°	Fresagrandinaria	AB10	904	11	734	A04
R185	41.988275°	14.647725°	Fresagrandinaria	AB10	639	7	136	A04
R186	41.989554°	14.647638°	Fresagrandinaria	AB10	774	7	128	A04
R189	41.988453°	14.653973°	Fresagrandinaria	AB10	937	9	607	A04
R190	41.987642°	14.654668°	Fresagrandinaria	AB10	922	9	4135	A04
R191	41.987669°	14.655183°	Fresagrandinaria	AB10	961	9	4137	A03
R192	41.987485°	14.655432°	Fresagrandinaria	AB10	964	9	4127	A03
R193	41.985533°	14.655292°	Fresagrandinaria	AB10	853	9	86	A03
R194	41.984422°	14.655467°	Fresagrandinaria	AB10	830	9	4140	A07
R196	41.984035°	14.655026°	Fresagrandinaria	AB10	792	9	4122	A04
R197	41.984097°	14.654570°	Fresagrandinaria	AB10	749	9	4201	A03
R198	41.983940°	14.654327°	Fresagrandinaria	AB10	723	9	4136	A03

**Tabella 6.1:** Ricettori oggetto di verifica

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

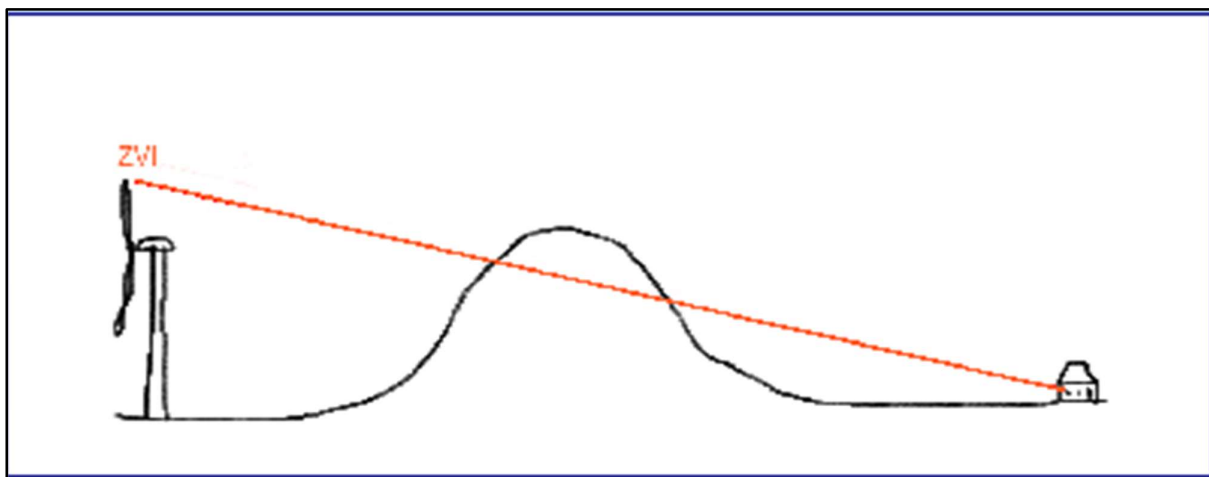




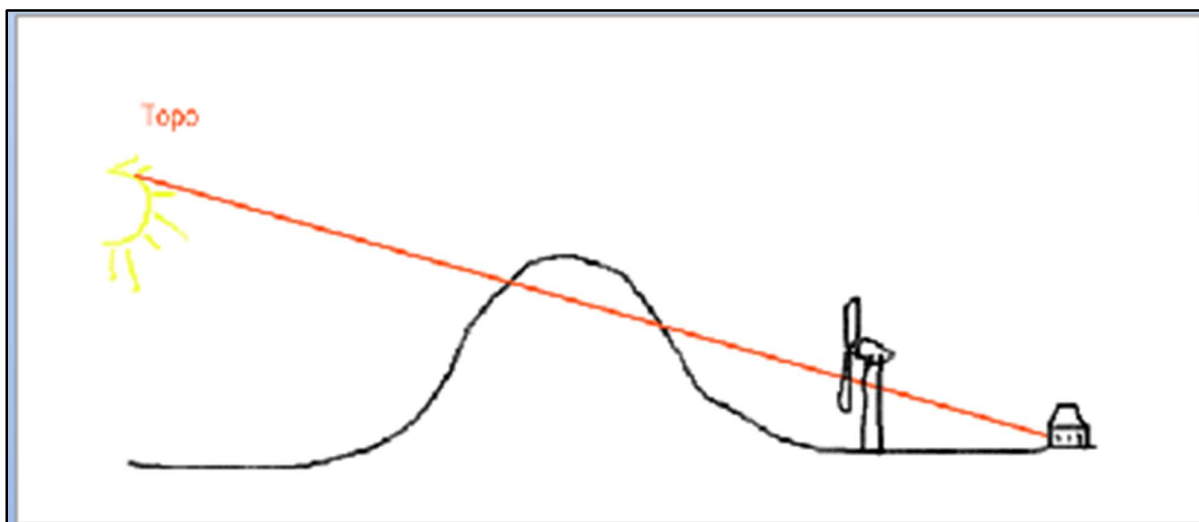
**Figura 6.3:** Localizzazione dei ricettori rispetto agli aerogeneratori di progetto – Zona 3

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



**Figura 6.5:** 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 stato considerato il valore medio annuale di 5,80 h come da fonte ISPRA con riferimento al Comune di Campochiaro (CB) e le ore di funzionamento degli aerogeneratori in presenza del sole in funzione della direzione del vento, come riportato nelle tabelle seguenti:

MESE	gen	feb	mar	apr	mag	giu	lug	ago	set	ott	nov	dic
GIORNI	31	28	31	30	31	30	31	31	30	31	30	31
PROB. MEDIA ELIOFANIA	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

**Tabella 6.2:** Probabilità medie di eliofania e ore di funzionamento aerogeneratori in presenza del sole

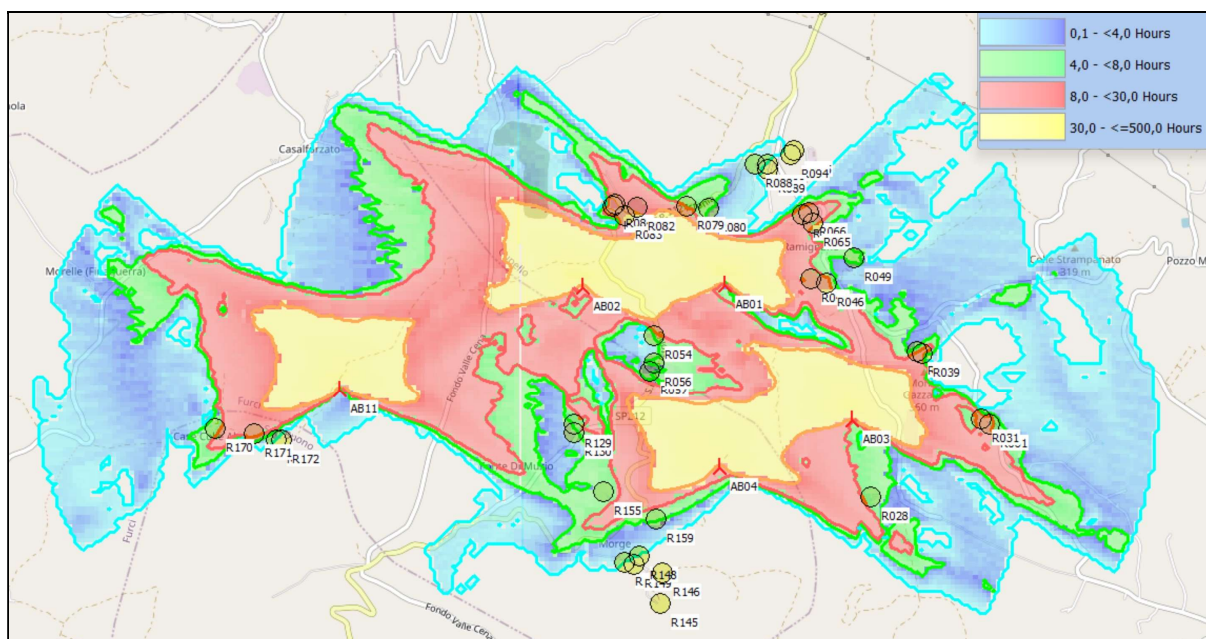
N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Somma
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

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

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

## 7. CONCLUSIONI

Nelle **Figure 7.1**, **Figure 7.2** e **Figure 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 - zona 1

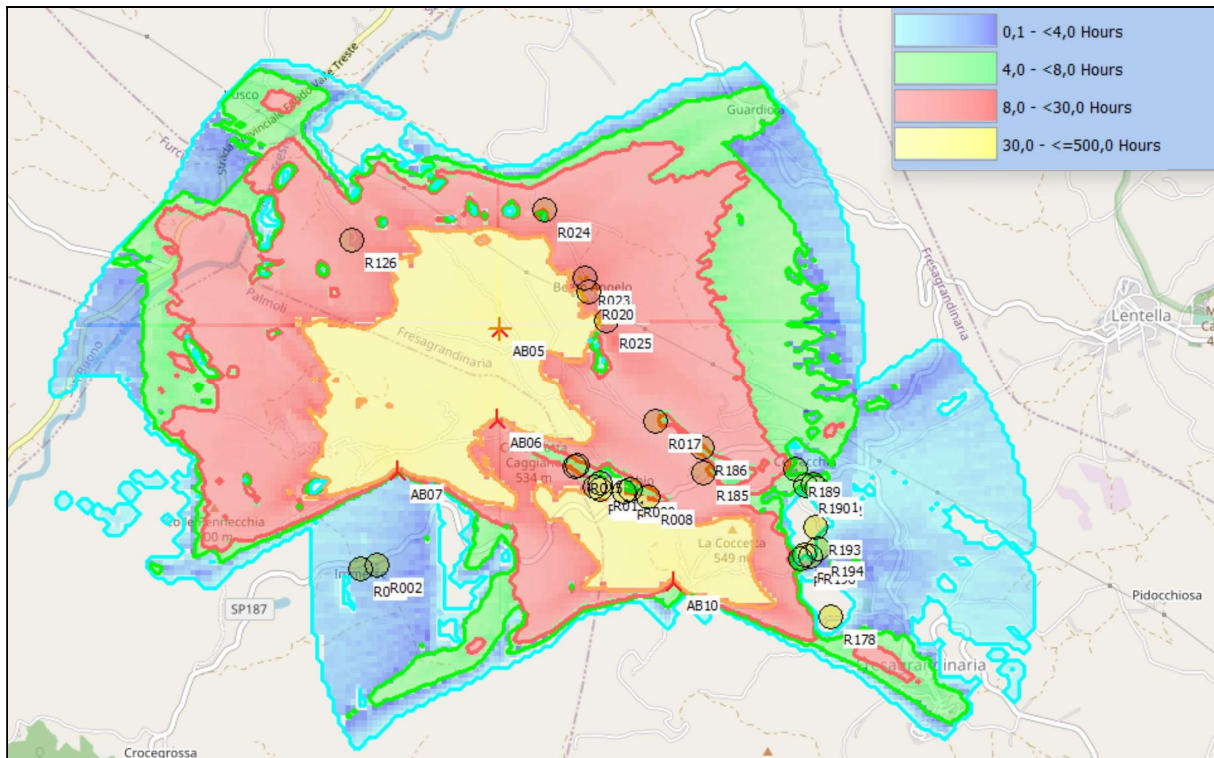


Figura 7.2: Localizzazione dei ricettori attenzionati rispetto agli aerogeneratori di progetto e ore d'ombra per anno – zona 2

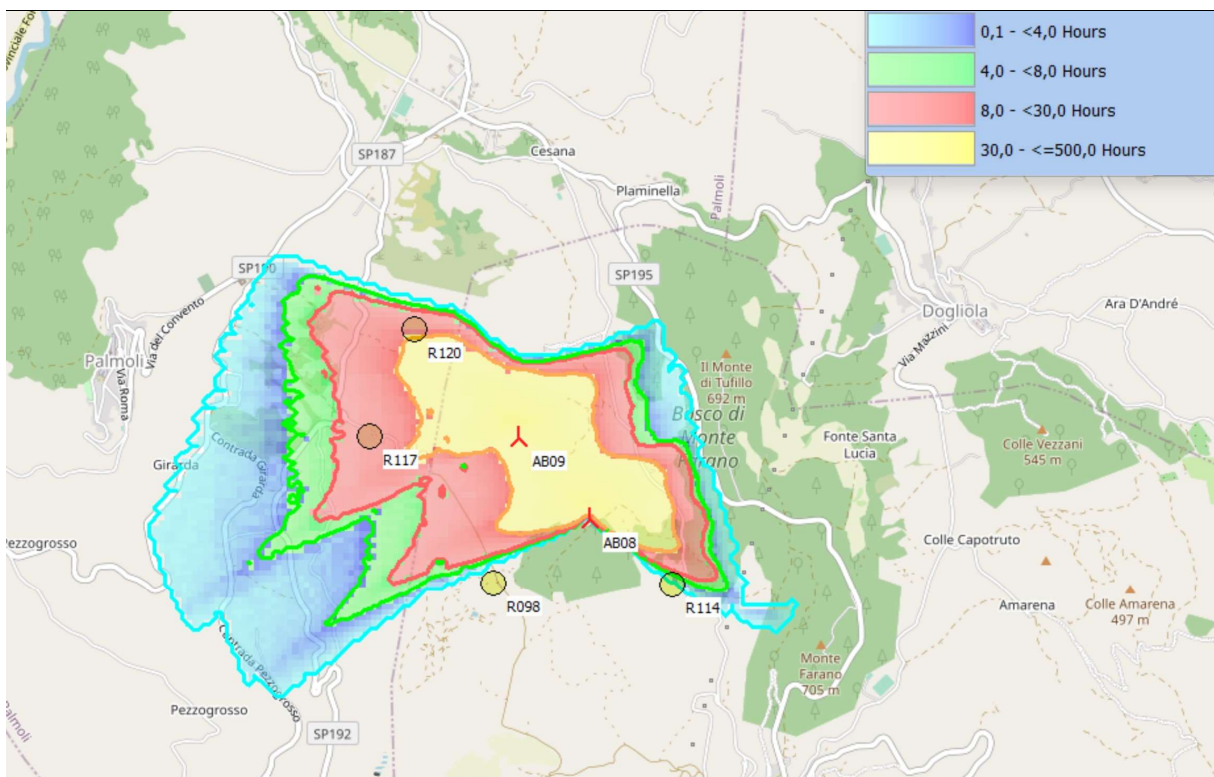


Figura 7.3: Localizzazione dei ricettori attenzionati rispetto agli aerogeneratori di progetto e ore d'ombra per anno – zona 3

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)
R2	8:13	2:16
R3	7:24	2:02
R8	25:34	7:59
R9	15:01	3:49
R10	31:42	10:17
R11	28:39	8:29
R12	49:15	16:33
R13	50:42	17:17
R15	23:45	6:10
R16	24:20	6:18
R17	36:18	8:54
R20	84:59	21:13
R23	112:11	29:24
R24	22:58	6:40
R25	104:47	25:31
R28	26:56	6:47
R31	36:06	9:25
R39	38:13	10:25
R40	32:59	9:02
R46	41:26	10:40
R47	51:59	13:20
R49	18:11	4:37
R54	13:08	4:31
R56	12:41	4:00
R57	12:05	3:42
R61	33:24	8:41
R65	37:40	10:33
R66	49:10	13:42
R67	48:30	13:22
R79	31:36	9:02
R80	16:56	4:56
R82	64:33	25:40
R83	43:22	16:29
R84	58:24	23:03
R85	55:03	21:35
R88	4:10	1:13



Ricettore	ORE/ANNO – WORST CASE	ORE/ANNO – REAL CASE (EXPECTED VALUES)
R89	0:35	0:10
R90	0:59	0:17
R94	0:00	0:00
R95	0:00	0:00
R98	0:00	0:00
R114	0:00	0:00
R117	48:06	13:12
R120	62:30	24:56
R126	58:10	21:43
R129	23:13	6:47
R130	6:51	1:44
R145	0:00	0:00
R146	0:00	0:00
R148	0:00	0:00
R149	0:00	0:00
R150	0:00	0:00
R155	25:24	5:44
R159	21:29	4:05
R170	33:52	6:56
R171	52:29	10:01
R172	0:00	0:00
R173	0:00	0:00
R178	0:00	0:00
R185	36:49	9:04
R186	30:31	7:43
R189	5:27	1:27
R190	24:02	5:59
R191	26:34	6:37
R192	25:17	6:18
R193	0:00	0:00
R194	1:08	0:16
R196	0:00	0:00
R197	5:24	1:21
R198	2:08	0:32

**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.

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

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

---

Project:

WF Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it

Calculated:

15/11/2023 18:49/3.5.587

## SHADOW - Main Result

Calculation: WF Abruzzo shadow flickering worst 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 Abruzzo Shoadow flickering\_EMDGrid\_0.wpg (1)

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			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
			[m]									
AB01	14,650204° E	42,044159° N	294,0	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB02	14,638567° E	42,044006° N	224,3	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB03	14,660593° E	42,035884° N	244,4	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB04	14,649737° E	42,033040° N	205,9	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB05	14,633780° E	41,995595° N	451,6	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB06	14,633631° E	41,990946° N	530,2	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB07	14,626857° E	41,988349° N	515,1	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB08	14,612389° E	41,931813° N	441,1	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB09	14,607750° E	41,935748° N	440,0	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB10	14,645631° E	41,982689° N	442,9	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB11	14,618792° E	42,037765° N	253,5	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8

### Shadow receptor-Input

No.	Longitude	Latitude	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l. [m]	window [°]		(ZVI) a.g.l. [m]
R002	14,625433° E	41,983636° N	429,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R003	14,624331° E	41,983442° N	425,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R008	14,643896° E	41,987066° N	445,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R009	14,642686° E	41,987427° N	454,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R010	14,642299° E	41,987286° N	457,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R011	14,640681° E	41,987731° N	474,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R012	14,640287° E	41,987540° N	475,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R013	14,640628° E	41,987449° N	470,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R015	14,639136° E	41,988662° N	486,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R016	14,638962° E	41,988615° N	486,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R017	14,644418° E	41,990911° N	386,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R020	14,639914° E	41,997436° N	327,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R023	14,639636° E	41,998140° N	324,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R024	14,636895° E	42,001586° N	293,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R025	14,641087° E	41,995961° N	338,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R028	14,662139° E	42,031269° N	215,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R031	14,671140° E	42,035948° N	250,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R039	14,666310° E	42,040012° N	331,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R040	14,665851° E	42,040130° N	330,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R046	14,658523° E	42,044233° N	326,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

## SHADOW - Main Result

Calculation: WF Abruzzo shadow flikering worst case

...continued from previous page

No.	Longitude	Latitude	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l.	[°]		(ZVI) a.g.l.
						[m]			[m]
R047	14,657223° E	42,044524° N	337,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R049	14,660730° E	42,045782° N	301,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R054	14,644394° E	42,041098° N	239,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R056	14,644462° E	42,039399° N	244,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R057	14,644123° E	42,038917° N	244,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R061	14,671785° E	42,035670° N	248,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R065	14,657427° E	42,047864° N	342,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R066	14,657048° E	42,048506° N	354,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R067	14,656532° E	42,048328° N	358,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R079	14,647094° E	42,048926° N	313,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R080	14,648893° E	42,048766° N	328,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R082	14,643026° E	42,048841° N	297,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R083	14,642009° E	42,048328° N	300,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R084	14,641252° E	42,049016° N	300,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R085	14,641124° E	42,048901° N	300,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R088	14,652681° E	42,051456° N	341,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R089	14,653702° E	42,051162° N	353,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R090	14,653738° E	42,051488° N	350,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R094	14,655563° E	42,052022° N	332,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R095	14,655876° E	42,052278° N	327,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R098	14,606138° E	41,928642° N	361,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R114	14,617794° E	41,928592° N	501,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R117	14,598114° E	41,935825° N	416,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R120	14,600963° E	41,940957° N	409,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R126	14,623734° E	42,000061° N	255,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R129	14,637925° E	42,035642° N	285,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R130	14,637950° E	42,035136° N	286,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R145	14,644979° E	42,024789° N	240,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R146	14,645142° E	42,026680° N	229,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R148	14,643251° E	42,027676° N	252,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R149	14,642761° E	42,027188° N	252,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R150	14,642068° E	42,027291° N	251,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R155	14,640354° E	42,031596° N	307,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R159	14,644637° E	42,029883° N	270,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R170	14,608684° E	42,035425° N	320,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R171	14,611822° E	42,035085° N	313,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R172	14,614006° E	42,034678° N	310,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R173	14,613615° E	42,034665° N	314,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R178	14,656340° E	41,981020° N	389,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R185	14,647725° E	41,988275° N	434,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R186	14,647638° E	41,989554° N	418,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R189	14,653973° E	41,988453° N	436,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R190	14,654668° E	41,987642° N	443,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R191	14,655183° E	41,987669° N	439,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R192	14,655432° E	41,987485° N	442,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R193	14,655292° E	41,985533° N	472,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R194	14,655467° E	41,984422° N	453,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R196	14,655026° E	41,984035° N	456,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R197	14,654570° E	41,984097° N	470,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R198	14,654327° E	41,983940° N	470,5	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]
R002	8:13	30	0:24
R003	7:24	28	0:22
R008	25:34	65	0:34
R009	15:01	42	0:30
R010	31:42	74	0:36
R011	28:39	71	0:34

To be continued on next page...

Project:

WF Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it

Calculated:

15/11/2023 18:49/3.5.587

## SHADOW - Main Result

Calculation: WF Abruzzo shadow flikering worst case

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
R012	49:15	94	0:44
R013	50:42	95	0:46
R015	23:45	49	0:38
R016	24:20	50	0:38
R017	36:18	84	0:42
R020	84:59	169	1:00
R023	112:11	162	1:02
R024	22:58	83	0:39
R025	104:47	155	0:59
R028	26:56	58	0:38
R031	36:06	81	0:45
R039	38:13	106	0:31
R040	32:59	87	0:38
R046	41:26	74	0:46
R047	51:59	87	0:51
R049	18:11	51	0:31
R054	13:08	41	0:28
R056	12:41	38	0:28
R057	12:05	37	0:28
R061	33:24	78	0:42
R065	37:40	108	0:36
R066	49:10	78	0:44
R067	48:30	74	0:45
R079	31:36	66	0:34
R080	16:56	84	0:22
R082	64:33	92	0:52
R083	43:22	96	0:48
R084	58:24	99	0:45
R085	55:03	103	0:45
R088	4:10	44	0:07
R089	0:35	21	0:03
R090	0:59	28	0:03
R094	0:00	0	0:00
R095	0:00	0	0:00
R098	0:00	0	0:00
R114	0:00	0	0:00
R117	48:06	106	0:47
R120	62:30	84	0:52
R126	58:10	133	0:38
R129	23:13	98	0:27
R130	6:51	31	0:19
R145	0:00	0	0:00
R146	0:00	0	0:00
R148	0:00	0	0:00
R149	0:00	0	0:00
R150	0:00	0	0:00
R155	25:24	86	0:30
R159	21:29	69	0:25
R170	33:52	77	0:39
R171	52:29	88	0:49
R172	0:00	0	0:00
R173	0:00	0	0:00
R178	0:00	0	0:00
R185	36:49	96	0:33
R186	30:31	85	0:34
R189	5:27	43	0:19
R190	24:02	94	0:22
R191	26:34	98	0:22
R192	25:17	95	0:22
R193	0:00	0	0:00
R194	1:08	25	0:04
R196	0:00	0	0:00
R197	5:24	44	0:11
R198	2:08	32	0:06

Project:

WF Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:

15/11/2023 18:49/3.5.587

## SHADOW - Main Result

Calculation: WF Abruzzo shadow flickering worst case

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

No.	Name	Worst case [h/year]
AB01	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (1)	265:25
AB02	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (2)	40:45
AB03	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (3)	126:35
AB04	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (4)	65:39
AB05	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (5)	226:14
AB06	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (6)	220:27
AB07	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (7)	48:39
AB08	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (8)	12:45
AB09	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (9)	97:51
AB10	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (10)	81:02
AB11	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (11)	90:31

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.

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering worst case Shadow receptor: R002 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (72)  
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	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:27 19:37	06:58 18:45	06:33 16:57	07:09 16:32	
2	07:30 16:42	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:28 19:36	06:59 18:44	06:35 16:56	07:10 16:32	
3	07:30 16:42	07:14 17:18	06:36 17:53	06:43 19:29	05:57 20:02	05:29 20:32	05:31 20:41	05:56 20:19	06:29 19:34	07:00 18:42	06:36 16:55	07:12 16:31	
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:54	07:13 16:31	
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:39	06:38 16:52	07:14 16:31	
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31	
7	07:30 16:46	07:09 17:24	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:01 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:31	
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:02 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:31	
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	05:49 20:08	05:27 20:36	05:34 20:39	06:03 20:12	06:35 19:24	07:06 18:32	06:43 16:48	07:17 16:31	
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:36	05:35 20:39	06:04 20:11	06:36 19:22	07:07 18:30	06:45 16:47	07:18 16:31	
11	07:29 16:50	07:05 17:29	06:22 18:03	06:30 19:37	05:47 20:11	05:26 20:37	05:36 20:39	06:05 20:09	06:37 19:20	07:09 18:29	06:46 16:46	07:19 16:31	
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:37 20:38	06:06 20:08	06:38 19:19	07:10 18:27	06:47 16:45	07:20 16:31	
13	07:29 16:53	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31	
14	07:28 16:54	07:01 17:33	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 (AB10) 07:26 (AB10)	07:12 18:24	06:49 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:08	06:35 (AB10) 06:38 (AB10)	06:23 19:42	05:43 20:15	05:39 20:39	06:09 20:36	06:41 20:04	07:13 (AB10) 07:28 (AB10)	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:33 (AB10) 06:41 (AB10)	06:22 19:43	05:42 20:16	05:26 20:39	06:10 20:36	06:42 20:02	07:14 (AB10) 07:29 (AB10)	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:31 (AB10) 06:43 (AB10)	06:20 19:44	05:41 20:17	05:26 20:40	06:11 20:35	06:43 20:01	07:15 (AB10) 07:30 (AB10)	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:38	06:11 18:11	06:29 (AB10) 06:43 (AB10)	06:19 19:45	05:40 20:18	05:26 20:40	06:12 20:34	06:44 19:59	07:10 (AB10) 07:31 (AB10)	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:28 (AB10) 06:45 (AB10)	06:17 19:47	05:39 20:19	05:26 20:40	06:13 20:34	06:45 19:58	07:09 (AB10) 07:31 (AB10)	07:18 18:16	06:56 16:39	07:25 16:32
20	07:26 17:01	06:52 17:40	06:07 18:13	06:26 (AB10) 06:45 (AB10)	06:15 19:48	05:38 20:20	05:26 20:41	06:14 20:33	06:46 19:56	07:08 (AB10) 07:31 (AB10)	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:24 (AB10) 06:45 (AB10)	06:14 19:49	05:37 20:21	05:26 20:41	06:15 20:32	06:47 19:55	07:08 (AB10) 07:31 (AB10)	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:43	06:04 18:15	06:22 (AB10) 06:44 (AB10)	06:12 19:50	05:36 20:22	05:27 20:41	06:16 20:31	06:48 19:53	07:09 (AB10) 07:30 (AB10)	07:21 18:11	06:59 16:36	07:27 16:34
23	07:24 17:04	06:48 17:44	06:02 18:17	06:21 (AB10) 06:45 (AB10)	06:11 19:51	05:35 20:23	05:27 20:41	06:17 20:31	06:49 19:52	07:10 (AB10) 07:29 (AB10)	07:23 18:10	07:00 16:36	07:27 16:34
24	07:23 17:06	06:46 17:45	06:00 18:18	06:21 (AB10) 06:44 (AB10)	06:09 19:52	05:35 20:23	05:27 20:41	06:18 19:50	06:50 18:58	07:11 (AB10) 07:28 (AB10)	07:24 18:08	07:02 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:59 18:19	06:21 (AB10) 06:43 (AB10)	06:08 19:53	05:34 20:24	05:27 20:42	06:19 20:29	06:51 18:56	07:12 (AB10) 07:27 (AB10)	06:25 17:07	07:03 16:35	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:22 (AB10) 06:42 (AB10)	06:06 19:54	05:33 20:25	05:28 20:42	06:20 19:47	06:53 18:54	07:13 (AB10) 07:26 (AB10)	06:26 17:05	07:04 16:34	07:28 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:23 (AB10) 06:40 (AB10)	06:05 19:55	05:32 20:26	05:28 20:42	06:21 20:27	06:54 19:45	07:14 (AB10) 07:24 (AB10)	06:27 17:04	07:05 16:33	07:29 16:37
28	07:20 17:11	06:40 17:50	05:53 18:22	06:24 (AB10) 06:38 (AB10)	06:04 19:56	05:32 20:27	05:28 20:42	06:22 20:26	06:55 19:44	07:15 (AB10) 07:21 (AB10)	06:29 17:03	07:06 16:33	07:29 16:37
29	07:19 17:12	06:52 17:45	06:52 18:18	07:26 (AB10) 07:35 (AB10)	06:02 19:58	05:31 20:28	05:29 20:42	06:23 20:25	06:56 18:49	07:03 (AB10) 07:18 (AB10)	06:30 17:01	07:07 16:33	07:29 16:38
30	07:18 17:13	06:50 17:46	06:50 18:19	06:01 19:59	05:31 20:29	05:29 20:42	05:29 20:42	06:24 19:41	06:57 18:47	07:04 (AB10) 07:19 (AB10)	06:57 17:00	07:08 16:32	07:30 16:39
31	07:17 17:15	06:48 19:25	06:48 19:25	05:30 20:30	05:30 20:30	05:30 20:30	05:53 20:23	06:25 19:39	06:25 18:47	06:32 16:59	06:32 16:40	07:30 16:40	07:30 16:40
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285	
Total, worst case			245						248				

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: WF Abruzzo shadow flickering worst case Shadow receptor: R003 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (73)  
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	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:27 19:37	06:58 18:45	06:33 16:57	07:09 16:32	
2	07:30 16:42	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:28 19:36	06:59 18:44	06:35 16:56	07:10 16:32	
3	07:30 16:42	07:14 17:18	06:36 17:54	06:43 19:29	05:57 20:02	05:29 20:32	05:31 20:41	05:56 20:19	06:29 19:34	07:00 18:42	06:36 16:55	07:12 16:31	
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:54	07:13 16:31	
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:39	06:38 16:52	07:14 16:31	
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31	
7	07:30 16:46	07:09 17:24	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:01 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:31	
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:02 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:31	
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	05:49 20:08	05:27 20:36	05:34 20:39	06:03 20:12	06:35 19:24	07:06 18:32	06:43 16:48	07:17 16:31	
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:36	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:31	
11	07:29 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:05 20:09	06:37 19:20	07:09 18:29	06:46 16:46	07:19 16:31	
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:37 20:38	06:06 20:08	06:38 19:19	07:10 18:27	06:47 16:45	07:20 16:31	
13	07:29 16:53	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	7 07:15 (AB10) 8 07:23 (AB10)	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:33	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	9 07:12 (AB10) 14 07:26 (AB10)	07:12 18:24	06:49 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:08	06:23 19:42	05:43 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	17 07:10 (AB10) 17 07:27 (AB10)	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:12	19 07:09 (AB10) 19 07:28 (AB10)	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40	05:41 20:35	06:11 20:01	06:43 19:10	21 07:07 (AB10) 21 07:28 (AB10)	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:38	06:11 18:11	4 06:35 (AB10) 9 06:38 (AB10)	06:19 19:45	05:40 20:18	05:26 20:40	05:41 20:34	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	9 06:38 (AB10) 12 06:40 (AB10)	06:17 19:47	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:39	07:25 16:32
20	07:26 17:01	06:52 17:40	06:07 18:13	12 06:40 (AB10) 14 06:40 (AB10)	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:05	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	14 06:40 (AB10) 17 06:41 (AB10)	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:43	06:04 18:15	17 06:41 (AB10) 19 06:41 (AB10)	06:12 19:50	05:36 20:22	05:27 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:24 17:04	06:48 17:44	06:02 18:17	19 06:41 (AB10) 20 06:41 (AB10)	06:11 19:51	05:35 20:23	05:27 20:41	05:46 20:31	06:17 19:52	06:49 18:59	07:22 18:10	07:00 16:36	07:27 16:34
24	07:23 17:06	06:46 17:45	06:00 18:18	20 06:41 (AB10) 22 06:41 (AB10)	06:09 19:52	05:35 20:24	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:58	07:24 18:08	07:02 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:59 18:19	22 06:18 (AB10) 22 06:40 (AB10)	06:08 19:53	05:34 20:24	05:27 20:42	05:48 20:29	06:19 19:49	06:51 18:56	07:12 (AB10) 10 07:22 (AB10)	06:25 17:07	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	21 06:19 (AB10) 21 06:40 (AB10)	06:06 19:54	05:33 20:25	05:28 20:42	05:49 20:28	06:20 19:47	06:53 18:54	07:13 (AB10) 6 07:19 (AB10)	06:26 17:05	07:28 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	20 06:19 (AB10) 20 06:39 (AB10)	06:05 19:55	05:32 20:26	05:28 20:42	05:50 20:27	06:21 19:45	06:54 18:52	07:14 17:04	06:54 16:34	07:29 16:37
28	07:20 17:11	06:40 17:50	05:53 18:22	20 06:20 (AB10) 17 06:37 (AB10)	06:04 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:51	07:15 17:03	06:55 16:33	07:29 16:37
29	07:19 17:12	06:39 17:51	06:52 18:23	17 06:37 (AB10) 14 07:35 (AB10)	06:02 19:58	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:07 17:01	06:57 16:33	07:29 16:38
30	07:18 17:13	06:38 17:52	06:50 18:24	14 07:35 (AB10) 10 07:33 (AB10)	06:01 19:59	05:31 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	07:08 17:00	06:58 16:32	07:30 16:39
31	07:17 17:15	06:37 17:51	06:48 18:25	10 07:33 (AB10)	05:30 20:30	05:30 20:30	05:53 20:23	06:25 19:39	06:25 19:39	06:32 19:39	06:32 16:59	06:32 16:40	07:30 16:40
Potential sun hours	295	296	369	400	451	455	462	430	375	223	344	296	285
Total, worst case			221										

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: WF Abruzzo shadow flickering worst case Shadow receptor: R008 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (74)

### 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	07:30 16:41	10:36 (AB10) 10:56 (AB10)	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00
2	07:30 16:41	10:38 (AB10) 10:55 (AB10)	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01
3	07:30 16:42	10:41 (AB10) 10:52 (AB10)	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02
4	07:30 16:43		07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03
5	07:30 16:44		07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04
6	07:30 16:45		07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05
7	07:30 16:46		07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06
8	07:30 16:47		07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07
9	07:30 16:48		07:07 17:26	06:26 18:01	06:33 19:35	05:49 20:08
10	07:30 16:49		07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09
11	07:29 16:50		07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:11
12	07:29 16:51		07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12
13	07:29 16:52		07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13
14	07:28 16:54		07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14
15	07:28 16:55		06:59 17:34	06:16 18:07	06:23 19:42	05:43 20:15
16	07:28 16:56		06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16
17	07:27 16:57		06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17
18	07:27 16:58		06:55 17:37	06:10 18:11	06:18 19:45	05:40 20:18
19	07:26 16:59		06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19
20	07:25 17:01		06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20
21	07:25 17:02		06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21
22	07:24 17:03		06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22
23	07:23 17:04		06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23
24	07:23 17:06		06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:23
25	07:22 17:07		06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24
26	07:21 17:08		06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25
27	07:20 17:09		06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26
28	07:20 17:11		06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27
29	07:19 17:12			06:52 19:23	06:02 19:57	05:31 20:28
30	07:18 17:13			06:50 19:24	06:01 19:59	05:30 20:29
31	07:17 17:14			06:48 19:25		05:30 20:29
Potential sun hours	295		296	369	400	451
Total, worst case	48				412	455

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: WF Abruzzo shadow flikering worst case Shadow receptor: R008 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (74)

### 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	05:30 20:41	05:54 20:22	06:26 19:37	18:40 (AB07) 19:04 (AB07)	06:58 18:45	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:20	06:27 19:36	18:41 (AB07) 19:03 (AB07)	06:59 18:44	06:35 16:56	07:10 16:31
3	05:31 20:41	05:56 20:19	06:29 19:34	18:41 (AB07) 19:02 (AB07)	07:00 18:42	06:36 16:55	07:11 16:31
4	05:31 20:41	05:57 20:18	06:30 19:32	18:42 (AB07) 19:00 (AB07)	07:01 18:40	06:37 16:53	07:12 16:31
5	05:32 20:41	05:58 20:17	06:31 19:30	18:44 (AB07) 18:59 (AB07)	07:02 18:38	06:38 16:52	07:13 16:31
6	05:32 20:40	05:59 20:16	06:32 19:29	18:47 (AB07) 18:55 (AB07)	07:03 18:37	06:40 16:51	07:14 16:31
7	05:33 20:40	06:00 20:14	06:33 19:27		07:04 18:35	06:41 16:50	07:15 16:31
8	05:34 20:40	06:01 20:13	06:34 19:25		07:05 18:33	06:42 16:49	07:16 16:30
9	05:34 20:39	06:02 20:12	06:35 19:24		07:07 18:32	06:43 16:48	07:17 16:30
10	05:35 20:39	06:04 20:11	06:36 19:22		07:08 18:30	06:44 16:47	07:18 16:30
11	05:36 20:39	06:05 20:09	06:37 19:20		07:09 18:28	06:46 16:46	07:19 16:30
12	05:36 20:38	06:06 20:08	06:38 19:18		07:10 18:27	06:47 16:45	07:20 16:31
13	05:37 20:38	06:07 20:07	06:39 19:17		07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 20:05	06:40 19:15		07:12 18:24	06:49 16:43	07:21 16:31
15	05:39 20:36	06:09 20:04	06:41 19:13		07:13 18:22	06:51 16:42	07:22 16:31
16	05:40 20:36	06:10 20:02	06:42 19:11		07:14 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	06:43 19:10		07:16 18:19	06:53 16:40	07:24 16:32
18	05:41 20:34	06:12 19:59	06:44 19:08	18:55 (AB07) 18:58 (AB07)	06:44 19:08	07:17 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	18:50 (AB07) 19:03 (AB07)	06:45 19:06	07:18 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	06:46 19:04	18:48 (AB07) 19:04 (AB07)	06:46 19:04	07:19 16:38	07:26 16:33
21	05:44 20:32	06:15 19:55	06:47 19:03	18:46 (AB07) 19:06 (AB07)	06:47 19:03	07:20 16:37	07:26 16:33
22	05:45 20:31	06:16 19:53	06:48 19:01	18:45 (AB07) 19:07 (AB07)	06:48 19:01	07:21 16:36	07:27 16:34
23	05:46 20:31	06:17 19:52	06:49 18:59	18:44 (AB07) 19:07 (AB07)	06:49 18:59	07:23 16:36	07:27 16:34
24	05:47 20:30	06:18 19:50	06:50 18:57	18:43 (AB07) 19:08 (AB07)	06:50 18:57	07:24 16:35	07:28 16:35
25	05:48 20:29	06:19 19:49	06:51 18:56	18:42 (AB07) 19:08 (AB07)	06:51 18:56	06:25 17:07	07:28 16:35
26	05:48 20:28	06:20 19:47	06:52 18:54	18:41 (AB07) 19:08 (AB07)	06:52 18:54	06:26 17:05	07:28 16:36
27	05:49 20:27	06:21 19:45	06:54 18:52	18:41 (AB07) 19:08 (AB07)	06:54 18:52	06:27 17:04	07:29 16:37
28	05:50 20:26	06:22 19:44	06:55 18:50	18:40 (AB07) 19:08 (AB07)	06:55 18:50	06:29 17:03	07:29 16:37
29	05:51 20:25	06:23 19:42	06:56 18:49	18:40 (AB07) 19:07 (AB07)	06:56 18:49	06:30 17:01	07:29 16:38
30	05:52 20:24	06:24 19:41	06:57 18:47	18:40 (AB07) 19:07 (AB07)	06:57 18:47	06:31 17:00	07:30 16:39
31	05:53 20:23	06:25 19:39	06:58 19:06 (AB07)	18:40 (AB07)	06:58 19:06 (AB07)	06:32 16:59	07:30 16:40
Potential sun hours	462	430	375	344	296	285	656
Total, worst case		310	108				

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

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

Calculation: WF Abruzzo shadow flikering worst caseShadow receptor: R009 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (75)  
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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	18:34 (AB07) 19:01 (AB07)	06:58 18:45	06:33 16:57	07:09 16:32	
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:20	06:27 19:36	18:34 (AB07) 19:00 (AB07)	06:59 18:44	06:35 16:56	07:10 16:31	
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	18:49 (AB07) 18:55 (AB07)	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:29 19:34	18:34 (AB07) 18:58 (AB07)	07:00 18:42	06:36 16:55	07:11 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	18:44 (AB07) 18:56 (AB07)	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	18:34 (AB07) 18:57 (AB07)	07:01 18:40	06:37 16:53	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	18:41 (AB07) 18:56 (AB07)	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:30	18:35 (AB07) 18:55 (AB07)	07:02 18:38	06:38 16:52	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	18:40 (AB07) 18:58 (AB07)	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	18:36 (AB07) 18:54 (AB07)	07:03 18:37	06:40 16:51	07:14 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	18:38 (AB07) 18:58 (AB07)	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:14	06:33 19:27	18:37 (AB07) 18:52 (AB07)	07:04 18:35	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	18:36 (AB07) 18:59 (AB07)	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	18:39 (AB07) 18:51 (AB07)	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	18:36 (AB07) 19:00 (AB07)	05:49 20:08	05:26 20:36	05:34 20:39	06:02 20:12	06:35 19:24	18:42 (AB07) 18:49 (AB07)	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	18:35 (AB07) 19:01 (AB07)	05:48 20:09	05:26 20:36	05:35 20:39	06:04 20:11	06:36 19:22	18:49 (AB07)	07:08 18:30	06:44 16:47	07:18 16:30
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	18:34 (AB07) 19:01 (AB07)	05:47 20:11	05:26 20:37	05:36 20:39	06:05 20:09	06:37 19:20	18:37 (AB07)	07:09 18:28	06:46 16:46	07:19 16:31
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	18:34 (AB07) 19:02 (AB07)	05:46 20:12	05:26 20:37	05:36 20:38	06:06 20:08	06:38 19:18	18:48 (AB07) 18:56 (AB07)	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	18:33 (AB07) 19:03 (AB07)	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	18:45 (AB07) 18:53 (AB07)	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	18:34 (AB07) 19:03 (AB07)	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	18:44 (AB07) 18:52 (AB07)	07:12 18:24	06:49 16:43	07:21 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	18:34 (AB07) 19:02 (AB07)	05:43 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	18:44 (AB07) 18:52 (AB07)	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	18:34 (AB07) 19:02 (AB07)	05:42 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:11	18:44 (AB07) 18:52 (AB07)	07:14 18:20	06:52 16:51	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	18:34 (AB07) 19:01 (AB07)	05:41 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	18:44 (AB07) 18:52 (AB07)	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	18:34 (AB07) 19:00 (AB07)	05:40 20:18	05:26 20:40	05:41 20:34	06:12 19:59	06:44 19:08	18:44 (AB07) 18:52 (AB07)	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	18:36 (AB07) 18:59 (AB07)	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	18:44 (AB07) 18:52 (AB07)	07:18 18:16	06:56 16:38	07:25 16:32
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	18:36 (AB07) 18:57 (AB07)	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	18:44 (AB07) 18:52 (AB07)	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	18:37 (AB07) 18:56 (AB07)	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	18:44 (AB07) 18:52 (AB07)	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	18:40 (AB07) 18:53 (AB07)	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	18:44 (AB07) 18:52 (AB07)	07:21 18:11	06:59 16:36	07:27 16:34
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	18:44 (AB07) 18:49 (AB07)	05:35 20:23	05:27 20:41	05:46 20:31	06:17 19:52	06:49 19:21	18:44 (AB07) 18:52 (AB07)	07:22 18:10	07:00 16:36	07:27 16:34
24	07:23 17:06	06:46 17:45	06:00 18:18	06:09 19:52	18:49 (AB07) 20:23	05:34 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 19:24	18:44 (AB07) 18:52 (AB07)	07:23 18:08	07:01 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	20:24	05:27 20:41	05:48 20:29	05:48 19:49	06:19 19:49	06:51 19:26	18:44 (AB07) 18:52 (AB07)	07:24 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	20:25	05:28 20:42	05:48 20:28	06:20 19:47	06:20 19:47	06:52 19:27	18:44 (AB07) 18:52 (AB07)	07:25 17:05	07:04 16:34	07:28 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:21 19:45	06:53 19:28	18:44 (AB07) 18:52 (AB07)	07:26 17:04	07:05 16:33	07:29 16:37
28	07:20 17:11	06:40 17:50	05:53 18:22	06:03 19:56	20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:22 19:44	06:55 19:29	18:44 (AB07) 18:52 (AB07)	07:27 17:03	07:06 16:33	07:29 16:37
29	07:19 17:12	06:52 19:23	06:52 19:57	06:02 19:57	20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:23 19:42	06:56 19:29	18:44 (AB07) 18:52 (AB07)	07:28 17:01	07:07 16:33	07:29 16:38
30	07:18 17:13	06:50 19:24	06:50 19:59	06:01 19:59	20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:24 19:41	06:57 19:29	18:44 (AB07) 18:52 (AB07)	07:29 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14	06:48 19:25	06:48 19:25		20:29	05:30 20:23	05:53 20:23	06:25 19:39	06:25 19:39	06:58 19:28	18:44 (AB07) 19:02 (AB07)	07:30 16:59	07:30 16:40	
Potential sun hours	295	296	369	400	451	455	462	430	375	172	344	296	285	
Total, worst case				447				282						

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: WF Abruzzo shadow flickering worst case Shadow receptor: R010 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (76)

### 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	07:30 16:41	09:37 (AB10) 10:05 (AB10)	07:16 17:16	06:39 17:51		05:59 20:00
2	07:30 16:41	09:39 (AB10) 10:04 (AB10)	07:15 17:17	06:37 17:52		05:58 20:01
3	07:30 16:42	09:40 (AB10) 10:03 (AB10)	07:14 17:18	06:35 17:53		05:57 20:02
4	07:30 16:43	09:42 (AB10) 10:02 (AB10)	07:13 17:20	06:34 17:55		05:55 20:03
5	07:30 16:44	09:45 (AB10) 10:01 (AB10)	07:12 17:21	06:32 17:56	18:47 (AB07) 18:58 (AB07)	05:54 20:04
6	07:30 16:45	09:48 (AB10) 09:58 (AB10)	07:10 17:22	06:31 17:57	18:44 (AB07) 19:00 (AB07)	05:53 20:05
7	07:30 16:46		07:09 17:23	06:29 17:58	18:42 (AB07) 19:00 (AB07)	05:52 20:06
8	07:30 16:47		07:08 17:25	06:27 17:59	18:40 (AB07) 19:01 (AB07)	05:50 20:07
9	07:30 16:48		07:07 17:26	06:26 18:01	18:39 (AB07) 19:02 (AB07)	05:49 20:08
10	07:30 16:49		07:06 17:27	06:24 18:02	18:37 (AB07) 19:02 (AB07)	05:48 20:09
11	07:29 16:50		07:04 17:29	06:22 18:03	18:36 (AB07) 19:03 (AB07)	05:47 20:11
12	07:29 16:51		07:03 17:30	06:21 18:04	18:36 (AB07) 19:04 (AB07)	05:46 20:12
13	07:29 16:52		07:02 17:31	06:19 18:05	18:35 (AB07) 19:05 (AB07)	05:45 20:13
14	07:28 16:54		07:01 17:32	06:17 18:06	18:35 (AB07) 19:06 (AB07)	05:44 20:14
15	07:28 16:55		06:59 17:34	06:16 18:07	18:35 (AB07) 19:05 (AB07)	05:43 20:15
16	07:28 16:56		06:58 17:35	06:14 18:09	18:35 (AB07) 19:05 (AB07)	05:42 20:16
17	07:27 16:57		06:57 17:36	06:12 18:10	18:35 (AB07) 19:04 (AB07)	05:41 20:17
18	07:27 16:58		06:55 17:37	06:10 18:11	18:34 (AB07) 19:03 (AB07)	05:40 20:18
19	07:26 16:59		06:54 17:39	06:09 18:12	18:35 (AB07) 19:03 (AB07)	05:39 20:19
20	07:25 17:01		06:52 17:40	06:07 18:13	18:35 (AB07) 19:01 (AB07)	05:38 20:20
21	07:25 17:02		06:51 17:41	06:05 18:14	18:37 (AB07) 19:01 (AB07)	05:37 20:21
22	07:24 17:03		06:49 17:42	06:04 18:15	18:37 (AB07) 18:59 (AB07)	05:36 20:22
23	07:23 17:04		06:48 17:44	06:02 18:16	18:39 (AB07) 18:58 (AB07)	05:35 20:23
24	07:23 17:06		06:46 17:45	06:00 18:18	18:40 (AB07) 18:55 (AB07)	05:34 20:23
25	07:22 17:07		06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24
26	07:21 17:08		06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25
27	07:20 17:09		06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26
28	07:20 17:11		06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27
29	07:19 17:12			06:52 19:23	06:02 19:58	05:31 20:28
30	07:18 17:13			06:50 19:24	06:01 19:59	05:30 20:29
31	07:17 17:14			06:48 19:25		05:30 20:29
Potential sun hours	295		296	400	490	455
Total, worst case	122					

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: WF Abruzzo shadow flickering worst case Shadow receptor: R010 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (76)

### 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	05:30 20:41	05:54 20:22	06:26 19:37	18:36 (AB07) 19:03 (AB07)	06:58 18:45	06:33 16:57
2	05:30 20:41	05:55 20:20	06:27 19:36	18:36 (AB07) 19:01 (AB07)	06:59 18:44	06:35 16:56
3	05:31 20:41	05:56 20:19	06:29 19:34	18:37 (AB07) 19:00 (AB07)	07:00 18:42	06:36 16:55
4	05:31 20:41	05:57 20:18	06:30 19:32	18:38 (AB07) 18:59 (AB07)	07:01 18:40	06:37 16:53
5	05:32 20:41	05:58 20:17	06:31 19:30	18:39 (AB07) 18:57 (AB07)	07:02 18:38	06:38 16:52
6	05:32 20:40	05:59 20:16	06:32 19:29	18:40 (AB07) 18:56 (AB07)	07:03 18:37	06:40 16:51
7	05:33 20:40	06:00 20:14	06:33 19:27	18:43 (AB07) 18:54 (AB07)	07:04 18:35	06:41 16:50
8	05:34 20:40	06:01 20:13	06:34 19:25		07:05 18:33	06:42 16:49
9	05:34 20:39	06:03 20:12	06:35 19:24		07:07 18:32	06:43 16:48
10	05:35 20:39	06:04 20:11	06:36 19:22		07:08 18:30	06:44 16:47
11	05:36 20:39	06:05 20:09	06:37 19:20		07:09 18:28	06:46 16:46
12	05:36 20:38	06:06 20:08	06:38 19:18		07:10 18:27	06:47 16:45
13	05:37 20:38	06:07 20:07	06:39 19:17		07:11 18:25	06:48 16:44
14	05:38 20:37	06:08 20:05	06:40 19:15		07:12 18:24	06:49 16:43
15	05:39 20:36	06:09 20:04	06:41 19:13		07:13 18:22	06:51 16:42
16	05:40 20:36	06:10 20:02	06:42 19:11		07:14 18:20	06:52 16:41
17	05:40 20:35	06:11 20:01	06:43 19:10		07:16 18:19	06:53 16:40
18	05:41 20:34	06:12 19:59	06:44 19:08		07:17 18:17	06:54 16:39
19	05:42 20:34	06:13 19:58	06:45 19:06		07:18 18:16	06:56 16:38
20	05:43 20:33	06:14 19:56	06:46 19:04		07:19 18:14	06:57 16:38
21	05:44 20:32	06:15 19:55	06:47 19:03		07:20 18:13	06:58 16:37
22	05:45 20:31	06:16 19:53	06:48 19:01		07:21 18:11	06:59 16:36
23	05:46 20:31	06:17 19:52	06:49 18:59		07:23 18:10	07:00 16:34
24	05:47 20:30	06:18 19:50	06:50 18:57		07:24 18:08	07:01 16:35
25	05:48 20:29	06:19 19:49	06:51 18:56		06:25 17:07	07:03 16:34
26	05:48 20:28	06:20 19:47	06:52 18:54		06:26 17:05	07:04 16:34
27	05:49 20:27	06:21 19:45	06:54 18:52		06:27 17:04	07:05 16:33
28	05:50 20:26	06:22 19:44	06:55 18:50		06:29 17:03	07:06 16:33
29	05:51 20:25	06:23 19:42	06:56 18:49		06:30 17:01	07:07 16:33
30	05:52 20:24	06:24 19:41	06:57 18:47		06:31 17:00	07:08 16:32
31	05:53 20:23	06:25 19:39	06:58 18:46		06:32 16:59	07:09 16:30
Potential sun hours	462	430	375	344	296	285
Total, worst case		353	141			796

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: WF Abruzzo shadow flikering worst case Shadow receptor: R011 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (77)

### 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	07:30 16:41	09:07 (AB10) 17:16	07:16 17:51	06:46 19:27	18:41 (AB07) 20:00	05:29 20:30
2	07:30 16:41	09:09 (AB10) 17:17	07:15 17:52	06:45 19:28	18:38 (AB07) 20:01	05:28 20:31
3	07:30 16:42	09:18 (AB10) 17:14	07:14 17:53	06:43 19:29	18:36 (AB07) 20:02	05:27 20:32
4	07:30 16:43	07:14 17:20	06:35 17:55	06:41 19:30	18:34 (AB07) 20:03	05:28 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	18:33 (AB07) 20:04	05:28 20:33
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	18:32 (AB07) 20:05	05:27 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	18:31 (AB07) 20:06	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	18:30 (AB07) 20:07	05:27 20:35
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	18:30 (AB07) 20:08	05:26 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	18:29 (AB07) 20:09	05:26 20:36
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	18:28 (AB07) 20:11	05:26 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	18:29 (AB07) 20:12	05:26 20:37
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	18:28 (AB07) 20:13	05:26 20:38
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	18:29 (AB07) 20:14	05:26 20:38
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	18:29 (AB07) 20:15	05:26 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	18:30 (AB07) 20:16	05:26 20:39
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	18:30 (AB07) 20:17	05:26 20:40
18	07:27 16:58	06:55 17:38	06:10 18:11	06:18 19:45	18:30 (AB07) 20:18	05:26 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	18:31 (AB07) 20:19	05:26 20:40
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	18:32 (AB07) 20:20	05:26 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	18:34 (AB07) 20:21	05:26 20:41
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	18:36 (AB07) 20:22	05:26 20:41
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	18:49 (AB07) 20:23	05:27 20:41
24	07:23 17:06	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:23	05:27 20:41
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:41
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:28 20:42
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42
28	07:20 17:11	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42
29	07:19 17:12		05:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42
30	07:18 17:13		06:50 19:24	06:01 19:59	05:30 20:29	05:29 20:42
31	07:17 17:14		06:48 19:25	18:46 (AB07) 18:52 (AB07)	05:30 20:29	
Potential sun hours	295	296	369	400	451	455
Total, worst case	22		6	606		

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: WF Abruzzo shadow flickering worst case Shadow receptor: R011 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (77)

### 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	05:30 20:41	05:54 20:22	06:26 19:37	18:28 (AB07) 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:21	06:27 19:36	18:28 (AB07) 19:02 (AB07)	06:59 18:44	06:35 16:56	07:10 16:32
3	05:31 20:41	05:56 20:19	06:29 19:34	18:28 (AB07) 19:01 (AB07)	07:00 18:42	06:36 16:55	07:11 16:31
4	05:31 20:41	05:57 20:18	06:30 19:32	18:28 (AB07) 19:00 (AB07)	07:01 18:40	06:37 16:54	07:12 16:31
5	05:32 20:41	05:58 20:17	06:31 19:31	18:28 (AB07) 19:00 (AB07)	07:02 18:38	06:38 16:52	07:14 16:31
6	05:32 20:40	05:59 20:16	06:32 19:29	18:28 (AB07) 18:59 (AB07)	07:03 18:37	06:40 16:51	07:14 16:31
7	05:33 20:40	06:00 20:14	06:33 19:27	18:29 (AB07) 18:57 (AB07)	07:04 18:35	06:41 16:50	07:15 16:31
8	05:34 20:40	06:01 20:13	06:34 19:25	18:29 (AB07) 18:56 (AB07)	07:05 18:33	06:42 16:49	07:16 16:30
9	05:34 20:39	06:03 20:12	06:35 19:24	18:30 (AB07) 18:54 (AB07)	07:07 18:32	06:43 16:48	07:17 16:30
10	05:35 20:39	06:04 20:11	06:36 19:22	18:32 (AB07) 18:52 (AB07)	07:08 18:30	06:44 16:47	07:18 16:30
11	05:36 20:39	06:05 20:09	06:37 19:20	18:34 (AB07) 18:49 (AB07)	07:09 18:28	06:46 16:46	07:19 16:31
12	05:36 20:38	06:06 20:08	06:38 19:18	18:37 (AB07) 18:45 (AB07)	07:10 18:27	06:47 16:45	07:20 16:31
13	05:37 20:38	06:07 20:07	06:39 19:17		07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 20:05	06:40 19:15		07:12 18:24	06:49 16:43	07:21 16:31
15	05:39 20:36	06:09 20:04	06:41 19:13		07:13 18:22	06:51 16:42	07:22 16:31
16	05:40 20:36	06:10 20:02	06:42 19:11		07:14 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	06:43 19:10		07:16 18:19	06:53 16:40	07:24 16:32
18	05:41 20:34	06:12 19:59	06:44 19:08		07:17 18:17	06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06		07:18 18:16	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	06:46 19:04	18:46 (AB07) 18:52 (AB07)	07:19 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	06:15 19:55	06:47 19:03	18:41 (AB07) 18:56 (AB07)	07:20 18:13	06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 19:53	06:48 19:01	18:39 (AB07) 18:58 (AB07)	07:21 18:11	06:59 16:36	07:27 16:34
23	05:46 20:31	06:17 19:52	06:49 18:59	18:37 (AB07) 18:59 (AB07)	07:23 18:10	07:00 16:36	07:27 16:34
24	05:47 20:30	06:18 19:50	06:50 18:57	18:35 (AB07) 19:00 (AB07)	07:24 18:08	07:01 16:35	07:28 16:35
25	05:48 20:29	06:19 19:49	06:51 18:56	18:34 (AB07) 19:01 (AB07)	06:51 17:07	07:03 16:34	07:28 16:35
26	05:49 20:28	06:20 19:47	06:52 18:54	18:32 (AB07) 19:02 (AB07)	06:52 17:05	07:04 16:34	07:28 16:36
27	05:49 20:27	06:21 19:45	06:54 18:52	18:31 (AB07) 19:02 (AB07)	06:54 17:04	07:05 16:33	07:29 16:37
28	05:50 20:26	06:22 19:44	06:55 18:50	18:30 (AB07) 19:02 (AB07)	06:55 17:03	07:06 16:33	07:29 16:37
29	05:51 20:25	06:23 19:42	06:56 18:49	18:30 (AB07) 19:03 (AB07)	06:56 17:01	07:07 16:33	07:29 16:38
30	05:52 20:24	06:24 19:41	06:57 18:47	18:29 (AB07) 19:03 (AB07)	06:57 17:00	07:08 16:32	07:30 16:39
31	05:53 20:23	06:25 19:39		18:29 (AB07) 19:02 (AB07)	06:57 16:59	07:08 16:32	07:30 16:40
Potential sun hours	462	430	375	344	296	285	460
Total, worst case		307	318				

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: WF Abruzzo shadow flickering worst case Shadow receptor: R012 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (78)  
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	07:30 16:41	08:41 (AB10) 09:21 (AB10)	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00
2	07:30 16:41	08:42 (AB10) 09:21 (AB10)	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01
3	07:30 16:42	08:43 (AB10) 09:21 (AB10)	07:14 17:18	06:35 17:53	06:43 19:29	18:44 (AB07) 20:02
4	07:30 16:43	08:44 (AB10) 09:21 (AB10)	07:13 17:20	06:34 17:55	06:41 19:30	18:41 (AB07) 20:03
5	07:30 16:44	08:45 (AB10) 09:20 (AB10)	07:12 17:21	06:32 17:56	06:40 19:31	18:38 (AB07) 20:04
6	07:30 16:45	08:47 (AB10) 09:20 (AB10)	07:10 17:22	06:31 17:57	06:38 19:32	18:37 (AB07) 20:05
7	07:30 16:46	08:48 (AB10) 09:20 (AB10)	07:09 17:23	06:29 17:58	06:36 19:33	18:35 (AB07) 20:06
8	07:30 16:47	08:49 (AB10) 09:18 (AB10)	07:08 17:25	06:27 17:59	06:35 19:34	18:33 (AB07) 20:07
9	07:30 16:48	08:50 (AB10) 09:18 (AB10)	07:07 17:26	06:26 18:01	06:33 19:35	18:33 (AB07) 20:08
10	07:30 16:49	08:52 (AB10) 09:17 (AB10)	07:06 17:27	06:24 18:02	06:31 19:36	18:32 (AB07) 20:09
11	07:29 16:50	08:54 (AB10) 09:15 (AB10)	07:04 17:29	06:22 18:03	06:30 19:38	18:31 (AB07) 20:11
12	07:29 16:51	08:57 (AB10) 09:14 (AB10)	07:03 17:30	06:21 18:04	06:28 19:39	18:31 (AB07) 20:12
13	07:29 16:52	09:00 (AB10) 09:12 (AB10)	07:02 17:31	06:19 18:05	06:26 19:40	18:30 (AB07) 20:13
14	07:28 16:54		07:01 17:32	06:17 18:06	06:25 19:41	18:30 (AB07) 20:14
15	07:28 16:55		06:59 17:34	06:16 18:07	06:23 19:42	18:30 (AB07) 20:15
16	07:28 16:56		06:58 17:35	06:14 18:09	06:22 19:43	18:30 (AB07) 20:16
17	07:27 16:57		06:57 17:36	06:12 18:10	06:20 19:44	18:30 (AB07) 20:17
18	07:27 16:58		06:55 17:38	06:10 18:11	06:18 19:45	18:30 (AB07) 20:18
19	07:26 16:59		06:54 17:39	06:09 18:12	06:17 19:46	18:31 (AB07) 20:19
20	07:25 17:01		06:52 17:40	06:07 18:13	06:15 19:48	18:31 (AB07) 20:20
21	07:25 17:02		06:51 17:41	06:05 18:14	06:14 19:49	18:32 (AB07) 20:21
22	07:24 17:03		06:49 17:42	06:04 18:15	06:12 19:50	18:32 (AB07) 20:22
23	07:23 17:04		06:48 17:44	06:02 18:16	06:11 19:51	18:34 (AB07) 20:23
24	07:23 17:06		06:46 17:45	06:00 18:18	06:09 19:52	18:36 (AB07) 20:23
25	07:22 17:07		06:45 17:46	05:58 18:19	06:08 19:53	18:37 (AB07) 20:24
26	07:21 17:08		06:43 17:47	05:57 18:20	06:06 19:54	18:41 (AB07) 20:25
27	07:20 17:09		06:42 17:49	05:55 18:21	06:05 19:55	18:49 (AB07) 20:26
28	07:20 17:11		06:40 17:50	05:53 18:22	06:03 19:56	18:49 (AB07) 20:27
29	07:19 17:12			06:52 19:23	06:02 19:58	20:28
30	07:18 17:13			06:50 19:24	06:01 19:59	20:29
31	07:17 17:14			06:48 19:25		20:29
Potential sun hours	295		296	369	400	451
Total, worst case	386				663	455

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: WF Abruzzo shadow flickering worst case Shadow receptor: R012 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (78)

### 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	05:30 20:41	05:54 20:22	06:26 19:37	18:31 (AB07) 19:05 (AB07)	06:58 18:45	06:33 16:57	07:09 16:32	08:36 (AB10) 08:57 (AB10)
2	05:30 20:41	05:55 20:21	06:27 19:36	18:31 (AB07) 19:04 (AB07)	06:59 18:44	06:35 16:56	07:10 16:32	08:36 (AB10) 09:00 (AB10)
3	05:31 20:41	05:56 20:19	06:29 19:34	18:31 (AB07) 19:03 (AB07)	07:00 18:42	06:36 16:55	07:11 16:31	08:35 (AB10) 09:02 (AB10)
4	05:31 20:41	05:57 20:18	06:30 19:32	18:31 (AB07) 19:02 (AB07)	07:01 18:40	06:37 16:54	07:12 16:31	08:34 (AB10) 09:03 (AB10)
5	05:32 20:41	05:58 20:17	06:31 19:31	18:32 (AB07) 19:01 (AB07)	07:02 18:38	06:38 16:52	07:14 16:31	08:33 (AB10) 09:05 (AB10)
6	05:32 20:40	05:59 20:16	06:32 19:29	18:33 (AB07) 18:59 (AB07)	07:03 18:37	06:40 16:51	07:14 16:31	08:33 (AB10) 09:06 (AB10)
7	05:33 20:40	06:00 20:14	06:33 19:27	18:34 (AB07) 18:57 (AB07)	07:04 18:35	06:41 16:50	07:15 16:31	08:32 (AB10) 09:07 (AB10)
8	05:34 20:40	06:01 20:13	06:34 19:25	18:35 (AB07) 18:55 (AB07)	07:05 18:33	06:42 16:49	07:16 16:30	08:32 (AB10) 09:09 (AB10)
9	05:34 20:39	06:03 20:12	06:35 19:24	18:38 (AB07) 18:52 (AB07)	07:07 18:32	06:43 16:48	07:17 16:30	08:32 (AB10) 09:10 (AB10)
10	05:35 20:39	06:04 20:11	06:36 19:22		07:08 18:30	06:44 16:47	07:18 16:30	08:31 (AB10) 09:10 (AB10)
11	05:36 20:39	06:05 20:09	06:37 19:20		07:09 18:28	06:46 16:46	07:19 16:31	08:31 (AB10) 09:11 (AB10)
12	05:36 20:38	06:06 20:08	06:38 19:18		07:10 18:27	06:47 16:45	07:20 16:31	08:32 (AB10) 09:12 (AB10)
13	05:37 20:38	06:07 20:07	06:39 19:17		07:11 18:25	06:48 16:44	07:21 16:31	08:32 (AB10) 09:13 (AB10)
14	05:38 20:37	06:08 20:05	06:40 19:15		07:12 18:24	06:49 16:43	07:21 16:31	08:32 (AB10) 09:14 (AB10)
15	05:39 20:36	06:09 20:04	06:41 19:13		07:13 18:22	06:51 16:42	07:22 16:31	08:32 (AB10) 09:14 (AB10)
16	05:40 20:36	06:10 20:02	06:42 19:11		07:14 18:20	06:52 16:41	07:23 16:31	08:32 (AB10) 09:15 (AB10)
17	05:40 20:35	06:11 20:01	18:47 (AB07) 18:57 (AB07)	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32	08:33 (AB10) 09:16 (AB10)
18	05:41 20:34	06:12 19:59	18:44 (AB07) 19:00 (AB07)	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32	08:33 (AB10) 09:16 (AB10)
19	05:42 20:34	06:13 19:58	18:41 (AB07) 19:02 (AB07)	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32	08:33 (AB10) 09:17 (AB10)
20	05:43 20:33	06:14 19:56	18:40 (AB07) 19:03 (AB07)	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33	08:33 (AB10) 09:17 (AB10)
21	05:44 20:32	06:15 19:55	18:38 (AB07) 19:04 (AB07)	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33	08:34 (AB10) 09:18 (AB10)
22	05:45 20:31	06:16 19:53	18:37 (AB07) 19:05 (AB07)	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34	08:34 (AB10) 09:18 (AB10)
23	05:46 20:31	06:17 19:52	18:35 (AB07) 19:06 (AB07)	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34	08:35 (AB10) 09:19 (AB10)
24	05:47 20:30	06:18 19:50	18:34 (AB07) 19:06 (AB07)	06:50 18:57	07:24 18:08	07:01 16:35	07:28 16:35	08:35 (AB10) 09:19 (AB10)
25	05:48 20:29	06:19 19:49	18:34 (AB07) 19:06 (AB07)	06:51 18:56	07:25 17:07	07:03 16:34	07:28 16:35	08:36 (AB10) 09:20 (AB10)
26	05:49 20:28	06:20 19:47	18:33 (AB07) 19:07 (AB07)	06:52 18:54	07:26 17:05	07:04 16:34	07:28 16:36	08:37 (AB10) 09:20 (AB10)
27	05:49 20:27	06:21 19:45	18:32 (AB07) 19:07 (AB07)	06:54 18:52	07:27 17:04	07:05 16:33	07:29 16:37	08:37 (AB10) 09:20 (AB10)
28	05:50 20:26	06:22 19:44	18:32 (AB07) 19:06 (AB07)	06:55 18:50	07:29 17:03	07:06 16:33	07:29 16:37	08:37 (AB10) 09:20 (AB10)
29	05:51 20:25	06:23 19:42	18:31 (AB07) 19:06 (AB07)	06:56 18:49	07:30 17:01	07:07 16:33	07:29 16:38	08:39 (AB10) 09:21 (AB10)
30	05:52 20:24	06:24 19:41	18:31 (AB07) 19:06 (AB07)	06:57 18:47	07:31 17:00	07:08 16:32	07:30 16:39	08:40 (AB10) 09:21 (AB10)
31	05:53 20:23	06:25 19:39	18:31 (AB07) 19:05 (AB07)		07:32 16:59		07:30 16:40	08:40 (AB10) 09:21 (AB10)
Potential sun hours	462	430	375	344	296	285		
Total, worst case		426	242		28		1210	

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: WF Abruzzo shadow flickering worst case Shadow receptor: R013 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (79)

### 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	07:30	08:47 (AB10)	07:16	06:39	06:46	05:59
	16:41	42	09:29 (AB10)	17:16	17:51	19:27
2	07:30	08:48 (AB10)	07:15	06:37	06:45	05:58
	16:41	41	09:29 (AB10)	17:17	17:52	19:28
3	07:30	08:48 (AB10)	07:14	06:35	06:43	05:57
	16:42	41	09:29 (AB10)	17:18	17:53	19:29
4	07:30	08:50 (AB10)	07:13	06:34	06:41	18:45 (AB07)
	16:43	39	09:29 (AB10)	17:20	17:55	19:30
5	07:30	08:51 (AB10)	07:12	06:32	06:40	18:41 (AB07)
	16:44	37	09:28 (AB10)	17:21	17:56	19:31
6	07:30	08:52 (AB10)	07:10	06:31	06:38	19:00 (AB07)
	16:45	36	09:28 (AB10)	17:22	17:57	19:32
7	07:30	08:53 (AB10)	07:09	06:29	06:36	18:37 (AB07)
	16:46	35	09:28 (AB10)	17:23	17:58	19:33
8	07:30	08:54 (AB10)	07:08	06:27	06:35	18:36 (AB07)
	16:47	33	09:27 (AB10)	17:25	17:59	19:34
9	07:30	08:56 (AB10)	07:07	06:26	06:33	19:03 (AB07)
	16:48	30	09:26 (AB10)	17:26	18:01	19:35
10	07:30	08:57 (AB10)	07:06	06:24	06:31	18:34 (AB07)
	16:49	29	09:26 (AB10)	17:27	18:02	19:36
11	07:29	08:59 (AB10)	07:04	06:22	06:30	18:32 (AB07)
	16:50	25	09:24 (AB10)	17:29	18:03	19:38
12	07:29	09:01 (AB10)	07:03	06:21	06:28	19:05 (AB07)
	16:51	22	09:23 (AB10)	17:30	18:04	19:39
13	07:29	09:04 (AB10)	07:02	06:19	06:26	18:31 (AB07)
	16:52	17	09:21 (AB10)	17:31	18:05	19:40
14	07:28	09:07 (AB10)	07:01	06:17	06:25	18:32 (AB07)
	16:54	10	09:17 (AB10)	17:32	18:06	19:41
15	07:28	06:59	06:16	06:23	18:31 (AB07)	05:43
	16:55		17:34	18:07	19:42	34
16	07:28	06:58	06:14	06:22	18:31 (AB07)	05:42
	16:56		17:35	18:09	19:43	34
17	07:27	06:57	06:12	06:20	18:31 (AB07)	05:41
	16:57		17:36	18:10	19:44	33
18	07:27	06:55	06:10	06:18	18:31 (AB07)	05:40
	16:58		17:38	18:11	19:45	32
19	07:26	06:54	06:09	06:17	18:32 (AB07)	05:39
	16:59		17:39	18:12	19:46	31
20	07:25	06:52	06:07	06:15	18:32 (AB07)	05:38
	17:01		17:40	18:13	19:48	30
21	07:25	06:51	06:05	06:14	18:33 (AB07)	05:37
	17:02		17:41	18:14	19:49	28
22	07:24	06:49	06:04	06:12	18:33 (AB07)	05:36
	17:03		17:42	18:15	19:50	27
23	07:23	06:48	06:02	06:11	18:34 (AB07)	05:35
	17:04		17:44	18:16	19:51	25
24	07:23	06:46	06:00	06:09	18:36 (AB07)	05:34
	17:06		17:45	18:18	19:52	22
25	07:22	06:45	05:58	06:08	18:37 (AB07)	05:34
	17:07		17:46	18:19	19:53	18
26	07:21	06:43	05:57	06:06	18:40 (AB07)	05:33
	17:08		17:47	18:20	19:54	13
27	07:20	06:42	05:55	06:05	18:53 (AB07)	05:32
	17:09		17:49	18:21	19:55	
28	07:20	06:40	05:53	06:03	05:32	05:28
	17:11		17:50	18:22	19:56	
29	07:19			06:52	06:02	05:31
	17:12			19:23	19:58	
30	07:18			06:50	06:01	05:30
	17:13			19:24	19:59	
31	07:17			06:48		05:30
	17:14			19:25		20:29
Potential sun hours	295		296	369	400	451
Total, worst case	437				628	455

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: WF Abruzzo shadow flickering worst case Shadow receptor: R013 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (79)

### 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	05:30 20:41	05:54 20:22	06:26 19:37	18:32 (AB07) 19:05 (AB07)	06:58 18:45	06:33 16:57	07:09 16:32	25	08:41 (AB10) 09:06 (AB10)
2	05:30 20:41	05:55 20:21	06:27 19:36	18:33 (AB07) 19:04 (AB07)	06:59 18:44	06:35 16:56	07:10 16:32	27	08:41 (AB10) 09:08 (AB10)
3	05:31 20:41	05:56 20:19	06:29 19:34	18:33 (AB07) 19:03 (AB07)	07:00 18:42	06:36 16:55	07:11 16:31	30	08:40 (AB10) 09:10 (AB10)
4	05:31 20:41	05:57 20:18	06:30 19:32	18:34 (AB07) 19:01 (AB07)	07:01 18:40	06:37 16:54	07:12 16:31	32	08:39 (AB10) 09:11 (AB10)
5	05:32 20:41	05:58 20:17	06:31 19:31	18:34 (AB07) 19:00 (AB07)	07:02 18:38	06:38 16:52	07:14 16:31	35	08:38 (AB10) 09:13 (AB10)
6	05:32 20:40	05:59 20:16	06:32 19:29	18:36 (AB07) 18:58 (AB07)	07:03 18:37	06:40 16:51	07:14 16:31	36	08:38 (AB10) 09:14 (AB10)
7	05:33 20:40	06:00 20:14	06:33 19:27	18:37 (AB07) 18:56 (AB07)	07:04 18:35	06:41 16:50	07:15 16:31	37	08:38 (AB10) 09:15 (AB10)
8	05:34 20:40	06:01 20:13	06:34 19:25	18:40 (AB07) 18:53 (AB07)	07:05 18:33	06:42 16:49	07:16 16:30	39	08:38 (AB10) 09:17 (AB10)
9	05:34 20:39	06:03 20:12	06:35 19:24		07:07 18:32	06:43 16:48	07:17 16:30	40	08:38 (AB10) 09:18 (AB10)
10	05:35 20:39	06:04 20:11	06:36 19:22		07:08 18:30	06:44 16:47	07:18 16:30	41	08:37 (AB10) 09:18 (AB10)
11	05:36 20:39	06:05 20:09	06:37 19:20		07:09 18:28	06:46 16:46	07:19 16:31	42	08:37 (AB10) 09:19 (AB10)
12	05:36 20:38	06:06 20:08	06:38 19:18		07:10 18:27	06:47 16:45	07:20 16:31	43	08:37 (AB10) 09:20 (AB10)
13	05:37 20:38	06:07 20:07	06:39 19:17		07:11 18:25	06:48 16:44	07:21 16:31	44	08:37 (AB10) 09:21 (AB10)
14	05:38 20:37	06:08 20:05	06:40 19:15		07:12 18:24	06:49 16:43	07:21 16:31	44	08:38 (AB10) 09:22 (AB10)
15	05:39 20:36	06:09 20:04	06:41 19:13		07:13 18:22	06:51 16:42	07:22 16:31	45	08:37 (AB10) 09:22 (AB10)
16	05:40 20:36	06:10 20:02	18:50 (AB07) 18:56 (AB07)	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31	45	08:38 (AB10) 09:23 (AB10)
17	05:40 20:35	06:11 20:01	18:46 (AB07) 19:00 (AB07)	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32	46	08:38 (AB10) 09:24 (AB10)
18	05:41 20:34	06:12 19:59	18:43 (AB07) 19:02 (AB07)	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32	46	08:38 (AB10) 09:24 (AB10)
19	05:42 20:34	06:13 19:58	18:42 (AB07) 19:04 (AB07)	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32	46	08:39 (AB10) 09:25 (AB10)
20	05:43 20:33	06:14 19:56	18:40 (AB07) 19:05 (AB07)	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33	46	08:39 (AB10) 09:25 (AB10)
21	05:44 20:32	06:15 19:55	18:38 (AB07) 19:06 (AB07)	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33	46	08:40 (AB10) 09:26 (AB10)
22	05:45 20:31	06:16 19:53	18:37 (AB07) 19:06 (AB07)	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34	46	08:40 (AB10) 09:26 (AB10)
23	05:46 20:31	06:17 19:52	18:36 (AB07) 19:07 (AB07)	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34	46	08:41 (AB10) 09:27 (AB10)
24	05:47 20:30	06:18 19:50	18:35 (AB07) 19:07 (AB07)	06:50 18:57	07:24 18:08	07:01 16:35	07:28 16:35	46	08:41 (AB10) 09:27 (AB10)
25	05:48 20:29	06:19 19:49	18:35 (AB07) 19:07 (AB07)	06:51 18:56	06:25 17:07	07:03 16:34	07:28 16:35	46	08:42 (AB10) 09:28 (AB10)
26	05:49 20:28	06:20 19:47	18:34 (AB07) 19:07 (AB07)	06:52 18:54	06:26 17:05	07:04 16:34	07:28 16:36	46	08:42 (AB10) 09:28 (AB10)
27	05:49 20:27	06:21 19:45	18:33 (AB07) 19:07 (AB07)	06:54 18:52	06:27 17:04	07:05 16:33	07:29 16:37	45	08:43 (AB10) 09:28 (AB10)
28	05:50 20:26	06:22 19:44	18:33 (AB07) 19:07 (AB07)	06:55 18:50	06:29 17:03	07:06 16:33	07:29 16:37	45	08:43 (AB10) 09:28 (AB10)
29	05:51 20:25	06:23 19:42	18:33 (AB07) 19:07 (AB07)	06:56 18:49	06:30 17:01	07:07 16:33	07:29 16:38	45	08:44 (AB10) 09:29 (AB10)
30	05:52 20:24	06:24 19:41	18:32 (AB07) 19:06 (AB07)	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39	44	08:45 (AB10) 09:29 (AB10)
31	05:53 20:23	06:25 19:39	18:32 (AB07) 19:06 (AB07)		06:32 16:59		07:30 16:40	43	08:46 (AB10) 09:29 (AB10)
Potential sun hours	462	430	375	344	296	285			
Total, worst case		441	201		48		1287		

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 Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:49/3.5.587

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flikering worst case Shadow receptor: R015 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (80)  
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	07:30	07:16	06:39	06:46	18:14 (AB07)	05:59	05:29	05:30	05:54	06:26	18:18 (AB07)	06:58	06:33	07:09	
	16:41	17:16	17:51	19:27	38	18:52 (AB07)	20:00	20:30	20:41	19:37	24	18:42 (AB07)	18:45	16:57	16:32
2	07:30	07:15	06:37	06:45	18:14 (AB07)	05:58	05:29	05:30	05:55	06:27	18:16 (AB07)	06:59	06:35	07:10	
	16:41	17:17	17:52	19:28	37	18:51 (AB07)	20:01	20:31	20:21	19:36	27	18:43 (AB07)	18:44	16:56	16:32
3	07:30	07:14	06:35	06:43	18:14 (AB07)	05:57	05:28	05:31	05:56	06:29	18:15 (AB07)	07:00	06:36	07:11	
	16:42	17:18	17:53	19:29	38	18:52 (AB07)	20:02	20:32	20:19	19:34	29	18:44 (AB07)	18:42	16:55	16:31
4	07:30	07:13	06:34	06:41	18:14 (AB07)	05:55	05:28	05:31	05:57	06:30	18:13 (AB07)	07:01	06:37	07:13	
	16:43	17:20	17:55	19:30	37	18:51 (AB07)	20:03	20:33	20:18	19:32	32	18:45 (AB07)	18:40	16:54	16:31
5	07:30	07:12	06:32	06:40	18:14 (AB07)	05:54	05:28	05:32	05:58	06:31	18:12 (AB07)	07:02	06:38	07:14	
	16:44	17:21	17:56	19:31	36	18:50 (AB07)	20:04	20:33	20:17	19:31	33	18:45 (AB07)	18:38	16:52	16:31
6	07:30	07:10	06:31	06:38	18:15 (AB07)	05:53	05:27	05:32	05:59	06:32	18:11 (AB07)	07:03	06:40	07:14	
	16:45	17:22	17:57	19:32	35	18:50 (AB07)	20:05	20:34	20:16	19:29	35	18:46 (AB07)	18:37	16:51	16:31
7	07:30	07:09	06:29	06:36	18:15 (AB07)	05:52	05:27	05:33	06:00	06:33	18:10 (AB07)	07:04	06:41	07:15	
	16:46	17:23	17:58	19:33	33	18:48 (AB07)	20:06	20:35	20:15	19:27	36	18:46 (AB07)	18:35	16:50	16:31
8	07:30	07:08	06:27	06:35	18:15 (AB07)	05:50	05:27	05:34	06:01	06:34	18:09 (AB07)	07:05	06:42	07:16	
	16:47	17:25	17:59	19:34	32	18:47 (AB07)	20:07	20:35	20:13	19:25	37	18:46 (AB07)	18:33	16:49	16:30
9	07:30	07:07	06:26	06:33	18:17 (AB07)	05:49	05:27	05:34	06:03	06:35	18:08 (AB07)	07:07	06:43	07:17	
	16:48	17:26	18:01	19:35	29	18:46 (AB07)	20:08	20:36	20:39	19:24	38	18:46 (AB07)	18:32	16:48	16:30
10	07:30	07:06	06:24	06:31	18:17 (AB07)	05:48	05:26	05:35	06:04	06:36	18:08 (AB07)	07:08	06:45	07:18	
	16:49	17:27	18:02	19:37	27	18:44 (AB07)	20:09	20:36	20:39	19:22	38	18:46 (AB07)	18:30	16:47	16:30
11	07:29	07:04	06:22	06:30	18:19 (AB07)	05:47	05:26	05:36	06:05	06:37	18:07 (AB07)	07:09	06:46	07:19	
	16:50	17:29	18:03	19:38	23	18:42 (AB07)	20:11	20:37	20:39	19:20	38	18:45 (AB07)	18:28	16:46	16:31
12	07:29	07:03	06:21	06:28	18:21 (AB07)	05:46	05:26	05:36	06:06	06:38	18:07 (AB07)	07:10	06:47	07:20	
	16:51	17:30	18:04	19:39	19	18:40 (AB07)	20:12	20:37	20:38	19:18	37	18:44 (AB07)	18:27	16:45	16:31
13	07:29	07:02	06:19	06:26	18:23 (AB07)	05:45	05:26	05:37	06:07	06:39	18:07 (AB07)	07:11	06:48	07:21	
	16:52	17:31	18:05	19:40	13	18:36 (AB07)	20:13	20:38	20:38	19:17	36	18:43 (AB07)	18:25	16:44	16:31
14	07:28	07:01	06:17	06:25	18:24 (AB07)	05:44	05:26	05:38	06:08	06:40	18:07 (AB07)	07:12	06:49	07:22	
	16:54	17:32	18:06	19:41	20:14	20:38	20:37	20:05	19:15	19:15	34	18:41 (AB07)	18:24	16:43	16:31
15	07:28	06:59	06:16	06:23	18:25 (AB07)	05:43	05:26	05:39	06:09	06:41	18:07 (AB07)	07:13	06:51	07:22	
	16:55	17:34	18:07	19:42	20:15	20:39	20:36	20:04	19:13	19:13	33	18:40 (AB07)	18:22	16:42	16:31
16	07:28	06:58	06:14	06:22	18:26 (AB07)	05:42	05:26	05:40	06:10	06:42	18:07 (AB07)	07:14	06:52	07:23	
	16:56	17:35	18:09	19:43	20:16	20:39	20:36	20:02	19:11	19:11	31	18:38 (AB07)	18:20	16:41	16:31
17	07:27	06:57	06:12	06:20	18:27 (AB07)	05:41	05:26	05:40	06:11	06:43	18:07 (AB07)	07:16	06:53	07:24	
	16:57	17:36	18:10	19:44	20:17	20:40	20:35	20:01	19:10	19:10	30	18:37 (AB07)	18:19	16:40	16:32
18	07:27	06:55	06:11	06:18	18:28 (AB07)	05:40	05:26	05:41	06:12	06:44	18:08 (AB07)	07:17	06:54	07:24	
	16:58	17:38	18:11	19:45	20:18	20:40	20:34	19:59	19:08	19:08	27	18:35 (AB07)	18:17	16:39	16:32
19	07:26	06:54	06:09	06:17	18:29 (AB07)	05:39	05:26	05:42	06:13	06:45	18:09 (AB07)	07:18	06:56	07:25	
	16:59	17:39	18:12	19:46	20:19	20:40	20:34	19:58	19:06	19:06	25	18:34 (AB07)	18:16	16:38	16:32
20	07:25	06:52	06:07	06:15	18:30 (AB07)	05:38	05:26	05:43	06:14	06:46	18:10 (AB07)	07:19	06:57	07:26	
	17:01	17:40	18:13	19:48	20:20	20:41	20:33	19:56	19:04	19:04	23	18:33 (AB07)	18:14	16:38	16:33
21	07:25	06:51	06:05	06:14	17:29 (AB07)	05:37	05:26	05:44	06:15	06:47	18:11 (AB07)	07:20	06:58	07:26	
	17:02	17:41	18:14	15	17:44 (AB07)	05:37	05:26	05:44	06:15	19:03	20	18:31 (AB07)	18:13	16:37	16:33
22	07:24	06:49	06:04	06:12	17:25 (AB07)	05:36	05:26	05:45	06:16	06:48	18:13 (AB07)	07:21	06:59	07:27	
	17:03	17:42	18:15	20	17:45 (AB07)	05:36	05:26	05:45	06:16	19:01	17	18:30 (AB07)	18:11	16:36	16:34
23	07:23	06:48	06:02	06:11	17:24 (AB07)	05:35	05:27	05:46	06:17	06:49	18:17 (AB07)	07:23	07:00	07:27	
	17:04	17:44	18:17	22	17:46 (AB07)	05:35	05:27	05:46	06:17	18:59	9	18:26 (AB07)	18:10	16:36	16:34
24	07:23	06:46	06:00	06:09	17:22 (AB07)	05:34	05:27	05:47	06:18	06:50	18:16 (AB07)	07:24	07:01	07:28	
	17:06	17:45	18:18	24	17:46 (AB07)	05:34	05:27	05:47	06:18	18:57	18:08	18:08	16:35	16:35	
25	07:22	06:45	05:58	06:08	17:20 (AB07)	05:34	05:27	05:48	06:19	06:51	18:15 (AB07)	07:25	07:02	07:28	
	17:07	17:46	18:19	27	17:47 (AB07)	05:33	05:28	05:49	06:20	18:56	17:07	16:34	16:35	16:35	
26	07:21	06:43	05:57	06:06	17:19 (AB07)	05:33	05:28	05:49	06:20	06:52	18:14 (AB07)	07:26	07:04	07:28	
	17:08	17:47	18:20	29	17:48 (AB07)	05:32	05:28	05:49	06:21	18:54	17:05	16:34	16:36	16:36	
27	07:20	06:42	05:55	06:05	17:18 (AB07)	05:32	05:28	05:49	06:21	06:54	18:14 (AB07)	07:27	07:05	07:29	
	17:09	17:49	18:21	31	17:49 (AB07)	05:32	05:28	05:49	06:21	18:52	17:04	16:33	16:37	16:37	
28	07:20	06:40	05:53	06:03	17:17 (AB07)	05:32	05:28	05:50	06:22	06:55	18:13 (AB07)	07:28	07:06	07:29	
	17:11	17:50	18:22	32	17:49 (AB07)	05:31	05:29	05:51	06:23	18:50	17:03	16:33	16:37	16:37	
29	07:19	06:52	06:02	06:02	18:15 (AB07)	05:31	05:29	05:51	06:23	06:56	18:12 (AB07)	07:29	07:07	07:29	
	17:12	17:51	18:23	35	18:50 (AB07)	05:30	05:29	05:52	06:24	18:49	17:01	16:33	16:38	16:38	
30	07:18	06:50	06:01	06:01	18:16 (AB07)	05:30	05:29	05:52	06:24	18:47	18:11 (AB07)	07:30	07:08	07:30	
	17:13	17:52	18:24	35	18:51 (AB07)	05:30	05:29	05:52	06:24	18:47	18:11 (AB07)	07:30	07:08	07:30	
31	07:17	06:48	06:01	06:01	18:15 (AB07)	05:30	05:29	05:52	06:24	18:47	18:11 (AB07)	07:30	07:08	07:30	
	17:14	17:53	18:25	37	18:52 (AB07)	05:30	05:29	05:52	06:24	18:47	18:11 (AB07)	07:30	07:08	07:30	
Potential sun hours		296		400		451	455	462	430	375	689	344	296	285	
Total, worst case		296	307	397		451	455	462	430	375	689	344	296	285	

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: WF Abruzzo shadow flikering worst case Shadow receptor: R016 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (81)  
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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:27	18:14 (AB07) 20:00	05:59 20:30	05:29 20:41	05:54 20:22	06:26 19:37	18:17 (AB07) 18:44 (AB07)	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	18:14 (AB07) 20:01	05:58 20:31	05:29 20:41	05:55 20:21	06:27 19:36	18:15 (AB07) 18:44 (AB07)	06:59 18:44	06:35 16:56	07:10 16:32
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	18:14 (AB07) 20:02	05:57 20:32	05:28 20:41	05:56 20:19	06:29 19:34	18:14 (AB07) 18:45 (AB07)	07:00 18:42	06:36 16:55	07:11 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	18:14 (AB07) 20:03	05:55 20:33	05:28 20:41	05:57 20:18	06:30 19:32	18:12 (AB07) 18:46 (AB07)	07:01 18:40	06:37 16:54	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	18:13 (AB07) 20:04	05:54 20:33	05:28 20:41	05:58 20:17	06:31 19:31	18:11 (AB07) 18:46 (AB07)	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	18:14 (AB07) 20:05	05:53 20:34	05:27 20:40	05:59 20:16	06:32 19:29	18:10 (AB07) 18:47 (AB07)	07:03 18:37	06:40 16:51	07:14 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	18:14 (AB07) 20:06	05:52 20:35	05:27 20:40	06:00 20:15	06:33 19:27	18:09 (AB07) 18:47 (AB07)	07:04 18:35	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	18:14 (AB07) 20:07	05:50 20:35	05:27 20:40	06:01 20:13	06:34 19:25	18:09 (AB07) 18:47 (AB07)	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	18:16 (AB07) 20:08	05:49 20:36	05:27 20:39	06:03 20:12	06:35 19:24	18:08 (AB07) 18:46 (AB07)	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	18:16 (AB07) 20:09	05:48 20:36	05:26 20:39	06:04 20:11	06:36 19:22	18:08 (AB07) 18:46 (AB07)	07:08 18:30	06:45 16:47	07:18 16:30
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	18:17 (AB07) 20:11	05:47 20:37	05:26 20:39	06:05 20:09	06:37 19:20	18:07 (AB07) 18:45 (AB07)	07:09 18:28	06:46 16:46	07:19 16:31
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	18:19 (AB07) 20:12	05:46 20:37	05:26 20:38	06:06 20:08	06:38 19:18	18:07 (AB07) 18:43 (AB07)	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	18:20 (AB07) 20:13	05:45 20:38	05:26 20:38	06:07 20:07	06:39 19:17	18:07 (AB07) 18:42 (AB07)	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	18:24 (AB07) 20:14	05:44 20:38	05:26 20:37	06:08 20:05	06:40 19:15	18:07 (AB07) 18:40 (AB07)	07:12 18:24	06:49 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	18:37 (AB07) 20:14	05:43 20:38	05:26 20:37	06:09 20:05	06:41 19:13	18:07 (AB07) 18:39 (AB07)	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:11	18:07 (AB07) 18:37 (AB07)	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	18:08 (AB07) 18:36 (AB07)	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:38	06:11 18:11	06:18 19:45	05:40 20:18	05:26 20:40	05:41 20:34	06:12 19:59	06:44 19:08	18:09 (AB07) 18:35 (AB07)	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	18:10 (AB07) 18:33 (AB07)	07:18 18:16	06:56 16:38	07:25 16:32
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	18:11 (AB07) 18:32 (AB07)	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	17:32 (AB07) 17:42 (AB07)	06:14 19:49	05:37 20:21	06:15 19:55	06:47 19:03	18:13 (AB07) 18:31 (AB07)	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	17:27 (AB07) 17:44 (AB07)	06:12 19:50	05:36 20:22	06:16 19:53	06:48 19:01	18:16 (AB07) 18:28 (AB07)	07:21 18:11	06:59 16:36	07:27 16:34
23	07:24 17:04	06:48 17:44	06:02 18:17	06:11 19:51	17:25 (AB07) 17:45 (AB07)	06:11 19:51	05:35 20:23	06:17 19:52	06:49 18:59	18:25 (AB07) 18:38 (AB07)	07:22 18:10	06:59 16:36	07:27 16:34
24	07:23 17:06	06:46 17:45	06:00 18:18	06:09 19:52	17:23 (AB07) 17:46 (AB07)	06:09 19:52	05:34 20:23	06:18 19:50	06:50 18:57	18:36 (AB07) 18:41 (AB07)	07:23 18:08	07:01 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	17:21 (AB07) 17:46 (AB07)	06:08 19:53	05:34 20:24	06:19 19:49	06:51 18:56	18:42 (AB07) 18:47 (AB07)	07:24 18:07	07:02 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	17:20 (AB07) 17:48 (AB07)	06:06 19:54	05:33 20:25	06:20 19:47	06:52 18:54	18:49 (AB07) 18:54 (AB07)	07:25 18:06	07:03 16:34	07:28 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	17:18 (AB07) 17:48 (AB07)	06:05 19:55	05:32 20:26	06:21 19:45	06:54 18:52	18:51 (AB07) 18:57 (AB07)	07:26 18:05	07:04 16:33	07:29 16:37
28	07:20 17:11	06:40 17:50	05:53 18:22	06:03 19:56	17:17 (AB07) 17:48 (AB07)	06:03 19:56	05:32 20:27	06:22 19:44	06:55 18:51	18:58 (AB07) 18:59 (AB07)	07:27 18:03	07:05 16:33	07:29 16:37
29	07:19 17:12	06:52 19:23	06:52 18:23	06:02 19:58	18:16 (AB07) 18:49 (AB07)	06:02 19:58	05:31 20:28	06:23 19:42	06:56 18:51	18:25 (AB07) 18:38 (AB07)	07:28 18:01	07:06 16:33	07:29 16:38
30	07:18 17:13	06:50 19:24	06:50 18:16	06:01 19:59	18:16 (AB07) 18:50 (AB07)	06:01 19:59	05:30 20:29	06:24 19:41	06:57 18:47	18:21 (AB07) 18:41 (AB07)	07:29 18:00	07:07 16:32	07:30 16:39
31	07:17 17:14	06:48 19:25	06:48 18:15	06:00 19:59	18:15 (AB07) 18:51 (AB07)	06:00 19:59	05:30 20:30	06:25 19:39	06:58 23	18:19 (AB07) 18:42 (AB07)	07:30 18:00	07:08 16:32	07:30 16:40
Potential sun hours	295	296	369	400	439	451	462	430	375	344	296	285	
Total, worst case			287	439				56	678				

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: WF Abruzzo shadow flikering worst case Shadow receptor: R017 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (82)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	17:53 (AB06) 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	17:54 (AB06) 20:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	17:55 (AB06) 20:32
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	17:56 (AB06) 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	17:59 (AB06) 20:33
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	18:12 (AB06) 20:05	05:53 18:02 (AB06)
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	18:13 (AB06) 20:06	05:52 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	18:04 (AB06) 20:07	05:50 20:35
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	18:22 (AB06) 20:08	05:49 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	18:25 (AB06) 20:09	05:48 20:36
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	17:54 (AB06) 20:11	05:47 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	18:26 (AB06) 20:12	05:46 20:37
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	17:53 (AB06) 20:13	05:45 20:38
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	18:28 (AB06) 20:14	05:44 20:38
15	07:28 16:55	06:59 17:34	06:16 18:07	16:59 (AB07) 17:01 (AB07)	06:23 19:42	05:43 20:15
16	07:28 16:56	06:58 17:35	06:14 18:09	16:58 (AB07) 17:02 (AB07)	06:22 19:43	05:42 20:16
17	07:27 16:57	06:57 17:36	06:12 18:10	16:58 (AB07) 17:03 (AB07)	06:20 19:44	05:41 20:17
18	07:27 16:58	06:55 17:37	06:10 18:11	16:57 (AB07) 17:04 (AB07)	06:18 19:45	05:40 20:18
19	07:26 16:59	06:54 17:39	06:09 18:12	16:58 (AB07) 17:06 (AB07)	06:17 19:46	05:39 20:19
20	07:25 17:01	06:52 17:40	06:07 18:13	16:58 (AB07) 17:08 (AB07)	06:15 19:48	05:38 20:20
21	07:25 17:02	06:51 17:41	06:05 18:14	16:58 (AB07) 17:09 (AB07)	06:14 19:49	05:37 20:21
22	07:24 17:03	06:49 17:42	06:04 18:15	16:59 (AB07) 17:10 (AB07)	06:12 19:50	05:36 20:22
23	07:23 17:04	06:48 17:44	06:02 18:16	17:01 (AB07) 17:12 (AB07)	06:11 19:51	05:35 20:23
24	07:23 17:06	06:46 17:45	06:00 18:18	17:02 (AB07) 17:13 (AB07)	06:09 19:52	05:34 20:23
25	07:22 17:07	06:45 17:46	05:58 18:19	17:06 (AB07) 17:11 (AB07)	06:08 19:53	05:34 20:24
26	07:21 17:08	06:43 17:47	05:57 18:20	17:11 (AB07)	06:06 19:54	05:33 20:25
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	06:05 19:55	05:32 20:26
28	07:20 17:11	06:40 17:50	05:53 18:22	06:03 19:56	06:03 19:56	05:32 20:27
29	07:19 17:12	06:39 17:51	05:52 18:23	06:02 19:57	06:02 19:57	05:31 20:28
30	07:18 17:13	06:38 17:52	05:50 18:24	06:01 19:58	06:01 19:58	05:30 20:29
31	07:17 17:14	06:37 17:53	05:48 18:25	06:00 19:59	06:00 19:59	05:29 20:30
Potential sun hours	295	296	369	400	451	455
Total, worst case			85	865	134	

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: WF Abruzzo shadow flikering worst case Shadow receptor: R017 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (82)

### 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	05:30 20:41	05:54 20:22	06:26 19:37	17:54 (AB06) 18:26 (AB06)	06:58 18:45	06:33 16:57
2	05:30 20:41	05:55 20:20	06:27 19:36	17:55 (AB06) 18:25 (AB06)	06:59 18:44	06:35 16:56
3	05:31 20:41	05:56 20:19	06:29 19:34	17:56 (AB06) 18:23 (AB06)	07:00 18:42	06:36 16:55
4	05:31 20:41	05:57 20:18	06:30 19:32	17:58 (AB06) 18:20 (AB06)	07:01 18:40	06:37 16:53
5	05:32 20:41	05:58 20:17	06:31 19:30	18:01 (AB06) 18:17 (AB06)	07:02 18:38	06:38 16:52
6	05:32 20:40	05:59 20:16	18:15 (AB06) 18:20 (AB06)	06:32 19:29	18:07 (AB06) 18:10 (AB06)	07:03 16:51
7	05:33 20:40	06:00 20:14	18:10 (AB06) 18:24 (AB06)	06:33 19:27	07:04 18:35	06:41 16:50
8	05:34 20:40	06:01 20:13	18:08 (AB06) 18:27 (AB06)	06:34 19:25	07:05 18:33	06:42 16:49
9	05:34 20:39	06:02 20:12	18:06 (AB06) 18:28 (AB06)	06:35 19:24	07:07 18:32	06:43 16:48
10	05:35 20:39	06:04 20:11	18:04 (AB06) 18:30 (AB06)	06:36 19:22	07:08 18:30	06:44 16:47
11	05:36 20:39	06:05 20:09	18:02 (AB06) 18:31 (AB06)	06:37 19:20	07:09 18:28	06:46 16:46
12	05:36 20:38	06:06 20:08	18:01 (AB06) 18:32 (AB06)	06:38 19:18	07:10 18:27	06:47 16:45
13	05:37 20:38	06:07 20:07	18:00 (AB06) 18:33 (AB06)	06:39 19:17	07:11 18:25	06:48 16:44
14	05:38 20:37	06:08 20:05	17:59 (AB06) 18:33 (AB06)	06:40 19:15	07:12 18:24	06:49 16:43
15	05:39 20:36	06:09 20:04	17:58 (AB06) 18:34 (AB06)	06:41 19:13	07:13 18:22	06:51 16:42
16	05:40 20:36	06:10 20:02	17:57 (AB06) 18:34 (AB06)	06:42 19:11	07:14 18:20	06:52 16:41
17	05:40 20:35	06:11 20:01	17:56 (AB06) 18:34 (AB06)	06:43 19:10	07:16 18:19	06:53 16:40
18	05:41 20:34	06:12 19:59	17:55 (AB06) 18:35 (AB06)	06:44 19:08	07:17 18:17	06:54 16:39
19	05:42 20:34	06:13 19:58	17:54 (AB06) 18:35 (AB06)	06:45 19:06	17:50 (AB07) 18:01 (AB07)	06:56 16:38
20	05:43 20:33	06:14 19:56	17:54 (AB06) 18:35 (AB06)	06:46 19:04	17:48 (AB07) 17:59 (AB07)	06:57 16:38
21	05:44 20:32	06:15 19:55	17:53 (AB06) 18:35 (AB06)	06:47 19:03	17:46 (AB07) 17:57 (AB07)	06:58 16:37
22	05:45 20:31	06:16 19:53	17:53 (AB06) 18:34 (AB06)	06:48 19:01	17:44 (AB07) 17:55 (AB07)	06:59 16:36
23	05:47 20:31	06:17 19:52	17:52 (AB06) 18:34 (AB06)	06:49 18:59	17:43 (AB07) 17:53 (AB07)	07:00 16:36
24	05:47 20:30	06:18 19:50	17:52 (AB06) 18:34 (AB06)	06:50 18:57	17:42 (AB07) 17:50 (AB07)	07:01 16:35
25	05:48 20:29	06:19 19:49	17:52 (AB06) 18:33 (AB06)	06:51 18:56	17:41 (AB07) 17:48 (AB07)	06:59 16:34
26	05:48 20:28	06:20 19:47	17:52 (AB06) 18:33 (AB06)	06:52 18:54	17:40 (AB07) 17:46 (AB07)	06:59 16:34
27	05:49 20:27	06:21 19:45	17:52 (AB06) 18:32 (AB06)	06:54 18:52	17:40 (AB07) 17:44 (AB07)	06:59 16:33
28	05:50 20:26	06:22 19:44	17:52 (AB06) 18:31 (AB06)	06:55 18:50	17:40 (AB07) 17:42 (AB07)	06:59 16:33
29	05:51 20:25	06:23 19:42	17:52 (AB06) 18:30 (AB06)	06:56 18:49	06:30 17:01	07:07 16:33
30	05:52 20:24	06:24 19:41	17:53 (AB06) 18:29 (AB06)	06:57 18:47	06:31 17:00	07:08 16:32
31	05:53 20:23	06:25 19:39	17:53 (AB06) 18:28 (AB06)		06:32 16:59	07:30 16:40
Potential sun hours	462	430	375	344	296	285
Total, worst case		883	211			

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: WF Abruzzo shadow flikering worst case Shadow receptor: R020 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (83)

### 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	07:30 16:41	14:11 (AB06) 17:16	07:16 17:16	14:17 (AB06) 17:51	06:39 17:27	06:46 19:27	16:27 (AB05) 20:00	05:59 20:30
2	07:30 16:41	14:11 (AB06) 17:17	07:15 17:17	14:18 (AB06) 17:52	06:37 17:52	06:45 19:28	16:27 (AB05) 20:01	05:58 20:31
3	07:30 16:42	14:11 (AB06) 17:18	07:14 17:18	14:19 (AB06) 17:53	06:35 17:53	06:43 19:29	16:29 (AB05) 20:02	05:57 20:32
4	07:30 16:43	14:11 (AB06) 17:20	07:13 17:20	14:20 (AB06) 17:55	06:34 17:55	06:41 19:30	16:29 (AB05) 20:03	05:55 20:33
5	07:30 16:44	14:11 (AB06) 17:21	07:12 17:21	14:21 (AB06) 17:56	06:32 17:56	06:40 19:31	16:30 (AB05) 20:04	05:54 20:33
6	07:30 16:45	14:12 (AB06) 17:22	07:10 17:22	14:23 (AB06) 17:57	06:31 17:57	06:38 19:32	16:31 (AB05) 20:05	05:53 20:34
7	07:30 16:46	14:12 (AB06) 17:23	07:09 17:23	14:24 (AB06) 17:58	06:29 17:58	15:47 (AB05) 19:33	16:32 (AB05) 20:06	05:52 20:35
8	07:30 16:47	14:11 (AB06) 17:25	07:08 17:25	14:27 (AB06) 17:59	06:27 17:59	15:44 (AB05) 19:34	16:33 (AB05) 20:07	05:50 20:35
9	07:30 16:48	14:23 (AB06) 17:26	07:07 17:26	14:30 (AB06) 18:01	06:26 18:01	15:53 (AB05) 19:35	16:35 (AB05) 20:08	05:49 20:36
10	07:30 16:49	14:24 (AB06) 17:27	07:06 17:27	14:34 (AB06) 18:02	06:24 18:02	15:55 (AB05) 19:37	16:37 (AB05) 20:09	05:48 20:36
11	07:29 16:50	14:11 (AB06) 17:29	07:05 17:29	14:44 (AB06) 18:03	18:02 18:03	15:56 (AB05) 19:38	17:13 (AB05) 20:11	20:09 20:37
12	07:29 16:51	14:11 (AB06) 17:30	07:03 17:30	14:44 (AB06) 18:04	18:02 18:04	15:57 (AB05) 19:39	17:11 (AB05) 20:12	20:09 20:37
13	07:29 16:52	14:11 (AB06) 17:31	07:02 17:31	14:44 (AB06) 18:05	18:03 18:05	15:58 (AB05) 19:40	17:09 (AB05) 20:13	20:10 20:38
14	07:28 16:54	14:11 (AB06) 17:32	07:01 17:32	14:44 (AB06) 18:06	18:04 18:06	16:00 (AB05) 19:41	17:09 (AB05) 20:14	20:11 20:38
15	07:28 16:55	14:11 (AB06) 17:34	06:59 17:34	14:44 (AB06) 18:07	18:05 18:07	16:01 (AB05) 19:42	17:06 (AB05) 20:15	20:12 20:39
16	07:28 16:56	14:32 (AB06) 17:35	06:58 17:35	14:44 (AB06) 18:09	18:06 18:09	16:02 (AB05) 19:43	17:06 (AB05) 20:16	20:13 20:39
17	07:27 16:57	14:11 (AB06) 17:36	06:57 17:36	14:44 (AB06) 18:10	18:07 18:10	16:03 (AB05) 19:44	17:06 (AB05) 20:17	20:14 20:40
18	07:27 16:58	14:11 (AB06) 17:37	06:55 17:37	14:44 (AB06) 18:11	18:08 18:11	16:04 (AB05) 19:45	17:06 (AB05) 20:18	20:15 20:40
19	07:26 16:59	14:36 (AB06) 17:39	06:54 17:39	14:44 (AB06) 18:12	18:09 18:12	16:05 (AB05) 19:46	17:06 (AB05) 20:19	20:16 20:40
20	07:25 17:01	14:12 (AB06) 17:40	06:52 17:40	14:44 (AB06) 18:13	18:10 18:13	16:06 (AB05) 19:48	17:06 (AB05) 20:20	20:17 20:41
21	07:25 17:02	14:12 (AB06) 17:41	06:51 17:41	14:44 (AB06) 18:14	18:11 18:14	16:07 (AB05) 19:49	17:06 (AB05) 20:21	20:18 20:41
22	07:24 17:03	14:12 (AB06) 17:42	06:49 17:42	14:44 (AB06) 18:15	18:12 18:15	16:08 (AB05) 19:50	17:06 (AB05) 20:22	20:19 20:41
23	07:24 17:04	14:13 (AB06) 17:44	06:48 17:44	14:44 (AB06) 18:16	18:13 18:16	16:09 (AB05) 19:51	17:06 (AB05) 20:23	20:20 20:41
24	07:23 17:06	14:13 (AB06) 17:45	06:46 17:45	14:44 (AB06) 18:18	18:14 18:18	16:10 (AB05) 19:52	17:06 (AB05) 20:24	20:21 20:41
25	07:22 17:07	14:13 (AB06) 17:46	06:45 17:46	14:44 (AB06) 18:19	18:15 18:19	16:11 (AB05) 19:53	17:06 (AB05) 20:25	20:22 20:42
26	07:21 17:08	14:13 (AB06) 17:47	06:43 17:47	14:44 (AB06) 18:20	18:16 18:20	16:12 (AB05) 19:54	17:06 (AB05) 20:26	20:23 20:42
27	07:20 17:09	14:13 (AB06) 17:49	06:42 17:49	14:44 (AB06) 18:21	18:17 18:21	16:13 (AB05) 19:55	17:06 (AB05) 20:27	20:24 20:42
28	07:20 17:11	14:14 (AB06) 17:50	06:40 17:50	14:44 (AB06) 18:22	18:18 18:22	16:14 (AB05) 19:56	17:06 (AB05) 20:28	20:25 20:42
29	07:19 17:12	14:14 (AB06) 17:51		14:44 (AB06) 18:23	18:19 18:23	16:15 (AB05) 19:57	17:06 (AB05) 20:29	20:26 20:42
30	07:18 17:13	14:15 (AB06) 17:52		14:44 (AB06) 18:24	18:20 18:24	16:16 (AB05) 19:58	17:06 (AB05) 20:30	20:27 20:42
31	07:17 17:14	14:16 (AB06) 17:53		14:44 (AB06) 18:25	18:21 18:25	16:17 (AB05) 19:59	17:06 (AB05) 20:31	20:28 20:42
Potential sun hours	295	296	369	400	451	455		
Total, worst case	679	285	984	580	451	455		

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: WF Abruzzo shadow flickering worst case Shadow receptor: R020 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (83)

### 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	05:30 20:41	05:54 20:22	06:26 19:37	16:38 (AB05) 17:11 (AB05)	06:58 18:45	16:14 (AB05) 16:39 (AB05)	06:33 16:57	14:02 (AB06) 14:13 (AB06)	07:09 16:32	13:54 (AB06) 14:09 (AB06)
2	05:30 20:41	05:55 20:21	06:27 19:36	16:36 (AB05) 17:12 (AB05)	06:59 18:44	16:15 (AB05) 16:37 (AB05)	06:35 16:56	13:59 (AB06) 14:18 (AB06)	07:10 16:31	13:54 (AB06) 14:09 (AB06)
3	05:31 20:41	05:56 20:19	06:29 19:34	16:33 (AB05) 17:13 (AB05)	07:00 18:42	16:16 (AB05) 16:34 (AB05)	06:36 16:55	13:56 (AB06) 14:19 (AB06)	07:12 16:31	13:55 (AB06) 14:08 (AB06)
4	05:31 20:41	05:57 20:18	06:30 19:32	16:31 (AB05) 17:14 (AB05)	07:01 18:40	16:17 (AB05) 16:32 (AB05)	06:37 16:53	13:54 (AB06) 14:21 (AB06)	07:13 16:31	13:56 (AB06) 14:08 (AB06)
5	05:32 20:41	05:58 20:17	06:31 19:31	16:29 (AB05) 17:15 (AB05)	07:02 18:38	16:20 (AB05) 16:31 (AB05)	06:38 16:52	13:53 (AB06) 14:23 (AB06)	07:14 16:31	13:57 (AB06) 14:07 (AB06)
6	05:32 20:40	05:59 20:16	06:32 19:29	16:28 (AB05) 17:16 (AB05)	07:03 18:37	16:22 (AB05) 16:29 (AB05)	06:40 16:51	13:51 (AB06) 14:24 (AB06)	07:15 16:31	13:58 (AB06) 14:07 (AB06)
7	05:33 20:40	06:00 20:15	06:33 19:27	16:26 (AB05) 17:16 (AB05)	07:04 18:35	16:26 (AB05) 16:27 (AB05)	06:41 16:50	13:50 (AB06) 14:24 (AB06)	07:15 16:31	13:58 (AB06) 14:07 (AB06)
8	05:34 20:40	06:01 20:13	06:34 19:25	16:24 (AB05) 17:16 (AB05)	07:05 18:33	06:42 16:49	16:50 16:49	13:49 (AB06) 14:26 (AB06)	07:16 16:30	13:59 (AB06) 14:07 (AB06)
9	05:34 20:39	06:02 20:12	06:35 19:24	16:23 (AB05) 17:17 (AB05)	07:07 18:32	06:43 16:48	16:48 16:48	13:48 (AB06) 14:26 (AB06)	07:17 16:30	14:00 (AB06) 14:07 (AB06)
10	05:35 20:39	06:04 20:11	06:36 19:22	16:22 (AB05) 17:17 (AB05)	07:08 18:30	06:45 16:47	16:45 16:47	13:47 (AB06) 14:27 (AB06)	07:18 16:30	14:00 (AB06) 14:06 (AB06)
11	05:36 20:39	06:05 20:09	06:37 19:20	16:20 (AB05) 17:17 (AB05)	07:09 18:28	06:46 16:46	16:46 16:46	13:48 (AB06) 14:26 (AB06)	07:19 16:30	14:01 (AB06) 14:06 (AB06)
12	05:36 20:38	06:06 20:08	06:38 19:18	16:19 (AB05) 17:17 (AB05)	07:10 18:27	06:47 16:45	16:47 16:45	13:47 (AB06) 14:25 (AB06)	07:20 16:31	14:03 (AB06) 14:06 (AB06)
13	05:37 20:38	06:07 20:07	06:39 19:17	16:18 (AB05) 17:17 (AB05)	07:11 18:25	06:48 16:44	16:48 16:44	13:46 (AB06) 14:23 (AB06)	07:21 16:31	14:04 (AB06) 14:06 (AB06)
14	05:38 20:37	06:08 20:05	06:40 19:15	16:17 (AB05) 17:17 (AB05)	07:12 18:24	06:49 16:43	16:49 16:43	13:47 (AB06) 14:23 (AB06)	07:22 16:31	14:05 (AB06) 14:07 (AB06)
15	05:39 20:36	06:09 20:04	06:41 19:13	16:16 (AB05) 17:15 (AB05)	07:13 18:22	06:51 16:42	16:51 16:42	13:46 (AB06) 14:21 (AB06)	07:22 16:31	14:05 (AB06) 14:06 (AB06)
16	05:40 20:36	06:10 20:02	06:42 19:11	16:15 (AB05) 17:13 (AB05)	07:14 18:20	06:52 16:41	16:52 16:41	13:46 (AB06) 14:20 (AB06)	07:23 16:31	14:06 (AB06) 14:06 (AB06)
17	05:40 20:35	06:11 20:01	06:43 19:10	16:14 (AB05) 17:11 (AB05)	07:16 18:19	06:53 16:40	16:53 16:40	13:46 (AB06) 14:19 (AB06)	07:24 16:32	14:06 (AB06) 14:06 (AB06)
18	05:41 20:34	06:12 19:59	06:44 19:08	16:14 (AB05) 17:08 (AB05)	07:17 18:17	06:54 16:39	16:54 16:39	13:47 (AB06) 14:19 (AB06)	07:24 16:32	14:06 (AB06) 14:06 (AB06)
19	05:42 20:34	06:13 19:58	06:45 19:06	16:13 (AB05) 17:06 (AB05)	07:18 18:16	06:56 16:38	16:56 16:38	13:47 (AB06) 14:17 (AB06)	07:25 16:32	14:06 (AB06) 14:06 (AB06)
20	05:43 20:33	06:14 19:56	06:46 19:04	16:12 (AB05) 17:04 (AB05)	07:19 18:14	06:57 16:38	16:57 16:38	13:47 (AB06) 14:16 (AB06)	07:26 16:33	14:06 (AB06) 14:06 (AB06)
21	05:44 20:32	06:15 19:55	06:47 19:03	16:12 (AB05) 17:02 (AB05)	07:20 18:13	06:58 16:37	16:58 16:37	13:48 (AB06) 14:16 (AB06)	07:26 16:33	14:06 (AB06) 14:06 (AB06)
22	05:45 20:31	06:16 19:53	06:48 19:01	16:12 (AB05) 16:59 (AB05)	07:21 18:11	06:59 16:36	16:59 16:36	13:48 (AB06) 14:15 (AB06)	07:27 16:34	14:06 (AB06) 14:06 (AB06)
23	05:46 20:31	06:17 19:52	06:49 18:59	16:11 (AB05) 16:57 (AB05)	07:23 18:10	07:00 16:36	16:57 16:36	13:48 (AB06) 14:14 (AB06)	07:27 16:34	14:06 (AB06) 14:06 (AB06)
24	05:47 20:30	06:18 19:50	06:50 18:57	16:11 (AB05) 16:55 (AB05)	07:24 18:08	07:02 16:35	16:56 16:35	13:48 (AB06) 14:13 (AB06)	07:28 16:35	14:06 (AB06) 14:06 (AB06)
25	05:48 20:29	06:19 19:49	06:51 18:56	16:11 (AB05) 16:53 (AB05)	07:25 17:07	07:03 16:34	16:57 16:34	13:49 (AB06) 14:13 (AB06)	07:28 16:35	14:06 (AB06) 14:06 (AB06)
26	05:48 20:28	06:20 19:47	06:52 18:54	16:11 (AB05) 16:50 (AB05)	07:26 17:05	07:04 16:34	16:58 16:34	13:50 (AB06) 14:12 (AB06)	07:28 16:36	14:06 (AB06) 14:06 (AB06)
27	05:49 20:27	06:21 19:45	06:54 18:52	16:12 (AB05) 16:48 (AB05)	07:27 17:04	07:05 16:33	16:59 16:33	13:50 (AB06) 14:11 (AB06)	07:29 16:37	14:06 (AB06) 14:06 (AB06)
28	05:50 20:26	06:22 19:44	06:55 18:50	16:12 (AB05) 16:46 (AB05)	07:29 17:03	07:06 16:33	16:59 16:33	13:51 (AB06) 14:10 (AB06)	07:29 16:37	14:12 (AB06) 14:13 (AB06)
29	05:51 20:25	06:23 19:42	06:56 17:03 (AB05)	16:12 (AB05) 16:44 (AB05)	07:30 17:01	07:07 16:33	16:59 16:33	13:51 (AB06) 14:09 (AB06)	07:29 16:38	14:12 (AB06) 14:13 (AB06)
30	05:52 20:24	06:24 19:41	06:57 17:07 (AB05)	16:13 (AB05) 16:41 (AB05)	07:31 17:00	07:08 16:32	16:59 16:32	13:52 (AB06) 14:09 (AB06)	07:30 16:39	14:12 (AB06) 14:14 (AB06)
31	05:53 20:23	06:25 19:39	06:58 17:09 (AB05)	16:13 (AB05)	07:32 16:59	07:09 16:32	16:59 16:32	13:52 (AB06) 14:09 (AB06)	07:30 16:40	14:12 (AB06) 14:15 (AB06)
Potential sun hours	462	430	375	344	296	285				
Total, worst case		65	1422	99	861	124				

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: WF Abruzzo shadow flikering worst caseShadow receptor: R023 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (84)

### 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	07:30 16:41	13:53 (AB06) 14:29 (AB06)	07:16 17:16	14:19 (AB06) 14:31 (AB06)	06:39 17:51	15:14 (AB05) 16:06 (AB05)	06:46 19:27	05:59 20:00	05:29 20:30
2	07:30 16:41	13:53 (AB06) 14:30 (AB06)	07:15 17:17		06:37 17:52	15:13 (AB05) 16:06 (AB05)	06:45 19:28	05:58 20:01	05:29 20:31
3	07:30 16:42	13:54 (AB06) 14:31 (AB06)	07:14 17:18		06:35 17:53	15:12 (AB05) 16:08 (AB05)	06:43 19:29	05:57 20:02	05:28 20:32
4	07:30 16:43	13:54 (AB06) 14:32 (AB06)	07:13 17:20		06:34 17:55	15:11 (AB05) 16:08 (AB05)	06:41 19:30	05:55 20:03	05:28 20:33
5	07:30 16:44	13:54 (AB06) 14:33 (AB06)	07:12 17:21		06:32 17:56	15:10 (AB05) 16:08 (AB05)	06:40 19:31	05:54 20:04	05:28 20:33
6	07:30 16:45	13:55 (AB06) 14:35 (AB06)	07:10 17:22		06:31 17:57	15:10 (AB05) 16:09 (AB05)	06:38 19:32	05:53 20:05	05:27 20:34
7	07:30 16:46	13:55 (AB06) 14:36 (AB06)	07:09 17:23		06:29 17:58	15:09 (AB05) 16:09 (AB05)	06:36 19:33	05:52 20:06	05:27 20:35
8	07:30 16:47	13:55 (AB06) 14:36 (AB06)	07:08 17:25		06:27 17:59	15:08 (AB05) 16:09 (AB05)	06:35 19:34	05:50 20:07	05:27 20:35
9	07:30 16:48	13:55 (AB06) 14:37 (AB06)	07:07 17:26		06:26 18:01	15:09 (AB05) 16:10 (AB05)	06:33 19:35	05:49 20:08	05:26 20:36
10	07:30 16:49	13:56 (AB06) 14:38 (AB06)	07:06 17:27		06:24 18:02	15:08 (AB05) 16:09 (AB05)	06:31 19:37	05:48 20:09	05:26 20:36
11	07:29 16:50	13:57 (AB06) 14:39 (AB06)	07:05 17:29		06:22 18:03	15:08 (AB05) 16:09 (AB05)	06:30 19:38	05:47 20:11	05:26 20:37
12	07:29 16:51	13:57 (AB06) 14:38 (AB06)	07:03 17:30		06:21 18:04	15:08 (AB05) 16:10 (AB05)	06:28 19:39	05:46 20:12	05:26 20:37
13	07:29 16:52	13:57 (AB06) 14:39 (AB06)	07:02 17:31		06:19 18:05	15:08 (AB05) 16:09 (AB05)	06:26 19:40	05:45 20:13	05:26 20:38
14	07:28 16:54	13:57 (AB06) 14:39 (AB06)	07:01 17:32		06:17 18:06	15:08 (AB05) 16:08 (AB05)	06:25 19:41	05:44 20:14	05:26 20:38
15	07:28 16:55	13:58 (AB06) 14:40 (AB06)	06:59 17:34		06:16 18:07	15:09 (AB05) 16:09 (AB05)	06:23 19:42	05:43 20:15	05:26 20:39
16	07:28 16:56	13:58 (AB06) 14:40 (AB06)	06:58 17:35		06:14 18:09	15:09 (AB05) 16:08 (AB05)	06:22 19:43	05:42 20:16	05:26 20:39
17	07:27 16:57	13:59 (AB06) 14:41 (AB06)	06:57 17:36		06:12 18:10	15:09 (AB05) 16:07 (AB05)	06:20 19:44	05:41 20:17	05:26 20:40
18	07:27 16:58	14:00 (AB06) 14:40 (AB06)	06:55 17:37		06:10 18:11	15:09 (AB05) 16:06 (AB05)	06:18 19:45	05:40 20:18	05:26 20:40
19	07:26 16:59	14:00 (AB06) 14:40 (AB06)	06:54 17:39		06:09 18:12	15:11 (AB05) 16:06 (AB05)	06:17 19:46	05:39 20:19	05:26 20:40
20	07:25 17:01	14:01 (AB06) 14:41 (AB06)	06:52 17:40	15:37 (AB05) 15:44 (AB05)	06:07 18:13	15:11 (AB05) 16:05 (AB05)	06:15 19:48	05:38 20:20	05:26 20:41
21	07:25 17:02	14:02 (AB06) 14:41 (AB06)	06:51 17:41	7 20	15:30 (AB05) 15:50 (AB05)	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41
22	07:24 17:03	14:02 (AB06) 14:40 (AB06)	06:49 17:42		06:04 18:15	15:12 (AB05) 16:02 (AB05)	06:12 19:50	05:36 20:22	05:26 20:41
23	07:24 17:04	14:04 (AB06) 14:41 (AB06)	06:48 17:44	28 33	15:55 (AB05) 15:24 (AB05)	18:15 18:16	06:11 19:51	05:35 20:23	05:27 20:41
24	07:23 17:06	14:05 (AB06) 14:40 (AB06)	06:46 17:45		15:22 (AB05) 15:59 (AB05)	06:00 18:18	06:09 19:52	05:34 20:23	05:27 20:41
25	07:22 17:07	14:05 (AB06) 14:40 (AB06)	06:45 17:46	42	15:19 (AB05) 16:01 (AB05)	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:42
26	07:21 17:08	14:06 (AB06) 14:39 (AB06)	06:43 17:47	45	15:18 (AB05) 16:03 (AB05)	05:57 18:20	06:06 19:54	05:33 20:25	05:28 20:42
27	07:20 17:09	14:08 (AB06) 14:39 (AB06)	06:42 17:49	48	15:16 (AB05) 16:04 (AB05)	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42
28	07:20 17:11	14:09 (AB06) 14:38 (AB06)	06:40 17:50	49	15:16 (AB05) 16:05 (AB05)	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42
29	07:19 17:12	14:11 (AB06) 14:37 (AB06)			06:52 19:23	16:25 (AB05) 16:50 (AB05)	06:02 19:58	05:31 20:28	05:29 20:42
30	07:18 17:13	14:13 (AB06) 14:35 (AB06)			06:50 19:24	16:29 (AB05) 16:47 (AB05)	06:01 19:59	05:30 20:29	05:29 20:42
31	07:17 17:14	14:15 (AB06) 14:33 (AB06)			06:48 19:25		05:30 20:30		
Potential sun hours	295		296		369		400	451	455
Total, worst case	1149		321		1551				

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: WF Abruzzo shadow flickering worst case Shadow receptor: R023 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (84)  
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	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	15:47 (AB05) 16:48 (AB05)	06:33 16:57	07:09 16:32	13:39 (AB06) 14:21 (AB06)	
2	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	15:46 (AB05) 16:48 (AB05)	06:35 16:56	07:10 16:31	13:39 (AB06) 14:21 (AB06)	
3	05:31 20:41	05:56 20:19	06:29 19:34	07:00 18:42	15:46 (AB05) 16:47 (AB05)	06:36 16:55	07:12 16:31	13:40 (AB06) 14:21 (AB06)	
4	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	15:45 (AB05) 16:47 (AB05)	06:37 16:53	07:13 16:31	13:40 (AB06) 14:21 (AB06)	
5	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	15:46 (AB05) 16:47 (AB05)	06:38 16:52	07:14 16:31	13:40 (AB06) 14:21 (AB06)	
6	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	15:46 (AB05) 16:46 (AB05)	06:40 16:51	07:15 16:31	13:41 (AB06) 14:21 (AB06)	
7	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	15:46 (AB05) 16:45 (AB05)	06:41 16:50	07:15 16:31	13:41 (AB06) 14:20 (AB06)	
8	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	15:45 (AB05) 16:44 (AB05)	06:42 16:49	07:16 16:30	13:42 (AB06) 14:20 (AB06)	
9	05:34 20:39	06:02 20:12	06:35 19:24	07:07 18:32	15:45 (AB05) 16:43 (AB05)	06:43 16:48	07:17 16:30	13:43 (AB06) 14:20 (AB06)	
10	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	15:46 (AB05) 16:42 (AB05)	06:45 16:47	13:49 (AB06) 14:02 (AB06)	07:18 16:30	13:42 (AB06) 14:19 (AB06)
11	05:36 20:39	06:05 20:09	06:37 19:20	07:09 18:28	15:46 (AB05) 16:41 (AB05)	06:46 16:46	13:47 (AB06) 14:06 (AB06)	07:19 16:30	13:43 (AB06) 14:19 (AB06)
12	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	15:47 (AB05) 16:40 (AB05)	06:47 16:45	13:45 (AB06) 14:07 (AB06)	07:20 16:31	13:44 (AB06) 14:19 (AB06)
13	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	15:48 (AB05) 16:39 (AB05)	06:48 16:44	13:43 (AB06) 14:09 (AB06)	07:21 16:31	13:44 (AB06) 14:19 (AB06)
14	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	15:48 (AB05) 16:37 (AB05)	06:49 16:43	13:42 (AB06) 14:11 (AB06)	07:22 16:31	13:45 (AB06) 14:19 (AB06)
15	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	15:49 (AB05) 16:36 (AB05)	06:51 16:42	13:41 (AB06) 14:12 (AB06)	07:22 16:31	13:45 (AB06) 14:18 (AB06)
16	05:40 20:36	06:10 20:02	06:42 19:11	07:14 18:20	15:50 (AB05) 16:34 (AB05)	06:52 16:41	13:39 (AB06) 14:12 (AB06)	07:23 16:31	13:46 (AB06) 14:19 (AB06)
17	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	15:52 (AB05) 16:31 (AB05)	06:53 16:40	13:38 (AB06) 14:13 (AB06)	07:24 16:32	13:47 (AB06) 14:19 (AB06)
18	05:41 20:34	06:12 19:59	06:44 19:08	07:17 18:17	15:54 (AB05) 16:30 (AB05)	06:54 16:39	13:39 (AB06) 14:14 (AB06)	07:24 16:32	13:47 (AB06) 14:19 (AB06)
19	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	15:56 (AB05) 16:27 (AB05)	06:56 16:38	13:38 (AB06) 14:15 (AB06)	07:25 16:32	13:47 (AB06) 14:20 (AB06)
20	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	15:58 (AB05) 16:24 (AB05)	06:57 16:38	13:37 (AB06) 14:15 (AB06)	07:26 16:33	13:48 (AB06) 14:20 (AB06)
21	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	16:02 (AB05) 16:20 (AB05)	06:58 16:37	13:38 (AB06) 14:17 (AB06)	07:26 16:33	13:48 (AB06) 14:20 (AB06)
22	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	15:57 (AB05) 16:49 (AB05)	07:21 18:11	13:37 (AB06) 14:17 (AB06)	07:27 16:34	13:49 (AB06) 14:21 (AB06)
23	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	15:56 (AB05) 16:49 (AB05)	07:23 18:10	13:37 (AB06) 14:17 (AB06)	07:27 16:34	13:49 (AB06) 14:21 (AB06)
24	05:47 20:30	06:18 19:50	06:50 18:57	07:24 18:08	15:54 (AB05) 16:49 (AB05)	07:24 18:08	13:37 (AB06) 14:17 (AB06)	07:28 16:35	13:49 (AB06) 14:22 (AB06)
25	05:48 20:29	06:19 19:49	06:51 18:56	07:25 17:07	15:53 (AB05) 16:50 (AB05)	06:25 17:07	13:38 (AB06) 14:19 (AB06)	07:28 16:35	13:50 (AB06) 14:23 (AB06)
26	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	15:52 (AB05) 16:50 (AB05)	06:26 17:05	13:37 (AB06) 14:19 (AB06)	07:28 16:36	13:51 (AB06) 14:23 (AB06)
27	05:49 20:27	06:21 19:45	06:54 18:52	07:27 17:04	15:51 (AB05) 16:49 (AB05)	06:27 17:04	13:37 (AB06) 14:19 (AB06)	07:29 16:37	13:51 (AB06) 14:24 (AB06)
28	05:50 20:26	06:22 19:44	06:55 18:50	07:29 17:03	15:50 (AB05) 16:49 (AB05)	06:29 17:03	13:37 (AB06) 14:19 (AB06)	07:29 16:37	13:52 (AB06) 14:25 (AB06)
29	05:51 20:25	06:23 19:42	06:56 18:49	07:30 17:01	15:49 (AB05) 16:49 (AB05)	06:30 17:01	13:38 (AB06) 14:19 (AB06)	07:29 16:38	13:52 (AB06) 14:26 (AB06)
30	05:52 20:24	06:24 19:41	06:57 18:47	07:31 17:00	15:48 (AB05) 16:49 (AB05)	06:31 17:00	13:38 (AB06) 14:20 (AB06)	07:30 16:39	13:52 (AB06) 14:27 (AB06)
31	05:53 20:23	06:25 19:39		06:32 16:59				07:30 16:40	13:52 (AB06) 14:27 (AB06)
Potential sun hours	462	430	375	344	296	285			
Total, worst case			838	1048	727	1097			

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: WF Abruzzo shadow flikering worst caseShadow receptor: R024 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (85)  
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	07:30 16:41	13:01 (AB05) 13:09 (AB05)	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	13:02 (AB05) 13:10 (AB05)	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:10 16:31
3	07:30 16:42	13:03 (AB05) 13:11 (AB05)	07:14 17:18	06:36 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:29 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	13:03 (AB05) 13:12 (AB05)	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	13:03 (AB05) 13:13 (AB05)	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	13:04 (AB05) 13:14 (AB05)	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	13:05 (AB05) 13:15 (AB05)	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:31
8	07:30 16:47	13:05 (AB05) 13:16 (AB05)	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	13:05 (AB05) 13:17 (AB05)	07:07 17:26	06:26 18:01	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:39	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	13:06 (AB05) 13:18 (AB05)	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:36	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:30
11	07:29 16:50	13:07 (AB05) 13:20 (AB05)	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:19 16:31
12	07:29 16:51	13:08 (AB05) 13:24 (AB05)	07:02 17:34	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:38	06:05 20:07	06:37 19:17	07:09 18:25	06:46 16:44	07:20 16:31
13	07:29 16:52	13:08 (AB05) 13:22 (AB05)	07:02 17:31	06:19 18:03	06:26 19:38	05:45 20:11	05:26 20:37	05:37 20:39	06:05 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:21 16:30
14	07:28 16:54	13:08 (AB05) 13:07 (AB05)	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:49 16:43	07:22 16:31
15	07:28 16:55	13:09 (AB05) 13:24 (AB05)	06:59 17:34	06:16 18:07	06:23 19:42	05:43 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:23 16:31
16	07:28 16:56	13:09 (AB05) 13:26 (AB05)	06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:12	07:14 18:20	06:52 16:41	07:24 16:31
17	07:27 16:57	13:11 (AB05) 13:30 (AB05)	06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	13:11 (AB05) 13:33 (AB05)	06:55 17:38	06:11 18:11	06:18 19:45	05:40 20:18	05:26 20:40	05:41 20:34	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	13:12 (AB05) 13:37 (AB05)	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	07:26 17:01	13:13 (AB05) 13:41 (AB05)	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	13:14 (AB05) 13:44 (AB05)	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	13:15 (AB05) 13:48 (AB05)	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:24 17:04	13:17 (AB05) 13:52 (AB05)	06:48 17:44	06:02 18:17	06:11 19:51	05:35 20:23	05:27 20:41	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:24	07:00 16:36	07:27 16:34
24	07:23 17:06	13:18 (AB05) 13:55 (AB05)	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:28 16:35
25	07:22 17:07	13:19 (AB05) 13:58 (AB05)	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:42	05:48 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	13:20 (AB05) 13:58 (AB05)	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:28 20:42	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	07:28 16:36
27	07:20 17:09	13:22 (AB05) 13:57 (AB05)	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	07:27 17:04	07:05 16:33	07:29 16:37
28	07:20 17:11	13:24 (AB05) 13:56 (AB05)	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:51	07:29 17:03	07:06 16:33	07:29 16:37
29	07:19 17:12	13:26 (AB05) 13:54 (AB05)	06:52 18:23	06:02 19:58	06:02 19:58	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:07 17:01	07:07 16:33	07:29 16:38
30	07:18 17:13	13:29 (AB05) 13:52 (AB05)	06:50 19:24	06:01 19:59	06:01 19:59	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	07:08 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14	13:33 (AB05) 13:49 (AB05)	06:48 19:25	06:48 19:25	06:48 19:25	05:30 20:30	05:29 20:42	05:53 20:23	06:25 19:39	06:59 16:59	07:09 16:59	07:09 16:40	07:30 16:40
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285	
Total, worst case	627										516	235	

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: WF Abruzzo shadow flickering worst case Shadow receptor: R025 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (86)

### 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	07:30 16:41	07:16 17:16	15:01 (AB06) 15:26 (AB06)	06:39 17:51	15:13 (AB06) 15:21 (AB06)	06:46 19:27
2	07:30 16:41	07:15 17:17	15:00 (AB06) 15:28 (AB06)	06:37 17:52	06:45 19:28	17:37 (AB05) 05:58
3	07:30 16:42	07:14 17:18	14:59 (AB06) 15:30 (AB06)	06:35 17:53	06:43 19:29	17:34 (AB05) 05:57
4	07:30 16:43	07:13 17:20	14:58 (AB06) 15:31 (AB06)	06:34 17:55	06:41 19:30	17:31 (AB05) 05:55
5	07:30 16:44	07:12 17:21	14:57 (AB06) 15:33 (AB06)	06:32 17:56	06:40 19:31	18:03 (AB05) 20:03
6	07:30 16:45	07:10 17:22	14:57 (AB06) 15:34 (AB06)	06:31 17:57	06:38 19:32	18:04 (AB05) 20:04
7	07:30 16:46	07:09 17:23	14:55 (AB06) 15:34 (AB06)	06:29 17:58	06:36 19:33	17:24 (AB05) 05:52
8	07:30 16:47	07:08 17:25	14:55 (AB06) 15:35 (AB06)	06:27 17:59	06:35 19:34	18:08 (AB05) 20:07
9	07:30 16:48	07:07 17:26	14:55 (AB06) 15:36 (AB06)	06:26 18:01	06:33 19:35	17:22 (AB05) 05:49
10	07:30 16:49	07:06 17:27	14:55 (AB06) 15:37 (AB06)	06:24 18:02	06:31 19:37	18:10 (AB05) 20:08
11	07:29 16:50	07:04 17:29	14:54 (AB06) 15:37 (AB06)	06:22 18:03	06:30 19:38	17:19 (AB05) 05:47
12	07:29 16:51	07:03 17:30	14:54 (AB06) 15:37 (AB06)	06:21 18:04	06:28 19:39	17:18 (AB05) 05:46
13	07:29 16:52	07:02 17:31	14:54 (AB06) 15:38 (AB06)	06:19 18:05	06:26 19:40	17:17 (AB05) 05:45
14	07:28 16:54	07:01 17:32	14:53 (AB06) 15:37 (AB06)	06:17 18:06	06:25 19:41	18:12 (AB05) 20:12
15	07:28 16:55	06:59 17:34	14:54 (AB06) 15:38 (AB06)	06:16 18:07	06:23 19:42	17:16 (AB05) 05:43
16	07:28 16:56	06:58 17:35	14:54 (AB06) 15:38 (AB06)	06:14 18:09	06:22 19:43	17:16 (AB05) 05:42
17	07:27 16:57	06:57 17:36	14:54 (AB06) 15:38 (AB06)	06:12 18:10	06:20 19:44	18:13 (AB05) 20:14
18	07:27 16:58	06:55 17:37	14:55 (AB06) 15:38 (AB06)	06:10 18:11	06:18 19:45	17:14 (AB05) 05:40
19	07:26 16:59	06:54 17:39	14:55 (AB06) 15:37 (AB06)	06:09 18:12	06:17 19:46	18:13 (AB05) 20:15
20	07:25 17:01	06:52 17:40	14:56 (AB06) 15:37 (AB06)	06:07 18:13	06:15 19:48	17:15 (AB05) 05:41
21	07:25 17:02	06:51 17:41	14:56 (AB06) 15:36 (AB06)	06:05 18:14	06:14 19:49	18:13 (AB05) 20:16
22	07:24 17:03	06:49 17:42	14:58 (AB06) 15:36 (AB06)	06:04 18:15	06:12 19:50	17:14 (AB05) 05:36
23	07:24 17:04	06:48 17:44	14:58 (AB06) 15:34 (AB06)	06:02 18:16	06:11 19:51	18:12 (AB05) 20:22
24	07:23 17:06	06:46 17:45	15:00 (AB06) 15:34 (AB06)	06:00 18:18	06:09 19:52	17:14 (AB05) 05:34
25	07:22 17:07	06:45 17:46	15:01 (AB06) 15:32 (AB06)	05:58 18:19	06:08 19:53	18:12 (AB05) 20:24
26	07:21 17:08	06:43 17:47	15:03 (AB06) 15:31 (AB06)	05:57 18:20	06:06 19:54	17:15 (AB05) 05:33
27	07:20 17:09	06:42 17:49	15:05 (AB06) 15:28 (AB06)	05:55 18:21	06:05 19:55	18:12 (AB05) 20:25
28	07:20 17:11	06:40 17:50	15:08 (AB06) 15:26 (AB06)	05:53 18:22	06:03 19:56	17:16 (AB05) 05:32
29	07:19 17:12	15:09 (AB06) 15:17 (AB06)		06:52 19:23	06:02 19:58	17:17 (AB05) 05:31
30	07:18 17:13	15:05 (AB06) 15:21 (AB06)		06:50 19:24	06:01 19:59	18:10 (AB05) 20:28
31	07:17 17:14	15:03 (AB06) 15:24 (AB06)		06:48 19:25		17:16 (AB05) 05:30
Potential sun hours	295	296	369	400	451	455
Total, worst case	45	1032	8	1472	567	

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: WF Abruzzo shadow flickering worst case Shadow receptor: R025 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (86)  
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	05:30 20:41	05:54 20:22	17:39 (AB05) 18:09 (AB05)	06:26 19:37	17:19 (AB05) 18:11 (AB05)	06:58 18:45	06:33 16:57	14:23 (AB06) 15:06 (AB06)	07:09 16:32	
2	05:30 20:41	05:55 20:21	17:37 (AB05) 18:10 (AB05)	06:27 19:36	17:19 (AB05) 18:09 (AB05)	06:59 18:44	06:35 16:56	14:25 (AB06) 15:06 (AB06)	07:10 16:31	
3	05:31 20:41	05:56 20:19	17:36 (AB05) 18:11 (AB05)	06:29 19:34	17:20 (AB05) 18:08 (AB05)	07:00 18:42	06:36 16:55	14:25 (AB06) 15:05 (AB06)	07:11 16:31	
4	05:31 20:41	05:57 20:18	17:34 (AB05) 18:12 (AB05)	06:30 19:32	17:20 (AB05) 18:06 (AB05)	07:01 18:40	06:37 16:53	14:25 (AB06) 15:04 (AB06)	07:13 16:31	
5	05:32 20:41	05:58 20:17	17:33 (AB05) 18:13 (AB05)	06:31 19:31	17:21 (AB05) 18:05 (AB05)	07:02 18:38	06:38 16:52	14:27 (AB06) 15:04 (AB06)	07:14 16:31	
6	05:32 20:40	05:59 20:16	17:32 (AB05) 18:14 (AB05)	06:32 19:29	17:22 (AB05) 18:03 (AB05)	07:03 18:37	06:40 16:51	14:27 (AB06) 15:02 (AB06)	07:15 16:31	
7	05:33 20:40	06:00 20:15	17:31 (AB05) 18:15 (AB05)	06:33 19:27	17:24 (AB05) 18:01 (AB05)	07:04 18:35	06:41 16:50	14:28 (AB06) 15:01 (AB06)	07:15 16:31	
8	05:34 20:40	06:01 20:13	17:30 (AB05) 18:16 (AB05)	06:34 19:25	17:26 (AB05) 17:58 (AB05)	07:05 18:33	06:42 16:49	14:30 (AB06) 15:01 (AB06)	07:16 16:30	
9	05:34 20:39	06:02 20:12	17:29 (AB05) 18:16 (AB05)	06:35 19:24	17:28 (AB05) 17:55 (AB05)	07:07 18:32	06:43 16:48	14:31 (AB06) 14:59 (AB06)	07:17 16:30	
10	05:35 20:39	06:04 20:11	17:28 (AB05) 18:17 (AB05)	06:36 19:22	17:31 (AB05) 17:51 (AB05)	07:08 18:30	06:45 16:47	14:32 (AB06) 14:57 (AB06)	07:18 16:30	
11	05:36 20:39	06:05 20:09	17:27 (AB05) 18:17 (AB05)	06:37 19:20	17:32 (AB05) 17:43 (AB05)	07:09 18:28	06:46 16:46	14:35 (AB06) 14:56 (AB06)	07:19 16:30	
12	05:36 20:38	06:06 20:08	17:26 (AB05) 18:18 (AB05)	06:38 19:18	17:33 (AB05)	07:10 18:27	06:47 16:45	14:38 (AB06) 14:53 (AB06)	07:20 16:31	
13	05:37 20:38	06:07 20:07	17:25 (AB05) 18:18 (AB05)	06:39 19:17	17:34 (AB05)	07:11 18:25	15:44 (AB06) 15:57 (AB06)	06:48 16:44	14:42 (AB06) 14:48 (AB06)	07:21 16:31
14	05:38 20:37	06:08 20:05	17:24 (AB05) 18:18 (AB05)	06:40 19:15	17:35 (AB05)	07:12 18:24	15:39 (AB06) 16:00 (AB06)	06:49 16:43	14:51 (AB06) 14:57 (AB06)	07:22 16:31
15	05:39 20:36	06:09 20:04	17:23 (AB05) 18:18 (AB05)	06:41 19:13	17:36 (AB05)	07:13 18:22	15:36 (AB06) 16:02 (AB06)	06:51 16:42	14:59 (AB06) 15:05 (AB06)	07:22 16:31
16	05:40 20:36	06:10 20:02	17:23 (AB05) 18:19 (AB05)	06:42 19:11	17:37 (AB05)	07:14 18:20	15:34 (AB06) 16:03 (AB06)	06:52 16:41	15:11 (AB06) 15:17 (AB06)	07:23 16:31
17	05:40 20:35	06:11 20:01	17:22 (AB05) 18:19 (AB05)	06:43 19:10	17:38 (AB05)	07:16 18:19	15:32 (AB06) 16:04 (AB06)	06:53 16:40	15:24 (AB06) 15:30 (AB06)	07:24 16:32
18	05:41 20:34	06:12 19:59	17:21 (AB05) 18:19 (AB05)	06:44 19:08	17:39 (AB05)	07:17 18:17	15:31 (AB06) 16:05 (AB06)	06:54 16:39	15:37 (AB06) 15:43 (AB06)	07:24 16:32
19	05:42 20:34	06:13 19:58	17:21 (AB05) 18:18 (AB05)	06:45 19:06	17:40 (AB05)	07:18 18:16	15:29 (AB06) 16:06 (AB06)	06:56 16:38	15:49 (AB06) 15:55 (AB06)	07:25 16:32
20	05:43 20:33	06:14 19:56	17:20 (AB05) 18:18 (AB05)	06:46 19:04	17:41 (AB05)	07:19 18:14	15:28 (AB06) 16:06 (AB06)	06:57 16:38	16:01 (AB06) 16:07 (AB06)	07:26 16:33
21	05:44 20:32	06:15 19:55	17:20 (AB05) 18:18 (AB05)	06:47 19:03	17:42 (AB05)	07:20 18:13	15:26 (AB06) 16:07 (AB06)	06:58 16:37	16:13 (AB06) 16:19 (AB06)	07:26 16:33
22	05:45 20:31	06:16 19:53	17:19 (AB05) 18:18 (AB05)	06:48 19:01	17:43 (AB05)	07:21 18:11	15:26 (AB06) 16:08 (AB06)	06:59 16:36	16:25 (AB06) 16:31 (AB06)	07:27 16:34
23	05:46 20:31	06:17 19:52	17:19 (AB05) 18:17 (AB05)	06:49 18:59	17:44 (AB05)	07:23 18:10	15:25 (AB06) 16:08 (AB06)	07:00 16:36	16:37 (AB06) 16:43 (AB06)	07:27 16:34
24	05:47 20:30	06:18 19:50	17:18 (AB05) 18:17 (AB05)	06:50 18:57	17:45 (AB05)	07:24 18:08	15:24 (AB06) 16:07 (AB06)	07:02 16:35	16:45 (AB06) 16:51 (AB06)	07:28 16:35
25	05:48 20:29	06:19 19:49	17:18 (AB05) 18:17 (AB05)	06:51 18:56	17:46 (AB05)	07:25 17:07	14:24 (AB06) 15:07 (AB06)	07:03 16:34	16:59 (AB06) 17:05 (AB06)	07:28 16:35
26	05:48 20:28	06:20 19:47	17:18 (AB05) 18:16 (AB05)	06:52 18:54	17:47 (AB05)	07:26 17:05	14:24 (AB06) 15:08 (AB06)	07:04 16:34	17:11 (AB06) 17:17 (AB06)	07:28 16:36
27	05:49 20:27	06:21 19:45	17:18 (AB05) 18:15 (AB05)	06:54 18:52	17:48 (AB05)	07:27 17:04	14:23 (AB06) 15:08 (AB06)	07:05 16:33	17:23 (AB06) 17:29 (AB06)	07:29 16:37
28	05:50 20:26	17:49 (AB05) 18:00 (AB05)	06:22 19:44	17:18 (AB05) 18:50	17:49 (AB05)	06:29 17:03	14:23 (AB06) 15:07 (AB06)	07:06 16:33	17:35 (AB06) 17:41 (AB06)	07:29 16:37
29	05:51 20:25	17:45 (AB05) 18:03 (AB05)	06:23 19:42	17:18 (AB05) 18:49	17:50 (AB05)	06:30 17:01	14:23 (AB06) 15:07 (AB06)	07:07 16:33	17:47 (AB06) 17:53 (AB06)	07:29 16:38
30	05:52 20:24	17:43 (AB05) 18:05 (AB05)	06:24 19:41	17:18 (AB05) 18:47	17:51 (AB05)	06:31 17:00	14:23 (AB06) 15:07 (AB06)	07:08 16:32	17:59 (AB06) 18:05 (AB06)	07:30 16:39
31	05:53 20:23	17:41 (AB05) 18:07 (AB05)	06:25 19:39	17:18 (AB05) 18:12 (AB05)	17:52 (AB05)	06:32 16:59	14:23 (AB06) 15:06 (AB06)	07:09 16:33	18:11 (AB06) 18:17 (AB06)	07:30 16:40
Potential sun hours	462	430	375	344	296	285				
Total, worst case	77	1584	402	706	394	285				

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 Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:

15/11/2023 18:49/3.5.587

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flikering worst case Shadow receptor: R028 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (87)  
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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	18:51 (AB04) 19:23 (AB04)	05:29 20:30	05:29 20:41	05:54 20:22	06:26 19:37	19:02 (AB04) 19:14 (AB04)	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	18:51 (AB04) 19:21 (AB04)	05:29 20:31	05:55 20:21	06:27 20:21	06:59 19:36	19:08 (AB04) 19:11 (AB04)	06:59 18:43	06:35 16:56	07:10 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:56 20:02	18:52 (AB04) 19:21 (AB04)	05:28 20:32	05:56 20:19	06:28 19:34	07:00 19:34		07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	18:54 (AB04) 19:20 (AB04)	05:28 20:33	05:57 20:18	06:29 19:32	07:01 18:40		07:01 18:38	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	18:55 (AB04) 19:18 (AB04)	05:27 20:33	05:58 20:17	06:30 19:11 (AB04)	07:02 18:38		07:02 18:37	06:38 16:52	07:14 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	18:57 (AB04) 19:17 (AB04)	05:27 20:34	05:59 20:16	06:32 19:08 (AB04)	07:03 18:37		07:03 18:37	06:40 16:51	07:15 16:30
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	18:58 (AB04) 19:14 (AB04)	05:27 20:35	06:00 20:15	06:33 19:06 (AB04)	07:04 18:35		07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	19:01 (AB04) 19:11 (AB04)	05:27 20:35	06:01 20:13	06:34 19:04 (AB04)	07:05 18:33		07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08		05:26 20:36	06:02 20:39	06:35 19:03 (AB04)	07:06 18:32		07:06 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	19:10 (AB04) 19:13 (AB04)	05:26 20:36	06:03 20:39	06:36 19:02 (AB04)	07:07 18:30		07:07 18:30	06:45 16:47	07:18 16:30
11	07:29 16:50	07:04 17:28	06:22 18:03	06:30 19:38	05:47 20:11	19:03 (AB04) 19:15 (AB04)	05:26 20:37	06:04 20:09	06:37 19:01 (AB04)	07:09 18:28		07:09 18:28	06:46 16:45	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	19:01 (AB04) 19:17 (AB04)	05:26 20:38	06:05 20:08	06:38 18:59 (AB04)	07:10 18:27		07:10 18:27	06:47 16:44	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:44 20:13	18:58 (AB04) 19:18 (AB04)	05:26 20:38	06:06 20:07	06:39 18:52 (AB04)	07:11 18:25		07:11 18:25	06:48 16:43	07:21 16:31
14	07:28 16:53	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	18:57 (AB04) 19:19 (AB04)	05:26 20:38	06:08 20:05	06:40 18:53 (AB04)	07:12 18:23		07:12 18:23	06:49 16:43	07:22 16:31
15	07:28 16:54	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	18:55 (AB04) 19:20 (AB04)	05:26 20:39	06:09 20:04	06:41 18:57 (AB04)	07:13 18:22		07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:21 19:43	05:41 20:16	18:53 (AB04) 19:20 (AB04)	05:26 20:39	06:10 20:02	06:42 18:57 (AB04)	07:14 18:20		07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	18:53 (AB04) 19:22 (AB04)	05:26 20:40	06:11 20:35	06:43 18:56 (AB04)	07:15 18:19		07:15 18:19	06:53 16:40	07:24 16:31
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	18:51 (AB04) 19:23 (AB04)	05:26 20:40	06:12 20:34	06:44 18:56 (AB04)	07:17 18:17		07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:38 20:19	18:51 (AB04) 19:24 (AB04)	05:26 20:40	06:13 20:34	06:45 18:55 (AB04)	07:18 18:16		07:18 18:16	06:56 16:38	07:25 16:32
20	07:25 17:00	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	18:50 (AB04) 19:25 (AB04)	05:26 20:41	06:14 20:33	06:46 18:55 (AB04)	07:19 18:14		07:19 18:14	06:57 16:37	07:26 16:32
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	18:50 (AB04) 19:26 (AB04)	05:26 20:41	06:15 20:32	06:47 18:55 (AB04)	07:20 18:13		07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	18:49 (AB04) 19:27 (AB04)	05:26 20:41	06:16 20:31	06:48 18:55 (AB04)	07:21 18:11		07:21 18:11	06:59 16:36	07:27 16:33
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	18:49 (AB04) 19:27 (AB04)	05:26 20:41	06:17 20:31	06:49 18:55 (AB04)	07:22 18:10		07:22 18:10	07:00 16:35	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:23	18:49 (AB04) 19:27 (AB04)	05:27 20:41	06:18 20:30	06:50 18:55 (AB04)	07:23 18:08		07:23 18:08	07:02 16:35	07:28 16:34
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:33 20:24	18:49 (AB04) 19:27 (AB04)	05:27 20:42	06:19 20:29	06:51 18:55 (AB04)	07:24 18:07		07:24 18:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	18:49 (AB04) 19:27 (AB04)	05:27 20:42	06:20 20:28	06:52 18:56 (AB04)	07:25 18:06		07:25 18:06	07:04 16:34	07:28 16:36
27	07:20 17:09	06:42 17:48	05:55 18:21	06:05 19:55	05:32 20:26	18:49 (AB04) 19:26 (AB04)	05:28 20:42	06:21 20:27	06:53 18:56 (AB04)	07:26 18:05		07:26 18:05	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:31 20:27	18:50 (AB04) 19:25 (AB04)	05:28 20:42	06:22 20:26	06:55 18:56 (AB04)	07:27 18:04		07:27 18:04	07:06 16:33	07:29 16:36
29	07:19 17:12		06:02 19:23	06:02 19:58	05:31 20:28	18:49 (AB04) 19:24 (AB04)	05:28 20:42	06:23 20:25	06:56 18:57 (AB04)	07:28 18:03		07:28 18:03	07:07 16:32	07:29 16:38
30	07:18 17:13		06:01 19:24	06:01 19:59	05:30 20:29	18:50 (AB04) 19:24 (AB04)	05:29 20:42	06:24 20:24	06:57 19:00 (AB04)	07:29 18:02		07:29 18:02	07:08 16:32	07:30 16:39
31	07:17 17:14		06:48 19:25		05:30 20:30		05:53 20:23	06:25 19:39	06:58 19:16 (AB04)	07:30 18:47		07:30 18:47	07:09 16:32	07:30 16:39
Potential sun hours	295	296	369	400	451	486	456	462	430	375	344	296	285	
Total, worst case				621		186			794	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: WF Abruzzo shadow flikering worst case Shadow receptor: R031 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (88)

### 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	07:30 16:40	07:16 17:15	06:39 17:51		06:46 19:26	42	18:17 (AB03) 18:59 (AB03)	05:59 20:00	05:29 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	2	17:28 (AB04) 17:30 (AB04)	42	18:17 (AB03) 18:59 (AB03)	05:58 20:01	05:29 20:31
3	07:30 16:42	07:14 17:18	06:35 17:53	4	17:28 (AB04) 17:32 (AB04)	43	18:17 (AB03) 19:00 (AB03)	05:56 20:02	05:28 20:32
4	07:30 16:43	07:13 17:19	06:34 17:54	7	17:26 (AB04) 17:33 (AB04)	45	18:16 (AB03) 19:01 (AB03)	05:55 20:03	05:28 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56	8	17:26 (AB04) 17:34 (AB04)	44	18:16 (AB03) 19:00 (AB03)	05:54 20:04	05:27 20:33
6	07:30 16:45	07:10 17:22	06:31 17:57	10	17:26 (AB04) 17:36 (AB04)	43	18:17 (AB03) 19:00 (AB03)	05:53 20:05	05:27 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	11	17:26 (AB04) 17:37 (AB04)	42	18:17 (AB03) 18:59 (AB03)	05:51 20:06	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	12	17:25 (AB04) 17:37 (AB04)	41	18:17 (AB03) 18:58 (AB03)	05:50 20:07	05:26 20:35
9	07:30 16:48	07:07 17:26	06:26 18:00	12	17:27 (AB04) 17:39 (AB04)	40	18:18 (AB03) 18:58 (AB03)	05:49 20:08	05:26 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	13	17:27 (AB04) 17:40 (AB04)	38	18:18 (AB03) 18:56 (AB03)	05:48 20:09	05:26 20:36
11	07:29 16:50	07:04 17:28	06:22 18:03	13	17:28 (AB04) 17:41 (AB04)	37	18:18 (AB03) 18:55 (AB03)	05:47 20:11	05:26 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	10	17:31 (AB04) 17:41 (AB04)	34	18:20 (AB03) 18:54 (AB03)	05:45 20:12	05:26 20:38
13	07:29 16:52	07:02 17:31	06:19 18:05		06:26 19:40	32	18:20 (AB03) 18:52 (AB03)	05:44 20:13	05:26 20:38
14	07:28 16:53	07:01 17:32	06:17 18:06		06:25 19:41	29	18:21 (AB03) 18:50 (AB03)	05:43 20:14	05:26 20:38
15	07:28 16:54	06:59 17:34	06:15 18:07		06:23 19:42	25	18:23 (AB03) 18:48 (AB03)	05:42 20:15	05:25 20:39
16	07:28 16:56	06:58 17:35	06:14 18:08		06:21 19:43	20	18:25 (AB03) 18:45 (AB03)	05:41 20:16	05:25 20:39
17	07:27 16:57	06:56 17:36	06:12 18:10		06:20 19:44	13	18:29 (AB03) 18:42 (AB03)	05:40 20:17	05:26 20:40
18	07:27 16:58	06:55 17:37	06:10 18:11		06:18 19:45			05:39 20:18	05:26 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12		06:17 19:46			05:38 20:19	05:26 20:40
20	07:25 17:00	06:52 17:40	06:07 18:13	12	17:37 (AB03) 17:49 (AB03)			05:37 20:20	05:26 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	19	17:33 (AB03) 17:52 (AB03)			05:37 20:21	05:26 20:41
22	07:24 17:03	06:49 17:42	06:04 18:15	24	17:29 (AB03) 17:53 (AB03)			05:36 20:22	05:26 20:41
23	07:23 17:04	06:48 17:44	06:02 18:16	26	17:28 (AB03) 17:54 (AB03)			05:35 20:23	05:26 20:41
24	07:23 17:05	06:46 17:45	06:00 18:18	28	17:26 (AB03) 17:54 (AB03)			05:34 20:23	05:27 20:41
25	07:22 17:07	06:45 17:46	05:58 18:19	31	17:24 (AB03) 17:55 (AB03)			05:33 20:24	05:27 20:42
26	07:21 17:08	06:43 17:47	05:57 18:20	33	17:22 (AB03) 17:55 (AB03)			05:33 20:25	05:27 20:42
27	07:20 17:09	06:42 17:48	05:55 18:21	35	17:22 (AB03) 17:57 (AB03)			05:32 20:26	05:28 20:42
28	07:20 17:10	06:40 17:50	05:53 18:22	37	17:20 (AB03) 17:57 (AB03)			05:31 20:27	05:28 20:42
29	07:19 17:12		06:51 19:23	38	18:19 (AB03) 18:57 (AB03)			05:31 20:28	05:28 20:42
30	07:18 17:13		06:50 19:24	39	18:18 (AB03) 18:57 (AB03)			05:30 20:29	05:29 20:42
31	07:17 17:14		06:48 19:25	41	18:18 (AB03) 18:59 (AB03)			05:30 20:30	
Potential sun hours	295	296	369		400	610	451	456	
Total, worst case			465						

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: WF Abruzzo shadow flickering worst case Shadow receptor: R031 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (88)

### 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	05:29 20:41	05:54 20:22	06:26 19:37	18:17 (AB03) 18:54 (AB03)	06:58 18:45	18:11 (AB04) 18:18 (AB04)	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:21	06:27 19:35	18:16 (AB03) 18:54 (AB03)	06:59 18:43	18:07 (AB04) 18:20 (AB04)	06:35 16:56	07:10 16:31
3	05:30 20:41	05:56 20:19	06:28 19:34	18:15 (AB03) 18:55 (AB03)	07:00 18:42	18:05 (AB04) 18:18 (AB04)	06:36 16:55	07:11 16:31
4	05:31 20:41	05:57 20:18	06:29 19:32	18:14 (AB03) 18:55 (AB03)	07:01 18:40	18:04 (AB04) 18:17 (AB04)	06:37 16:53	07:13 16:31
5	05:32 20:41	05:58 20:17	06:30 19:30	18:13 (AB03) 18:55 (AB03)	07:02 18:38	18:02 (AB04) 18:15 (AB04)	06:38 16:52	07:14 16:31
6	05:32 20:40	05:59 20:16	06:31 19:29	18:12 (AB03) 18:55 (AB03)	07:03 18:37	18:02 (AB04) 18:14 (AB04)	06:40 16:51	07:15 16:30
7	05:33 20:40	06:00 20:14	06:33 19:27	18:11 (AB03) 18:55 (AB03)	07:04 18:35	18:02 (AB04) 18:12 (AB04)	06:41 16:50	07:15 16:30
8	05:33 20:40	06:01 20:13	06:34 19:25	18:11 (AB03) 18:55 (AB03)	07:05 18:33	18:01 (AB04) 18:10 (AB04)	06:42 16:49	07:16 16:30
9	05:34 20:39	06:02 20:12	06:35 19:24	18:10 (AB03) 18:54 (AB03)	07:06 18:32	18:01 (AB04) 18:08 (AB04)	06:43 16:48	07:17 16:30
10	05:35 20:39	06:03 20:11	06:36 19:22	18:10 (AB03) 18:52 (AB03)	07:08 18:30	18:01 (AB04) 18:07 (AB04)	06:44 16:46	07:18 16:30
11	05:35 20:39	06:04 20:09	06:37 19:20	18:09 (AB03) 18:51 (AB03)	07:09 18:28	18:01 (AB04) 18:05 (AB04)	06:46 16:45	07:19 16:30
12	05:36 20:38	06:05 20:08	06:38 19:18	18:09 (AB03) 18:50 (AB03)	07:10 18:27	18:02 (AB04) 18:03 (AB04)	06:47 16:44	07:20 16:30
13	05:37 20:38	06:06 20:07	06:39 19:17	18:09 (AB03) 18:49 (AB03)	07:11 18:25		06:48 16:43	07:21 16:30
14	05:38 20:37	06:07 20:05	06:40 19:15	18:09 (AB03) 18:47 (AB03)	07:12 18:23		06:49 16:42	07:22 16:31
15	05:39 20:36	06:09 20:04	06:41 19:13	18:09 (AB03) 18:46 (AB03)	07:13 18:22		06:51 16:42	07:22 16:31
16	05:39 20:36	06:10 20:02	06:42 19:11	18:10 (AB03) 18:45 (AB03)	07:14 18:20		06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	06:43 19:10	18:10 (AB03) 18:44 (AB03)	07:15 18:19		06:53 16:40	07:24 16:31
18	05:41 20:34	06:12 19:59	06:44 19:08	18:11 (AB03) 18:42 (AB03)	07:17 18:17		06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	18:12 (AB03) 18:41 (AB03)	07:18 18:16		06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	06:46 19:04	18:14 (AB03) 18:41 (AB03)	07:19 18:14		06:57 16:37	07:26 16:32
21	05:44 20:32	06:15 19:55	06:47 19:03	18:15 (AB03) 18:39 (AB03)	07:20 18:12		06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 19:53	06:48 19:01	18:17 (AB03) 18:38 (AB03)	07:21 18:11		06:59 16:36	07:27 16:33
23	05:45 20:31	06:17 19:52	06:49 18:59	18:20 (AB03) 18:35 (AB03)	07:23 18:10		07:00 16:35	07:27 16:34
24	05:46 20:30	06:18 19:50	06:50 18:57		07:24 18:08		07:01 16:35	07:28 16:34
25	05:47 20:29	06:19 19:49	06:51 18:56		06:25 17:07		07:03 16:34	07:28 16:35
26	05:48 20:28	06:20 19:47	18:30 (AB03) 18:44 (AB03)	06:52 18:54	06:26 17:05		07:04 16:34	07:28 16:36
27	05:49 20:27	06:21 19:45	18:27 (AB03) 18:47 (AB03)	06:53 18:52	06:27 17:04		07:05 16:33	07:29 16:36
28	05:50 20:26	06:22 19:44	18:24 (AB03) 18:49 (AB03)	06:54 18:50	06:28 17:02		07:06 16:33	07:29 16:37
29	05:51 20:25	06:23 19:42	18:22 (AB03) 18:51 (AB03)	06:56 18:49	06:30 17:01		07:07 16:32	07:29 16:38
30	05:52 20:24	06:24 19:40	18:20 (AB03) 18:52 (AB03)	06:57 18:47	06:31 17:00		07:08 16:32	07:30 16:38
31	05:53 20:23	06:25 19:39	18:19 (AB03) 18:53 (AB03)		06:32 16:58			07:30 16:39
Potential sun hours	462	430	375	344	296	285		
Total, worst case		154	829	108				

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

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

Calculation: WF Abruzzo shadow flickering worst case Shadow receptor: R039 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (89)

### 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	07:30 16:40	15:16 (AB03) 15:44 (AB03)	07:16 17:16	06:39 17:51	06:46 19:26	
2	07:30 16:41	15:17 (AB03) 15:45 (AB03)	07:15 17:17	06:37 17:52	06:45 19:28	
3	07:30 16:42	15:18 (AB03) 15:46 (AB03)	07:14 17:18	06:35 17:53	06:43 19:29	
4	07:30 16:43	15:19 (AB03) 15:47 (AB03)	07:13 17:19	06:34 17:54	06:41 19:30	
5	07:30 16:44	15:20 (AB03) 15:49 (AB03)	07:12 17:21	06:32 17:56	06:40 19:31	
6	07:30 16:45	15:21 (AB03) 15:50 (AB03)	07:10 17:22	06:31 17:57	06:38 19:32	
7	07:30 16:46	15:22 (AB03) 15:52 (AB03)	07:09 17:23	06:29 17:58	06:36 19:33	
8	07:30 16:47	15:23 (AB03) 15:52 (AB03)	07:08 17:25	06:27 17:59	06:34 19:34	
9	07:30 16:48	15:24 (AB03) 15:54 (AB03)	07:07 17:26	06:26 18:00	06:33 19:35	
10	07:30 16:49	15:26 (AB03) 15:56 (AB03)	07:06 17:27	06:24 18:02	06:31 19:36	
11	07:29 16:50	15:27 (AB03) 15:57 (AB03)	07:04 17:28	06:22 18:03	06:30 19:38	
12	07:29 16:51	15:28 (AB03) 15:58 (AB03)	07:03 17:30	06:21 18:04	06:28 19:39	
13	07:29 16:52	15:30 (AB03) 16:00 (AB03)	07:02 17:31	06:19 18:05	06:26 19:40	
14	07:28 16:53	15:31 (AB03) 16:01 (AB03)	07:01 17:32	06:17 18:06	06:25 19:41	
15	07:28 16:54	15:34 (AB03) 16:00 (AB03)	06:59 17:34	06:16 18:07	06:23 19:42	
16	07:28 16:56	15:36 (AB03) 15:58 (AB03)	06:58 17:35	06:14 18:08	06:21 19:43	
17	07:27 16:57	15:40 (AB03) 15:56 (AB03)	06:57 17:36	06:12 18:10	06:20 19:44	
18	07:27 16:58	15:44 (AB03) 15:51 (AB03)	06:55 17:37	06:10 18:11	06:18 19:45	
19	07:26 16:59		06:54 17:39	06:09 18:12	06:17 19:46	
20	07:26 17:00		06:52 17:40	06:07 18:13	06:15 19:48	
21	07:25 17:02		06:51 17:41	06:05 18:14	06:14 19:49	
22	07:24 17:03		06:49 17:42	06:04 18:15	06:12 19:50	
23	07:24 17:04		06:48 17:44	06:02 18:16	06:11 19:51	
24	07:23 17:05		06:46 17:45	06:00 18:18	06:09 19:52	
25	07:22 17:07		06:45 17:46	05:58 18:19	06:08 19:53	
26	07:21 17:08		06:43 17:47	05:57 18:20	06:06 19:54	
27	07:20 17:09		06:42 17:48	05:55 18:21	06:05 19:55	
28	07:20 17:10		06:40 17:50	05:53 18:22	06:03 19:56	
29	07:19 17:12			06:51 19:23	06:02 19:58	
30	07:18 17:13			06:50 19:24	06:00 19:59	
31	07:17 17:14			06:48 19:25		
Potential sun hours	295		296	369	400	451
Total, worst case	480				22	374

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: WF Abruzzo shadow flickering worst case Shadow receptor: R039 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (89)

### 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	05:29 20:42	05:54 20:22	19:35 (AB01) 19:58 (AB01)	06:26 19:37	06:58 18:45	06:33 16:57
2	05:30 20:41	05:55 20:21	19:34 (AB01) 19:57 (AB01)	06:27 19:36	06:59 18:43	06:35 16:56
3	05:30 20:41	05:56 20:19	19:34 (AB01) 19:56 (AB01)	06:28 19:34	07:00 18:42	06:36 16:55
4	05:31 20:41	05:57 20:18	19:34 (AB01) 19:55 (AB01)	06:29 19:32	07:01 18:40	06:37 16:53
5	05:32 20:41	05:58 20:17	19:33 (AB01) 19:54 (AB01)	06:30 19:30	07:02 18:38	06:38 16:52
6	05:32 20:40	05:59 20:16	19:33 (AB01) 19:52 (AB01)	06:31 19:29	07:03 18:37	06:40 16:51
7	05:33 20:40	06:00 20:15	19:33 (AB01) 19:51 (AB01)	06:33 19:27	07:04 18:35	06:41 16:50
8	05:33 20:40	06:01 20:13	19:33 (AB01) 19:50 (AB01)	06:34 19:25	07:05 18:33	06:42 16:49
9	05:34 20:39	06:02 20:12	19:33 (AB01) 19:49 (AB01)	06:35 19:24	07:06 18:32	06:43 16:48
10	05:35 20:39	06:03 20:11	19:33 (AB01) 19:47 (AB01)	06:36 19:22	07:08 18:30	06:45 16:46
11	05:35 20:39	06:04 20:09	19:33 (AB01) 19:45 (AB01)	06:37 19:20	07:09 18:28	06:46 16:45
12	05:36 20:38	06:05 20:08	19:34 (AB01) 19:44 (AB01)	06:38 19:18	07:10 18:27	06:47 16:44
13	05:37 20:38	06:06 20:07	19:34 (AB01) 19:43 (AB01)	06:39 19:17	07:11 18:25	06:48 16:43
14	05:38 20:37	06:07 20:05	19:35 (AB01) 19:41 (AB01)	06:40 19:15	07:12 18:23	06:49 16:42
15	05:39 20:36	06:09 20:04	19:36 (AB01) 19:40 (AB01)	06:41 19:13	07:13 18:22	06:51 16:42
16	05:39 20:36	06:10 20:02	19:38 (AB01) 19:39 (AB01)	06:42 19:11	07:14 18:20	06:52 16:41
17	05:40 20:35	06:11 20:01	19:39 (AB01)	06:43 19:10	07:16 18:19	06:53 16:40
18	05:41 20:34	06:12 19:59		06:44 19:08	07:17 18:17	06:54 16:39
19	05:42 20:34	06:13 19:58		06:45 19:06	07:18 18:16	06:56 16:38
20	05:43 20:33	06:14 19:56		06:46 19:04	07:19 18:14	06:57 16:37
21	05:44 20:32	06:15 19:55		06:47 19:03	07:20 18:12	06:58 16:37
22	05:45 20:31	06:16 19:53		06:48 19:01	07:21 18:11	06:59 16:36
23	05:45 20:31	19:44 (AB01) 19:51 (AB01)	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35
24	05:46 20:30	19:42 (AB01) 19:54 (AB01)	06:18 19:50	06:50 18:57	07:24 18:08	15:22 (AB03) 16:35
25	05:47 20:29	19:40 (AB01) 19:55 (AB01)	06:19 19:49	06:51 18:56	06:25 17:07	6 15:28 (AB03) 16:34
26	05:48 20:28	19:39 (AB01) 19:57 (AB01)	06:20 19:47	06:52 18:54	06:26 17:05	16 15:34 (AB03) 16:34
27	05:49 20:27	19:38 (AB01) 19:58 (AB01)	06:21 19:45	06:53 18:52	06:27 17:04	22 15:15 (AB03) 16:33
28	05:50 20:26	19:37 (AB01) 19:59 (AB01)	06:22 19:44	06:54 18:50	06:29 17:02	26 15:39 (AB03) 16:32
29	05:51 20:25	19:36 (AB01) 20:00 (AB01)	06:23 19:42	06:56 18:49	06:30 17:01	29 15:10 (AB03) 16:31
30	05:52 20:24	19:36 (AB01) 20:00 (AB01)	06:24 19:40	06:57 18:47	06:31 17:00	30 15:09 (AB03) 16:30
31	05:53 20:23	19:35 (AB01) 19:59 (AB01)	06:25 19:39		06:32 16:58	30 15:39 (AB03) 16:30
Potential sun hours	462	430		375	344	296
Total, worst case	166	236			159	285

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: WF Abruzzo shadow flickering worst case Shadow receptor: R040 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (90)

### 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	07:30 16:40	15:13 (AB03) 15:45 (AB03)	07:16 17:16	06:39 17:51	06:46 19:26	05:29 20:30
2	07:30 16:41	15:14 (AB03) 15:44 (AB03)	07:15 17:17	06:37 17:52	06:45 19:28	05:29 20:31
3	07:30 16:42	15:16 (AB03) 15:44 (AB03)	07:14 17:18	06:35 17:53	06:43 19:29	05:28 20:32
4	07:30 16:43	15:17 (AB03) 15:44 (AB03)	07:13 17:19	06:34 17:54	06:41 19:30	05:28 20:33
5	07:30 16:44	15:19 (AB03) 15:43 (AB03)	07:12 17:21	06:32 17:56	06:40 19:31	05:27 20:33
6	07:30 16:45	15:21 (AB03) 15:42 (AB03)	07:10 17:22	06:31 17:57	06:38 19:32	05:27 20:34
7	07:30 16:46	15:23 (AB03) 15:41 (AB03)	07:09 17:23	06:29 17:58	06:36 19:33	05:27 20:35
8	07:30 16:47	15:25 (AB03) 15:38 (AB03)	07:08 17:25	06:27 17:59	06:34 19:34	05:26 20:35
9	07:30 16:48	15:25 (AB03) 17:26	07:07 18:00	06:26 19:35	06:33 19:35	05:26 20:36
10	07:30 16:49	15:25 (AB03) 17:27	07:06 18:02	06:24 19:36	06:31 19:36	05:26 20:36
11	07:29 16:50	15:25 (AB03) 17:28	07:04 18:03	06:22 19:38	06:30 19:38	05:26 20:37
12	07:29 16:51	15:25 (AB03) 17:30	07:03 18:04	06:21 19:39	06:28 19:39	05:26 20:38
13	07:29 16:52	15:25 (AB03) 17:31	07:02 18:05	06:19 19:40	06:26 19:40	05:26 20:38
14	07:28 16:53	15:25 (AB03) 17:32	07:01 18:06	06:17 19:41	06:25 19:41	05:26 20:38
15	07:28 16:54	15:25 (AB03) 17:34	06:59 18:07	06:16 19:42	06:23 19:42	05:25 20:39
16	07:28 16:56	15:25 (AB03) 17:35	06:58 18:08	06:14 19:43	06:21 19:43	05:25 20:39
17	07:27 16:57	15:25 (AB03) 17:36	06:57 18:10	06:12 19:44	06:20 19:44	05:26 20:40
18	07:27 16:58	15:25 (AB03) 17:37	06:55 18:11	06:10 19:45	06:18 19:45	05:26 20:40
19	07:26 16:59	15:25 (AB03) 17:39	06:54 18:12	06:09 19:46	06:17 19:46	05:26 20:40
20	07:26 17:00	15:25 (AB03) 17:40	06:52 18:13	06:07 19:48	06:15 19:48	05:26 20:41
21	07:25 17:02	15:25 (AB03) 17:41	06:51 18:14	06:05 19:49	06:14 19:49	05:26 20:41
22	07:24 17:03	15:25 (AB03) 17:42	06:49 18:15	06:04 19:50	06:12 19:50	05:26 20:41
23	07:24 17:04	15:25 (AB03) 17:44	06:48 18:16	06:02 19:51	06:11 19:51	05:26 20:41
24	07:23 17:05	15:25 (AB03) 17:45	06:46 18:18	06:00 19:52	06:09 19:52	05:27 20:41
25	07:22 17:07	15:25 (AB03) 17:46	06:45 18:19	05:58 19:53	06:08 19:53	05:27 20:42
26	07:21 17:08	15:25 (AB03) 17:47	06:43 18:20	05:57 19:54	06:06 19:54	05:27 20:42
27	07:20 17:09	15:25 (AB03) 17:48	06:42 18:21	05:55 19:55	06:05 19:55	05:28 20:42
28	07:20 17:10	15:25 (AB03) 17:50	06:40 18:22	05:53 19:56	06:03 19:56	05:28 20:42
29	07:19 17:12	15:25 (AB03) 19:23	06:51 19:23	06:02 19:58	06:02 19:58	05:28 20:42
30	07:18 17:13	15:25 (AB03) 19:24	06:50 19:24	06:00 19:59	06:00 19:59	05:29 20:42
31	07:17 17:14	15:25 (AB03) 19:25	06:48 19:25	06:00 19:59	06:00 19:59	05:29 20:42
Potential sun hours	295	296	369	400	451	456
Total, worst case	193			24	406	

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: WF Abruzzo shadow flickering worst case Shadow receptor: R040 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (90)

### 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	05:29 20:42	05:54 20:22	19:34 (AB01)	06:26 19:58 (AB01)	06:58 18:45	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:21	24 19:33 (AB01)	06:27 19:57 (AB01)	06:59 18:43	06:35 16:56	07:10 16:31
3	05:30 20:41	05:56 20:19	24 19:33 (AB01)	06:28 19:56 (AB01)	07:00 18:42	06:36 16:55	07:12 16:31
4	05:31 20:41	05:57 20:18	22 19:33 (AB01)	06:29 19:55 (AB01)	07:01 18:40	06:37 16:53	07:13 16:31
5	05:32 20:41	05:58 20:17	21 19:33 (AB01)	06:30 19:54 (AB01)	07:02 18:38	06:38 16:52	07:14 16:31
6	05:32 20:41	05:59 20:16	19 19:33 (AB01)	06:31 19:52 (AB01)	07:03 18:37	06:40 16:51	07:15 16:30
7	05:33 20:40	06:00 20:15	19 19:32 (AB01)	06:33 19:51 (AB01)	07:04 18:35	06:41 16:50	07:16 16:30
8	05:33 20:40	06:01 20:13	17 19:33 (AB01)	06:34 19:50 (AB01)	07:05 18:33	06:42 16:49	07:16 16:30
9	05:34 20:39	06:02 20:12	16 19:33 (AB01)	06:35 19:49 (AB01)	07:06 18:32	06:43 16:48	07:17 16:30
10	05:35 20:39	06:03 20:11	15 19:32 (AB01)	06:36 19:47 (AB01)	07:08 18:30	06:45 16:46	07:18 16:30
11	05:35 20:39	06:04 20:09	13 19:32 (AB01)	06:37 19:45 (AB01)	07:09 18:28	06:46 16:45	07:19 16:30
12	05:36 20:38	06:05 20:08	11 19:33 (AB01)	06:38 19:44 (AB01)	07:10 18:27	06:47 16:44	07:20 16:30
13	05:37 20:38	06:06 20:07	9 19:34 (AB01)	06:39 19:43 (AB01)	07:11 18:25	06:48 16:43	07:21 16:30
14	05:38 20:37	06:07 20:05	7 19:34 (AB01)	06:40 19:41 (AB01)	07:12 18:23	06:49 16:42	07:22 16:31
15	05:39 20:36	06:09 20:04	4 19:36 (AB01)	06:41 19:40 (AB01)	07:13 18:22	06:51 16:42	07:22 16:31
16	05:39 20:36	06:10 20:02	2 19:37 (AB01)	06:42 19:39 (AB01)	07:14 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01		06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:31
18	05:41 20:34	06:12 19:59		06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58		06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56		06:46 19:04	07:19 18:14	06:57 16:37	07:26 16:32
21	05:44 20:32	06:15 19:55		06:47 19:03	07:20 18:12	06:58 16:37	07:26 16:33
22	05:45 20:31	19:44 (AB01) 06:16		06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:33
23	05:45 20:31	6 19:50 (AB01) 19:53		06:49 18:59	07:23 18:10	07:00 16:35	07:27 16:34
24	05:46 20:30	12 19:53 (AB01) 19:52		06:50 18:57	07:24 18:08	07:02 16:35	07:28 16:34
25	05:47 20:29	15 19:55 (AB01) 19:50		06:51 18:56	07:25 18:07	07:03 16:35	07:28 16:34
26	05:48 20:28	18 19:56 (AB01) 19:49		06:52 18:54	07:26 17:05	07:04 16:34	07:28 16:36
27	05:49 20:27	20 19:57 (AB01) 19:47		06:53 18:52	07:27 17:04	07:05 16:33	07:29 16:36
28	05:50 20:26	21 19:58 (AB01) 19:45		06:54 18:50	07:29 17:02	07:06 16:33	07:29 16:37
29	05:51 20:25	23 19:59 (AB01) 19:44		06:55 18:49	07:30 17:01	07:07 16:32	07:29 16:38
30	05:52 20:24	25 20:00 (AB01) 19:42		06:56 18:47	07:31 17:00	07:08 16:32	07:30 16:38
31	05:53 20:23	25 19:34 (AB01) 06:25			06:32 16:58	07:30 16:39	07:30 15:12 (AB03)
Potential sun hours	462	190	430	375	344	296	285
Total, worst case		190	430	375	344	296	285

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: WF Abruzzo shadow flikering worst case Shadow receptor: R046 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (91)  
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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:26	18:11 (AB01) 18:51 (AB01)	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	18:10 (AB01) 18:56 (AB01)	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	18:10 (AB01) 18:51 (AB01)	05:58 20:01	05:29 20:31	05:55 20:41	05:55 20:21	06:27 19:36	18:09 (AB01) 18:55 (AB01)	06:59 18:43	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	18:10 (AB01) 18:52 (AB01)	05:56 20:02	05:28 20:32	05:56 20:41	05:56 20:19	06:28 19:34	18:08 (AB01) 18:53 (AB01)	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	18:10 (AB01) 18:53 (AB01)	05:55 20:03	05:28 20:33	05:57 20:41	05:57 20:18	06:29 19:32	18:07 (AB01) 18:52 (AB01)	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	18:10 (AB01) 18:53 (AB01)	05:54 20:04	05:27 20:33	05:58 20:41	05:58 20:17	06:30 19:30	18:06 (AB01) 18:51 (AB01)	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	18:10 (AB01) 18:54 (AB01)	05:53 20:05	05:27 20:34	05:59 20:41	05:59 20:16	06:32 19:29	18:05 (AB01) 18:49 (AB01)	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	18:10 (AB01) 18:55 (AB01)	05:51 20:06	05:27 20:35	06:00 20:40	06:00 20:15	06:33 19:27	18:05 (AB01) 18:48 (AB01)	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	18:10 (AB01) 18:55 (AB01)	05:50 20:07	05:26 20:35	06:01 20:40	06:01 20:13	06:34 19:25	18:04 (AB01) 18:47 (AB01)	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	18:11 (AB01) 18:56 (AB01)	05:49 20:08	05:26 20:36	06:02 20:40	06:02 20:12	06:35 19:24	18:04 (AB01) 18:46 (AB01)	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	18:11 (AB01) 18:57 (AB01)	05:48 20:10	05:26 20:37	06:03 20:39	06:03 20:11	06:36 19:22	18:03 (AB01) 18:44 (AB01)	07:08 18:30	06:45 16:46	07:18 16:30
11	07:29 16:50	07:05 17:28	06:22 18:03	06:30 19:38	18:11 (AB01) 18:57 (AB01)	05:47 20:11	05:26 20:37	06:04 20:09	06:04 20:09	06:37 19:20	18:03 (AB01) 18:43 (AB01)	07:09 18:28	06:46 16:45	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	18:12 (AB01) 18:58 (AB01)	05:46 20:12	05:26 20:38	06:05 20:08	06:05 20:08	06:38 19:18	18:02 (AB01) 18:42 (AB01)	07:10 18:27	06:47 16:44	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	18:13 (AB01) 18:58 (AB01)	05:44 20:13	05:26 20:38	06:06 20:07	06:06 20:07	06:39 19:17	18:02 (AB01) 18:40 (AB01)	07:11 18:25	06:48 16:43	07:21 16:30
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	18:14 (AB01) 18:58 (AB01)	05:43 20:14	05:26 20:39	06:08 20:05	06:08 20:05	06:40 19:15	18:02 (AB01) 18:39 (AB01)	07:12 18:23	06:49 16:43	07:22 16:31
15	07:28 16:54	06:59 17:34	06:16 18:07	06:23 19:42	18:15 (AB01) 18:56 (AB01)	05:42 20:15	05:26 20:39	06:09 20:04	06:09 20:04	06:41 19:13	18:02 (AB01) 18:38 (AB01)	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:21 19:43	18:15 (AB01) 18:54 (AB01)	05:41 20:16	05:25 20:39	06:10 20:02	06:10 20:02	06:42 19:11	18:02 (AB01) 18:36 (AB01)	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	18:17 (AB01) 18:53 (AB01)	05:40 20:17	05:26 20:40	06:11 20:01	06:11 20:01	06:43 19:10	18:02 (AB01) 18:35 (AB01)	07:16 18:19	06:53 16:40	07:24 16:31
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	18:18 (AB01) 18:50 (AB01)	05:39 20:18	05:26 20:40	06:12 19:59	06:12 19:59	06:44 19:08	18:04 (AB01) 18:35 (AB01)	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	18:21 (AB01) 18:48 (AB01)	05:38 20:19	05:26 20:40	06:13 19:58	06:13 19:58	06:45 19:06	18:04 (AB01) 18:33 (AB01)	07:18 18:16	06:56 16:38	07:25 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	06:15 19:48	18:23 (AB01) 18:45 (AB01)	05:38 20:20	05:26 20:41	06:14 19:56	06:14 19:56	06:46 19:04	18:05 (AB01) 18:32 (AB01)	07:19 18:14	06:57 16:37	07:26 16:32
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	18:27 (AB01) 18:41 (AB01)	05:37 20:21	05:26 20:41	06:15 19:55	06:15 19:55	06:47 19:03	18:06 (AB01) 18:30 (AB01)	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	18:27 (AB01) 18:41 (AB01)	05:36 20:22	05:26 20:41	06:16 19:53	06:16 19:53	06:48 19:01	18:06 (AB01) 18:29 (AB01)	07:21 18:11	06:59 16:36	07:27 16:33
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	18:27 (AB01) 18:45 (AB01)	05:35 20:23	05:26 20:41	06:17 19:52	06:17 19:52	06:49 19:02	18:08 (AB01) 18:30 (AB01)	07:23 18:10	07:00 16:35	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	18:27 (AB01) 18:46 (AB01)	05:34 20:24	05:27 20:41	06:18 19:50	06:18 19:50	06:50 19:03	18:09 (AB01) 18:32 (AB01)	07:24 18:11	07:02 16:35	07:28 16:34
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	18:27 (AB01) 18:46 (AB01)	05:33 20:24	05:27 20:42	06:19 19:49	06:19 19:49	06:51 19:04	18:11 (AB01) 18:34 (AB01)	06:25 18:17	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	18:27 (AB01) 18:46 (AB01)	05:33 20:25	05:27 20:42	06:20 19:47	06:20 19:47	06:52 19:05	18:11 (AB01) 18:34 (AB01)	06:26 18:17	07:04 16:34	07:29 16:36
27	07:20 17:09	06:42 17:48	05:55 18:21	06:05 19:55	18:27 (AB01) 18:46 (AB01)	05:32 20:26	05:28 20:42	06:21 19:45	06:21 19:45	06:53 19:06	18:11 (AB01) 18:34 (AB01)	06:27 18:17	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	18:27 (AB01) 18:46 (AB01)	05:31 20:27	05:28 20:42	06:22 19:44	06:22 19:44	06:55 19:07	18:11 (AB01) 18:34 (AB01)	06:29 18:17	07:06 16:33	07:29 16:37
29	07:19 17:12	06:51 18:23	06:51 19:56	06:02 19:58	18:27 (AB01) 18:46 (AB01)	05:31 20:28	05:28 20:42	06:23 19:42	06:23 19:42	06:56 19:08	18:11 (AB01) 18:34 (AB01)	06:30 18:17	07:07 16:32	07:29 16:38
30	07:18 17:13	06:50 18:24	06:50 19:57	06:01 19:59	18:27 (AB01) 18:46 (AB01)	05:30 20:29	05:29 20:42	06:24 19:41	06:24 19:41	06:57 19:09	18:11 (AB01) 18:34 (AB01)	06:31 18:17	07:08 16:32	07:30 16:38
31	07:17 17:14	06:48 18:25	06:48 19:58	06:01 19:59	18:27 (AB01) 18:46 (AB01)	05:30 20:30	05:29 20:42	06:25 19:39	06:25 19:39	06:58 19:10	18:11 (AB01) 18:34 (AB01)	06:32 18:17	07:09 16:32	07:30 16:39
Potential sun hours	295	296	369	408	400	451	456	430	352	375	344	296	285	
Total, worst case														

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: WF Abruzzo shadow flickering worst case Shadow receptor: R047 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (92)

### 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	07:30 16:40	07:16 17:16	06:39 17:51		06:46 19:26	48	17:56 (AB01) 18:44 (AB01)	05:59 20:00	05:29 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52		06:45 19:28	49	17:56 (AB01) 18:45 (AB01)	05:58 20:01	05:29 20:31
3	07:30 16:42	07:14 17:18	06:35 17:53		06:43 19:29	49	17:57 (AB01) 18:46 (AB01)	05:56 20:02	05:28 20:32
4	07:30 16:43	07:13 17:19	06:34 17:55		06:41 19:30	49	17:57 (AB01) 18:46 (AB01)	05:55 20:03	05:28 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56		06:40 19:31	50	17:57 (AB01) 18:47 (AB01)	05:54 20:04	05:27 20:33
6	07:30 16:45	07:11 17:22	06:31 17:57		06:38 19:32	50	17:58 (AB01) 18:48 (AB01)	05:53 20:05	05:27 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58		06:36 19:33	50	17:59 (AB01) 18:49 (AB01)	05:51 20:06	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	4	17:24 (AB01) 17:28 (AB01)	06:35 19:34	17:59 (AB01) 18:49 (AB01)	05:50 20:07	05:26 20:35
9	07:30 16:48	07:07 17:26	06:26 18:00	9	17:20 (AB01) 17:29 (AB01)	06:33 19:35	18:00 (AB01) 18:51 (AB01)	05:49 20:08	05:26 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	13	17:17 (AB01) 17:30 (AB01)	06:31 19:36	18:01 (AB01) 18:51 (AB01)	05:48 20:10	05:26 20:37
11	07:29 16:50	07:05 17:28	06:22 18:03	16	17:14 (AB01) 17:30 (AB01)	06:30 19:38	18:01 (AB01) 18:51 (AB01)	05:47 20:11	05:26 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	19	17:13 (AB01) 17:32 (AB01)	06:28 19:39	18:03 (AB01) 18:50 (AB01)	05:46 20:12	05:26 20:38
13	07:29 16:52	07:02 17:31	06:19 18:05	21	17:11 (AB01) 17:32 (AB01)	06:26 19:40	18:04 (AB01) 18:48 (AB01)	05:44 20:13	05:26 20:38
14	07:29 16:53	07:01 17:32	06:17 18:06	24	17:09 (AB01) 17:33 (AB01)	06:25 19:41	18:06 (AB01) 18:46 (AB01)	05:43 20:14	05:26 20:39
15	07:28 16:54	06:59 17:34	06:16 18:07	26	17:07 (AB01) 17:33 (AB01)	06:23 19:42	18:07 (AB01) 18:44 (AB01)	05:42 20:15	05:26 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	28	17:06 (AB01) 17:34 (AB01)	06:21 19:43	18:09 (AB01) 18:41 (AB01)	05:41 20:16	05:26 20:39
17	07:27 16:57	06:57 17:36	06:12 18:10	30	17:05 (AB01) 17:35 (AB01)	06:20 19:44	18:12 (AB01) 18:39 (AB01)	05:40 20:17	05:26 20:40
18	07:27 16:58	06:55 17:37	06:10 18:11	32	17:03 (AB01) 17:35 (AB01)	06:18 19:45	18:15 (AB01) 18:34 (AB01)	05:39 20:18	05:26 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	33	17:03 (AB01) 17:36 (AB01)	06:17 19:46	18:22 (AB01) 18:28 (AB01)	05:38 20:19	05:26 20:40
20	07:26 17:00	06:52 17:40	06:07 18:13	34	17:02 (AB01) 17:36 (AB01)	06:15 19:48		05:38 20:20	05:26 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	36	17:00 (AB01) 17:36 (AB01)	06:14 19:49		05:37 20:21	05:26 20:41
22	07:24 17:03	06:49 17:42	06:04 18:15	38	16:59 (AB01) 17:37 (AB01)	06:12 19:50		05:36 20:22	05:26 20:41
23	07:24 17:04	06:48 17:44	06:02 18:16	39	16:59 (AB01) 17:38 (AB01)	06:11 19:51		05:35 20:23	05:26 20:41
24	07:23 17:05	06:46 17:45	06:00 18:18	40	16:59 (AB01) 17:39 (AB01)	06:09 19:52		05:34 20:24	05:27 20:41
25	07:22 17:08	06:45 17:47	05:58 18:20	42	16:58 (AB01) 17:39 (AB01)	06:08 19:54		05:33 20:25	05:27 20:42
26	07:21 17:09	06:43 17:48	05:57 18:21	43	16:57 (AB01) 17:41 (AB01)	06:06 19:55		05:33 20:26	05:27 20:42
27	07:20 17:10	06:42 17:50	05:55 18:22	44	16:58 (AB01) 17:41 (AB01)	06:05 19:56		05:32 20:27	05:28 20:42
28	07:20 17:11	06:40 17:51	05:53 18:23	46	16:57 (AB01) 17:56 (AB01)	06:03 06:02		05:31 05:31	05:28 05:28
29	07:19 17:12		06:51 19:23	46	17:56 (AB01) 18:42 (AB01)	06:02 19:58		05:31 20:28	05:28 20:42
30	07:18 17:13		06:50 19:24	46	17:57 (AB01) 18:43 (AB01)	06:01 19:59		05:30 20:29	05:29 20:42
31	07:17 17:14		06:48 19:25	47	17:57 (AB01) 18:44 (AB01)			05:30 20:30	
Potential sun hours	295	296	369		400		451	456	
Total, worst case			751		798				

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: WF Abruzzo shadow flickering worst case Shadow receptor: R047 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (92)

### 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	05:29 20:42	05:54 20:22	06:26 19:37	18:00 (AB01) 18:50 (AB01)	06:58 18:45	17:51 (AB01) 18:11 (AB01)	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:21	06:27 19:36	17:59 (AB01) 18:49 (AB01)	06:59 18:43	17:52 (AB01) 18:09 (AB01)	06:35 16:56	07:11 16:31
3	05:30 20:41	05:56 20:19	06:28 19:34	17:57 (AB01) 18:48 (AB01)	07:00 18:42	17:54 (AB01) 18:08 (AB01)	06:36 16:55	07:12 16:31
4	05:31 20:41	05:57 20:18	06:29 19:32	17:56 (AB01) 18:46 (AB01)	07:01 18:40	17:56 (AB01) 18:06 (AB01)	06:37 16:53	07:13 16:31
5	05:32 20:41	05:58 20:17	06:30 19:30	17:55 (AB01) 18:45 (AB01)	07:02 18:38	17:59 (AB01) 18:06 (AB01)	06:38 16:52	07:14 16:31
6	05:32 20:41	05:59 20:16	06:32 19:29	17:53 (AB01) 18:43 (AB01)	07:03 18:37	18:03 (AB01) 18:05 (AB01)	06:40 16:51	07:15 16:30
7	05:33 20:40	06:00 20:15	06:33 19:27	17:52 (AB01) 18:42 (AB01)	07:04 18:35		06:41 16:50	07:16 16:30
8	05:33 20:40	06:01 20:13	06:34 19:25	17:51 (AB01) 18:41 (AB01)	07:05 18:33		06:42 16:49	07:17 16:30
9	05:34 20:40	06:02 20:12	06:35 19:24	17:50 (AB01) 18:39 (AB01)	07:07 18:32		06:43 16:48	07:17 16:30
10	05:35 20:39	06:03 20:11	06:36 19:22	17:50 (AB01) 18:38 (AB01)	07:08 18:30		06:45 16:46	07:18 16:30
11	05:36 20:39	06:04 20:09	06:37 19:20	17:49 (AB01) 18:36 (AB01)	07:09 18:28		06:46 16:45	07:19 16:30
12	05:36 20:38	06:05 20:08	06:38 19:18	17:48 (AB01) 18:35 (AB01)	07:10 18:27		06:47 16:44	07:20 16:30
13	05:37 20:38	06:06 20:07	06:39 19:17	17:47 (AB01) 18:34 (AB01)	07:11 18:25		06:48 16:43	07:21 16:30
14	05:38 20:37	06:08 20:05	06:40 19:15	17:47 (AB01) 18:32 (AB01)	07:12 18:23		06:49 16:43	07:22 16:31
15	05:39 20:37	06:09 20:04	06:41 19:13	17:46 (AB01) 18:31 (AB01)	07:13 18:22		06:51 16:42	07:22 16:31
16	05:39 20:36	06:10 20:02	06:42 19:11	17:46 (AB01) 18:29 (AB01)	07:14 18:20		06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	06:43 19:10	17:46 (AB01) 18:29 (AB01)	07:16 18:19		06:53 16:40	07:24 16:31
18	05:41 20:35	06:12 19:59	06:44 19:08	17:46 (AB01) 18:28 (AB01)	07:17 18:17		06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	17:46 (AB01) 18:26 (AB01)	07:18 18:16		06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	06:46 19:04	17:46 (AB01) 18:25 (AB01)	07:19 18:14		06:57 16:37	07:26 16:32
21	05:44 20:32	06:15 19:55	06:47 19:03	17:46 (AB01) 18:23 (AB01)	07:20 18:13		06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 19:53	06:48 19:01	17:46 (AB01) 18:22 (AB01)	07:21 18:11		06:59 16:36	07:27 16:33
23	05:45 20:31	06:17 19:52	06:49 18:59	17:46 (AB01) 18:21 (AB01)	07:23 18:10		07:00 16:35	07:27 16:34
24	05:46 20:30	06:18 19:50	06:50 18:25 (AB01) 18:33 (AB01)	17:46 (AB01) 18:20 (AB01)	07:24 18:08		07:02 16:35	07:28 16:34
25	05:47 20:29	06:19 19:49	06:51 18:39 (AB01)	17:46 (AB01) 18:19 (AB01)	06:25 17:07		07:03 16:34	07:28 16:35
26	05:48 20:28	06:20 19:47	06:52 18:15 (AB01) 18:42 (AB01)	17:47 (AB01) 18:18 (AB01)	06:26 17:05		07:04 16:34	07:29 16:36
27	05:49 20:27	06:21 19:45	06:53 18:12 (AB01) 18:44 (AB01)	17:47 (AB01) 18:16 (AB01)	06:27 17:04		07:05 16:33	07:29 16:36
28	05:50 20:26	06:22 19:44	06:55 18:08 (AB01) 18:45 (AB01)	17:48 (AB01) 18:15 (AB01)	06:29 17:02		07:06 16:33	07:29 16:37
29	05:51 20:25	06:23 19:42	06:56 18:06 (AB01) 18:46 (AB01)	17:49 (AB01) 18:13 (AB01)	06:30 17:01		07:07 16:32	07:29 16:38
30	05:52 20:24	06:24 19:41	06:57 18:04 (AB01) 18:48 (AB01)	17:50 (AB01) 18:12 (AB01)	06:31 17:00		07:08 16:32	07:30 16:38
31	05:53 20:23	06:25 19:39	06:58 18:02 (AB01) 18:49 (AB01)		06:32 16:58			07:30 16:39
Potential sun hours	462	430	375	344	296	285		
Total, worst case		256	1244	70				

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: WF Abruzzo shadow flikering worst case Shadow receptor: R049 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (93)  
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	07:30 16:40	07:16 17:16	06:39 17:51	17:06 (AB01) 17:07 (AB01)	06:46 19:26	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	17:33 (AB01) 17:59 (AB01)	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	17:03 (AB01) 17:08 (AB01)	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:43	17:33 (AB01) 17:57 (AB01)	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	17:02 (AB01) 17:10 (AB01)	06:43 19:29	05:56 20:02	05:28 20:32	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	17:33 (AB01) 17:55 (AB01)	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	17:00 (AB01) 17:11 (AB01)	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	17:33 (AB01) 17:53 (AB01)	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	16:59 (AB01) 17:11 (AB01)	06:40 19:31	05:54 20:04	05:27 20:33	05:32 20:41	05:58 20:17	06:30 19:30	07:02 18:38	17:33 (AB01) 17:53 (AB01)	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	16:58 (AB01) 17:13 (AB01)	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	17:34 (AB01) 17:51 (AB01)	06:40 16:51	07:15 16:30
7	07:30 16:46	07:09 17:23	06:29 17:58	16:57 (AB01) 17:14 (AB01)	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	17:34 (AB01) 17:49 (AB01)	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	16:56 (AB01) 17:15 (AB01)	06:35 19:34	05:50 20:07	05:26 20:35	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	17:34 (AB01) 17:48 (AB01)	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	16:56 (AB01) 17:16 (AB01)	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:06 18:32	17:35 (AB01) 17:46 (AB01)	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	16:55 (AB01) 17:17 (AB01)	06:31 19:36	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	17:35 (AB01) 17:44 (AB01)	06:45 16:46	07:18 16:30
11	07:29 16:50	07:05 17:28	06:22 18:03	16:54 (AB01) 17:18 (AB01)	06:30 19:38	05:47 20:11	05:26 20:37	05:35 20:39	06:04 20:09	06:37 19:20	07:09 18:28	17:34 (AB01) 17:43 (AB01)	06:46 16:45	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	16:55 (AB01) 17:19 (AB01)	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27	17:39 (AB01) 17:42 (AB01)	06:47 16:44	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	16:54 (AB01) 17:20 (AB01)	06:26 19:40	05:44 20:13	05:26 20:38	05:37 20:38	06:06 20:07	06:39 19:17	07:11 18:25	17:42 (AB01)	06:48 16:43	07:21 16:30
14	07:29 16:53	07:01 17:32	06:17 18:06	16:54 (AB01) 17:21 (AB01)	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:07 20:05	06:40 19:15	07:12 18:23	17:43 (AB01)	06:49 16:42	07:22 16:31
15	07:28 16:54	06:59 17:34	06:16 18:07	16:54 (AB01) 17:22 (AB01)	06:23 19:42	05:42 20:15	05:25 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	17:44 (AB01)	06:51 16:42	07:23 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	16:54 (AB01) 17:23 (AB01)	06:21 19:43	05:41 20:16	05:25 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	17:45 (AB01)	06:52 16:41	07:24 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	16:54 (AB01) 17:24 (AB01)	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	17:46 (AB01)	06:53 16:40	07:25 16:31
18	07:27 16:58	06:55 17:37	06:10 18:11	16:55 (AB01) 17:25 (AB01)	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	17:53 (AB01) 18:09 (AB01)	06:54 16:39	07:26 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	16:56 (AB01) 17:27 (AB01)	06:17 19:46	05:38 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	18:11 (AB01)	06:56 16:38	07:27 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	16:56 (AB01) 17:27 (AB01)	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	17:47 (AB01) 18:13 (AB01)	06:57 16:37	07:28 16:32
21	07:25 17:02	06:51 17:41	06:05 18:14	16:57 (AB01) 17:28 (AB01)	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	17:45 (AB01) 18:15 (AB01)	06:58 16:37	07:29 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	16:58 (AB01) 17:29 (AB01)	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	17:43 (AB01) 18:14 (AB01)	06:59 16:36	07:30 16:33
23	07:24 17:04	06:48 17:44	06:02 18:16	17:00 (AB01) 17:27 (AB01)	06:11 19:51	05:35 20:23	05:26 20:41	05:45 20:31	06:17 19:52	06:49 18:59	07:22 18:10	18:14 (AB01)	07:00 16:35	07:31 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	17:02 (AB01) 17:25 (AB01)	06:09 19:52	05:34 20:24	05:27 20:41	05:46 20:30	06:18 19:50	06:50 18:57	07:23 18:08	17:40 (AB01) 18:10 (AB01)	07:01 16:35	07:32 16:34
25	07:22 17:07	06:45 17:46	05:58 18:19	17:04 (AB01) 17:21 (AB01)	06:08 19:53	05:33 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	07:24 18:09	17:38 (AB01) 18:09 (AB01)	07:02 16:34	07:33 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	17:09 (AB01) 17:16 (AB01)	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	07:25 18:07	17:37 (AB01) 18:07 (AB01)	07:03 16:34	07:34 16:36
27	07:20 17:09	06:42 17:48	05:55 18:21	17:16 (AB01)	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:53 18:52	07:26 18:04	17:36 (AB01) 18:05 (AB01)	07:04 16:33	07:35 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	17:16 (AB01)	06:03 19:56	05:31 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:27 18:04	17:35 (AB01) 18:04 (AB01)	07:05 16:33	07:36 16:37
29	07:19 17:12	06:39 17:52	05:51 18:23	17:16 (AB01)	06:02 19:57	05:30 20:28	05:28 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:28 18:02	17:35 (AB01) 18:02 (AB01)	07:06 16:32	07:37 16:38
30	07:18 17:13	06:38 17:53	05:50 18:24	17:16 (AB01)	06:01 19:58	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	07:29 18:00	17:34 (AB01) 18:00 (AB01)	07:07 16:32	07:38 16:39
31	07:17 17:14	06:37 17:54	05:49 18:25	17:16 (AB01)	06:00 19:59	05:30 20:30	05:29 20:42	05:53 20:23	06:25 19:39	06:58 18:47	07:30 18:00	17:33 (AB01)	07:08 16:32	07:39 16:40
Potential sun hours	295	296	369	400	451	456	462	430	375	357	344	296	285	
Total, worst case			546							188				

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: WF Abruzzo shadow flickering worst case Shadow receptor: R054 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (94)  
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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	06:55 (AB03) 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	06:57 (AB03) 16:31
3	07:30 16:42	07:14 17:18	07:34 (AB03) 17:53	06:36 19:29	05:57 20:02	05:28 20:32	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	06:58 (AB03) 16:31
4	07:30 16:43	07:13 17:19	07:33 (AB03) 17:55	06:34 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	06:59 (AB03) 16:31
5	07:30 16:44	07:12 17:21	07:32 (AB03) 17:56	06:32 19:31	05:54 20:04	05:27 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:01 (AB03) 16:31
6	07:30 16:45	07:11 17:22	07:31 (AB03) 17:57	06:31 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:02 (AB03) 16:30
7	07:30 16:46	07:09 17:23	07:30 (AB03) 17:58	06:29 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:03 (AB03) 16:30
8	07:30 16:47	07:08 17:25	07:28 (AB03) 17:59	06:27 19:34	05:50 20:07	05:27 20:35	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:05 (AB03) 16:30
9	07:30 16:48	07:07 17:26	07:27 (AB03) 18:00	06:26 19:35	05:49 20:09	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:07 (AB03) 16:30
10	07:30 16:49	07:06 17:27	07:26 (AB03) 18:02	06:24 19:37	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:08 (AB03) 16:30
11	07:30 16:50	07:05 17:29	07:24 (AB03) 18:03	06:22 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:09 (AB03) 16:30
12	07:29 16:51	07:03 17:30	07:23 (AB03) 18:04	06:21 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	07:20 (AB03) 16:30
13	07:29 16:52	07:02 17:31	07:22 (AB03) 18:05	06:19 19:40	05:44 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 (AB03) 16:31
14	07:29 16:53	07:01 17:32	07:21 (AB03) 18:06	06:17 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:50 16:43	07:22 (AB03) 16:31
15	07:28 16:55	06:59 17:34	07:22 (AB03) 18:07	06:16 19:42	05:42 20:15	05:26 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:41	07:22 (AB03) 16:31
16	07:28 16:56	06:58 17:35	07:23 (AB03) 18:09	06:14 19:43	05:41 20:16	05:26 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 (AB03) 16:31
17	07:27 16:57	06:57 17:36	07:23 (AB03) 18:10	06:12 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 (AB03) 16:31
18	07:27 16:58	06:55 17:37	07:24 (AB03) 18:11	06:10 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 (AB03) 16:32
19	07:26 16:59	06:54 17:39	07:24 (AB03) 18:12	06:09 19:47	05:38 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 (AB03) 16:32
20	07:26 17:00	06:52 17:40	07:26 (AB03) 18:13	06:07 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:26 (AB03) 16:33
21	07:25 17:02	06:51 17:41	07:27 (AB03) 18:14	06:05 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 (AB03) 16:33
22	07:24 17:03	06:49 17:42	07:30 (AB03) 18:15	06:04 19:50	05:36 20:22	05:26 20:41	05:45 20:32	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 (AB03) 16:33
23	07:24 17:04	06:48 17:44	07:40 (AB03) 18:16	06:02 19:51	05:35 20:23	05:26 20:41	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35	07:27 (AB03) 16:34
24	07:23 17:05	06:46 17:45	06:02 18:18	06:00 19:52	05:34 20:24	05:27 20:42	05:46 20:30	06:18 19:50	06:50 18:08	07:24 18:08	06:59 16:35	07:28 (AB03) 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:25	05:27 20:42	05:47 20:29	06:19 19:49	06:25 18:56	07:25 17:07	06:59 16:34	07:28 (AB03) 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	06:59 16:34	07:29 (AB03) 16:36
27	07:21 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	07:27 17:04	06:59 16:33	07:29 (AB03) 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:31 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:28 17:02	06:59 16:33	07:29 (AB03) 16:37
29	07:19 17:12	06:39 17:52	06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:29 17:01	06:30 16:32	07:30 (AB03) 16:38
30	07:18 17:13	06:38 17:53	06:50 19:24	06:01 19:59	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	07:30 17:00	06:31 16:32	07:30 (AB03) 16:39
31	07:17 17:14	06:37 17:54	06:48 19:25	06:48 19:59	05:30 20:30	05:29 20:42	05:53 20:23	06:25 19:39	06:32 18:58	07:31 17:00	06:32 16:32	07:30 (AB03) 16:39
Potential sun hours	295	296	391	369	400	451	456	462	430	375	344	285
Total, worst case		296	391	369	400	451	456	462	430	375	344	285

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: WF Abruzzo shadow flikering worst case Shadow receptor: R056 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (95)  
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	07:30 16:40	07:16 17:16	06:39 17:51	07:00 (AB03) 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	07:00 (AB03) 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:36 17:53	07:01 (AB03) 19:29	05:57 20:02	05:28 20:32	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	07:01 (AB03) 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	07:02 (AB03) 19:31	05:54 20:04	05:27 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	07:04 (AB03) 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:30
7	07:30 16:46	07:09 17:23	06:29 17:58	07:05 (AB03) 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	07:08 (AB03) 19:34	05:50 20:07	05:27 20:35	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:17 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	07:16 (AB03) 19:35	05:49 20:09	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:18 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	07:16 (AB03) 19:36	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:19 16:30
11	07:30 16:50	07:05 17:29	06:22 18:03	07:16 (AB03) 19:37	05:47 20:11	05:26 20:37	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	07:16 (AB03) 19:38	05:46 20:12	05:26 20:38	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	07:16 (AB03) 19:39	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:29 16:53	07:01 17:32	06:17 18:06	07:16 (AB03) 19:40	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:50 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	07:16 (AB03) 19:41	05:42 20:15	05:26 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	07:16 (AB03) 19:42	05:41 20:16	05:26 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	07:16 (AB03) 19:43	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:31
18	07:27 16:58	06:55 17:37	06:10 18:11	07:16 (AB03) 19:44	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	07:16 (AB03) 19:45	05:38 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	07:16 (AB03) 19:46	05:37 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	07:16 (AB03) 19:47	05:36 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	07:16 (AB03) 19:48	05:35 20:22	05:26 20:41	05:45 20:32	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:33
23	07:24 17:04	06:48 17:44	06:02 18:16	07:16 (AB03) 19:49	05:34 20:23	05:26 20:41	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	07:16 (AB03) 19:50	05:33 20:24	05:27 20:42	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	07:16 (AB03) 19:51	05:32 20:25	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	07:16 (AB03) 19:52	05:31 20:26	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34	07:29 16:36
27	07:21 17:09	06:42 17:49	05:55 18:21	07:16 (AB03) 19:53	05:30 20:27	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	06:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	07:16 (AB03) 19:54	05:29 20:28	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	06:29 17:02	07:06 16:33	07:29 16:37
29	07:19 17:12	06:39 17:52	05:52 18:23	07:16 (AB03) 19:55	05:28 20:29	05:27 20:42	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	07:30 16:38
30	07:18 17:13	06:38 17:53	05:51 18:24	07:16 (AB03) 19:56	05:27 20:30	05:26 20:42	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14	06:37 17:54	05:50 18:25	07:16 (AB03) 19:57	05:26 20:31	05:25 20:42	05:53 20:23	06:25 19:39	06:58 18:47	06:32 17:00	07:09 16:33	07:30 16:39
Potential sun hours	295	296	308	369	400	451	456	462	430	375	344	296
Total, worst case		208		170							383	285

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: WF Abruzzo shadow flikering worst case Shadow receptor: R057 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (96)  
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	07:30 16:40	07:16 17:16	06:39 17:51	06:58 (AB03) 19:27	06:46 20:00	05:59 20:30	05:29 20:42	05:29 20:22	05:54 19:37	06:26 18:45	06:58 18:45	07:41 (AB03) 16:57	06:33 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:56 (AB03) 19:28	06:45 20:01	05:58 20:31	05:29 20:41	05:30 20:21	05:55 19:36	06:27 18:44	06:59 18:44	07:36 (AB03) 16:56	06:35 16:31
3	07:30 16:42	07:14 17:18	06:36 17:53	06:55 (AB03) 19:29	06:43 20:02	05:57 20:32	05:28 20:41	05:30 20:19	05:56 19:34	06:28 18:42	07:00 18:42	07:34 (AB03) 16:55	06:36 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:53 (AB03) 19:30	06:41 20:03	05:55 20:33	05:28 20:41	05:31 20:18	05:57 19:32	06:30 18:40	07:01 18:40	07:32 (AB03) 16:53	06:37 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:52 (AB03) 19:31	06:40 20:04	05:54 20:33	05:27 20:41	05:32 20:17	05:58 19:31	06:31 18:38	07:02 18:38	07:31 (AB03) 16:52	06:38 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:53 (AB03) 19:32	06:38 20:05	05:53 20:34	05:27 20:41	05:32 20:16	05:59 19:29	06:32 18:37	07:03 18:37	07:30 (AB03) 16:51	06:40 16:30
7	07:30 16:46	07:09 17:23	06:29 17:58	06:53 (AB03) 19:33	06:36 20:06	05:51 20:35	05:27 20:40	05:33 20:15	06:00 19:27	06:33 18:35	07:04 18:35	07:29 (AB03) 16:50	06:41 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:53 (AB03) 19:34	06:35 20:07	05:50 20:35	05:27 20:40	05:33 20:13	06:01 19:25	06:34 18:33	07:05 18:33	07:28 (AB03) 16:49	06:42 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:55 (AB03) 19:35	06:33 20:09	05:49 20:36	05:26 20:40	05:34 20:12	06:02 19:24	06:35 18:32	07:07 18:32	07:28 (AB03) 16:48	06:43 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:55 (AB03) 19:37	06:31 20:10	05:48 20:37	05:26 20:39	05:36 20:11	06:04 19:22	06:37 18:30	07:09 18:30	07:29 (AB03) 16:47	06:46 16:30
11	07:30 16:50	07:05 17:29	06:22 18:03	06:57 (AB03) 19:38	06:30 20:11	05:47 20:37	05:26 20:39	05:36 20:09	06:04 19:20	06:37 18:28	07:09 18:28	07:29 (AB03) 16:46	06:47 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	07:00 (AB03) 19:39	06:28 20:12	05:46 20:38	05:26 20:38	05:36 20:08	06:05 19:18	06:38 18:27	07:10 18:27	07:31 (AB03) 16:45	06:47 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	07:10 (AB03) 19:40	06:26 20:13	05:45 20:38	05:26 20:38	05:37 20:07	06:07 19:17	06:39 18:25	07:11 18:25	07:32 (AB03) 16:44	06:48 16:31
14	07:29 16:53	07:01 17:32	06:17 18:06	07:11 (AB03) 19:41	06:25 20:14	05:43 20:39	05:26 20:37	05:38 20:05	06:08 19:15	06:40 18:24	07:12 18:24	07:33 (AB03) 16:43	06:50 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	07:12 (AB03) 19:42	06:23 20:15	05:42 20:39	05:26 20:37	05:39 20:04	06:09 19:13	06:41 18:22	07:13 18:22	07:34 (AB03) 16:42	06:51 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	07:13 (AB03) 19:43	06:22 20:16	05:41 20:39	05:26 20:36	05:39 20:02	06:10 19:11	06:42 18:20	07:14 18:20	07:35 (AB03) 16:41	06:52 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	07:14 (AB03) 19:44	06:20 20:17	05:40 20:40	05:26 20:35	05:40 20:01	06:11 19:10	06:43 18:19	07:16 18:19	07:37 (AB03) 16:40	06:53 16:31
18	07:27 16:58	06:55 17:37	06:10 18:11	07:15 (AB03) 19:45	06:18 20:18	05:39 20:40	05:26 20:35	05:41 20:02	06:12 19:08	06:44 18:17	07:17 18:17	07:38 (AB03) 16:39	06:54 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	07:16 (AB03) 19:47	06:17 20:19	05:39 20:40	05:26 20:34	05:42 20:04	06:13 19:06	06:45 18:16	07:18 18:16	07:39 (AB03) 16:38	06:56 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	07:17 (AB03) 19:48	06:15 20:20	05:38 20:41	05:26 20:33	05:43 20:04	06:14 19:56	06:46 19:04	07:19 18:14	07:40 (AB03) 16:38	06:57 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	07:18 (AB03) 19:49	06:14 20:21	05:37 20:41	05:26 20:32	05:44 20:03	06:15 19:55	06:47 19:03	07:20 18:13	07:41 (AB03) 16:37	06:58 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	07:19 (AB03) 19:50	06:12 20:22	05:36 20:41	05:26 20:32	05:45 20:02	06:16 19:53	06:48 19:01	07:21 18:11	07:42 (AB03) 16:36	06:59 16:33
23	07:24 17:04	06:48 17:44	06:03 18:16	07:20 (AB03) 19:51	06:11 20:23	05:35 20:41	05:26 20:31	05:46 20:01	06:17 19:52	06:49 18:59	07:23 18:10	07:43 (AB03) 16:35	07:00 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	07:21 (AB03) 19:52	06:09 20:24	05:34 20:42	05:27 20:30	05:46 20:03	06:18 19:50	06:50 18:57	07:24 18:08	07:44 (AB03) 16:35	07:02 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	07:22 (AB03) 19:53	06:08 20:25	05:34 20:42	05:27 20:29	05:47 20:04	06:19 19:49	06:51 18:56	07:25 17:07	07:45 (AB03) 16:34	07:03 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	07:23 (AB03) 19:54	06:06 20:26	05:33 20:42	05:27 20:28	05:48 20:05	06:20 19:47	06:52 18:54	07:26 17:05	07:46 (AB03) 16:34	07:04 16:36
27	07:21 17:09	06:42 17:49	05:55 18:21	07:24 (AB03) 19:55	06:05 20:27	05:32 20:42	05:28 20:27	05:49 20:06	06:21 19:45	06:54 18:52	07:27 17:04	07:47 (AB03) 16:33	07:05 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	07:25 (AB03) 19:56	06:03 20:27	05:31 20:42	05:28 20:26	05:50 20:07	06:22 19:44	06:55 18:50	07:29 17:02	07:48 (AB03) 16:33	07:06 16:37
29	07:19 17:12	06:38 17:52	05:51 18:23	07:26 (AB03) 19:57	06:02 20:28	05:30 20:42	05:27 20:25	05:51 20:08	06:23 19:42	06:56 18:49	07:30 17:01	07:49 (AB03) 16:32	07:07 16:38
30	07:18 17:13	06:36 17:53	05:49 18:24	07:27 (AB03) 19:58	06:01 20:29	05:29 20:42	05:26 20:24	05:52 20:09	06:24 19:41	06:57 18:47	07:31 17:00	07:50 (AB03) 16:32	07:08 16:39
31	07:17 17:14	06:34 17:54	05:47 18:25	07:28 (AB03) 19:59	06:00 20:30	05:28 20:42	05:25 20:23	05:53 20:10	06:25 19:39	06:58 18:47	07:32 17:00	07:51 (AB03) 16:31	07:09 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	365	296	285
Total, worst case		84	276										

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: WF Abruzzo shadow flikering worst case Shadow receptor: R061 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (97)

### 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	07:30 16:40	07:16 17:15	06:39 17:51	06:46 19:26	18:26 (AB03) 05:59	05:29 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	18:25 (AB03) 05:58	05:29 20:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	18:25 (AB03) 05:56	05:28 20:32
4	07:30 16:43	07:13 17:19	06:34 17:54	17:32 (AB04) 06:41	18:24 (AB03) 05:55	05:28 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56	17:30 (AB04) 06:40	18:23 (AB03) 05:54	05:27 20:33
6	07:30 16:45	07:10 17:22	06:31 17:57	17:30 (AB04) 06:38	18:23 (AB03) 05:53	05:27 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	17:29 (AB04) 06:36	18:23 (AB03) 05:51	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	17:28 (AB04) 06:34	18:22 (AB03) 05:50	05:26 20:35
9	07:30 16:48	07:07 17:26	06:26 18:00	17:29 (AB04) 06:33	18:23 (AB03) 05:49	05:26 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	17:29 (AB04) 06:31	18:23 (AB03) 05:48	05:26 20:36
11	07:29 16:50	07:04 17:28	06:22 18:03	17:29 (AB04) 06:30	18:23 (AB03) 05:47	05:26 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	17:41 (AB04) 06:28	19:02 (AB03) 05:45	05:26 20:38
13	07:29 16:52	07:02 17:31	06:19 18:05	17:31 (AB04) 06:26	18:24 (AB03) 05:44	05:26 20:38
14	07:28 16:53	07:01 17:32	06:17 18:06	17:32 (AB04) 06:25	18:24 (AB03) 05:43	05:26 20:38
15	07:28 16:54	06:59 17:34	06:15 18:07	17:43 (AB04) 06:23	18:26 (AB03) 05:42	05:25 20:39
16	07:28 16:56	06:58 17:35	06:14 18:08	06:21 19:43	18:26 (AB03) 05:41	05:25 20:39
17	07:27 16:57	06:56 17:36	06:12 18:10	06:20 19:44	18:28 (AB03) 05:40	05:26 20:40
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	18:29 (AB03) 05:39	05:26 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	18:32 (AB03) 05:38	05:26 20:40
20	07:25 17:00	06:52 17:40	06:07 18:13	06:15 19:48	18:36 (AB03) 05:37	05:26 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	18:45 (AB03) 05:37	05:26 20:41
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:26 20:41
24	07:23 17:05	06:46 17:45	06:00 18:17	17:42 (AB03) 06:09	05:34 20:23	05:27 20:41
25	07:22 17:07	06:45 17:46	05:58 18:19	17:54 (AB03) 06:08	05:33 20:24	05:27 20:42
26	07:21 17:08	06:43 17:47	05:57 18:20	17:37 (AB03) 06:06	05:33 20:25	05:27 20:42
27	07:20 17:09	06:42 17:48	05:55 18:21	17:58 (AB03) 06:05	05:32 20:26	05:28 20:42
28	07:20 17:10	06:40 17:50	05:53 18:22	17:33 (AB03) 06:03	05:31 20:27	05:28 20:42
29	07:19 17:12		05:51 19:23	18:00 (AB03) 06:02	05:31 20:28	05:28 20:42
30	07:18 17:13		05:50 19:24	18:29 (AB03) 06:00	05:30 20:29	05:29 20:42
31	07:17 17:14		05:48 19:25	17:31 (AB03) 06:03	05:31 20:30	05:28 20:42
Potential sun hours	295	296	369	400	451	456
Total, worst case			310	686		

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: WF Abruzzo shadow flickering worst case Shadow receptor: R061 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (97)

### 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	05:29 20:41	05:54 20:22	06:26 19:37	18:22 (AB03) 18:45	06:58 18:09 (AB04)	07:09 16:32
2	05:30 20:41	05:55 20:20	06:27 19:35	18:21 (AB03) 18:43	06:59 18:07 (AB04)	07:10 16:31
3	05:30 20:41	05:56 20:19	06:28 19:34	18:20 (AB03) 18:42	07:00 18:06 (AB04)	07:11 16:31
4	05:31 20:41	05:57 20:18	06:29 19:32	18:19 (AB03) 18:40	07:01 18:05 (AB04)	07:13 16:31
5	05:32 20:41	05:58 20:17	06:30 19:30	18:19 (AB03) 18:38	07:02 18:06 (AB04)	07:14 16:31
6	05:32 20:40	05:59 20:16	06:31 19:29	18:18 (AB03) 18:37	07:03 18:06 (AB04)	07:15 16:30
7	05:33 20:40	06:00 20:14	06:33 19:27	18:18 (AB03) 18:35	07:04 18:06 (AB04)	07:15 16:30
8	05:33 20:40	06:01 20:13	06:34 19:25	18:18 (AB03) 18:33	07:05 18:06 (AB04)	07:16 16:30
9	05:34 20:39	06:02 20:12	06:35 19:24	18:18 (AB03) 18:32	07:06 18:06 (AB04)	07:17 16:30
10	05:35 20:39	06:03 20:11	06:36 19:22	18:18 (AB03) 18:30	07:08 18:06 (AB04)	07:18 16:30
11	05:35 20:39	06:04 20:09	06:37 19:20	18:18 (AB03) 18:28	07:09 18:06 (AB04)	07:19 16:30
12	05:36 20:38	06:05 20:08	06:38 19:18	18:18 (AB03) 18:27	07:10 18:06 (AB04)	07:20 16:30
13	05:37 20:38	06:06 20:07	06:39 19:17	18:18 (AB03) 18:25	07:11 18:06 (AB04)	07:21 16:30
14	05:38 20:37	06:07 20:05	06:40 19:15	18:19 (AB03) 18:23	07:12 18:06 (AB04)	07:22 16:31
15	05:39 20:36	06:09 20:04	06:41 19:13	18:20 (AB03) 18:22	07:13 18:06 (AB04)	07:22 16:31
16	05:39 20:36	06:10 20:02	06:42 19:11	18:21 (AB03) 18:20	07:14 18:06 (AB04)	07:23 16:31
17	05:40 20:35	06:11 20:01	06:43 19:10	18:22 (AB03) 18:19	07:15 18:06 (AB04)	07:24 16:31
18	05:41 20:34	06:12 19:59	06:44 19:08	18:24 (AB03) 18:17	07:17 18:06 (AB04)	07:24 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	18:27 (AB03) 18:16	07:18 18:06 (AB04)	07:25 16:32
20	05:43 20:33	06:14 19:56	06:46 19:04	18:42 (AB03) 18:14	18:16 18:06 (AB04)	07:26 16:32
21	05:44 20:32	06:15 19:55	06:47 19:03	18:20 (AB03) 18:12	07:20 18:06 (AB04)	07:26 16:33
22	05:45 20:31	06:16 19:53	06:48 19:01	18:21 (AB03) 18:11	07:21 18:06 (AB04)	07:27 16:33
23	05:45 20:31	06:17 19:52	06:49 18:39 (AB03) 18:49 (AB03)	19:01 18:09	18:11 18:06 (AB04)	16:36 16:34
24	05:46 20:30	06:18 19:50	06:50 18:35 (AB03) 18:53 (AB03)	06:50 18:07 18:08	18:09 18:06 (AB04)	16:34 16:34
25	05:47 20:29	06:19 19:49	06:51 18:32 (AB03) 18:55 (AB03)	06:51 18:06 18:56	06:25 17:07	07:28 16:35
26	05:48 20:28	06:20 19:47	06:52 18:30 (AB03) 18:56 (AB03)	06:52 18:05 18:54	06:26 17:05	07:28 16:36
27	05:49 20:27	06:21 19:45	06:53 18:28 (AB03) 18:58 (AB03)	06:53 17:04 18:52	06:27 17:04	07:29 16:36
28	05:50 20:26	06:22 19:44	06:54 18:26 (AB03) 18:59 (AB03)	06:54 17:02 18:50	06:28 17:02	07:29 16:37
29	05:51 20:25	06:23 19:42	06:56 18:25 (AB03) 18:59 (AB03)	06:56 18:14 (AB04) 18:49	06:30 17:01	07:29 16:38
30	05:52 20:24	06:24 19:40	06:57 18:24 (AB03) 19:00 (AB03)	06:57 18:11 (AB04) 18:47	06:31 17:00	07:30 16:38
31	05:53 20:23	06:25 19:39	06:58 18:23 (AB03) 19:00 (AB03)	06:58 18:11 (AB04) 18:47	06:32 17:00	07:30 16:39
Potential sun hours	462	430	375	344	296	285
Total, worst case		247	684	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: WF Abruzzo shadow flikering worst case Shadow receptor: R065 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (98)

### 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	07:30 16:40	15:40 (AB01) 15:49 (AB01)	07:16 17:16	15:50 (AB01) 16:24 (AB01)	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30
2	07:30 16:41	15:40 (AB01) 15:50 (AB01)	07:15 17:17	15:51 (AB01) 16:26 (AB01)	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31
3	07:30 16:42	15:40 (AB01) 15:51 (AB01)	07:14 17:18	15:52 (AB01) 16:27 (AB01)	06:35 17:53	06:43 19:29	05:56 20:02	05:28 20:32
4	07:30 16:43	15:41 (AB01) 15:52 (AB01)	07:13 17:19	15:53 (AB01) 16:29 (AB01)	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33
5	07:30 16:44	15:41 (AB01) 15:53 (AB01)	07:12 17:21	15:55 (AB01) 16:30 (AB01)	06:32 17:56	06:40 19:31	05:54 20:04	05:27 20:33
6	07:30 16:45	15:41 (AB01) 15:54 (AB01)	07:11 17:22	15:56 (AB01) 16:32 (AB01)	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34
7	07:30 16:46	15:42 (AB01) 15:55 (AB01)	07:09 17:23	15:57 (AB01) 16:32 (AB01)	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35
8	07:30 16:47	15:42 (AB01) 15:56 (AB01)	07:08 17:25	15:58 (AB01) 16:34 (AB01)	06:27 17:59	06:35 19:34	05:50 20:07	05:26 20:35
9	07:30 16:48	15:42 (AB01) 15:56 (AB01)	07:07 17:26	16:00 (AB01) 16:35 (AB01)	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36
10	07:30 16:49	15:42 (AB01) 15:58 (AB01)	07:06 17:27	16:03 (AB01) 16:33 (AB01)	06:24 18:02	06:31 19:36	05:48 20:10	05:26 20:37
11	07:29 16:50	15:43 (AB01) 15:59 (AB01)	07:05 17:28	16:04 (AB01) 16:30 (AB01)	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37
12	07:29 16:51	15:42 (AB01) 16:00 (AB01)	07:03 17:30	16:08 (AB01) 16:28 (AB01)	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38
13	07:29 16:52	15:43 (AB01) 16:01 (AB01)	07:02 17:31	16:13 (AB01) 16:23 (AB01)	06:19 18:05	06:26 19:40	05:44 20:13	05:26 20:38
14	07:29 16:53	15:43 (AB01) 16:02 (AB01)	07:01 17:32	16:17 (AB01) 18:06	06:17 19:41	06:25 20:14	05:43 20:14	05:26 20:39
15	07:28 16:54	15:43 (AB01) 16:03 (AB01)	06:59 17:34	16:16 (AB01) 18:07	06:16 19:42	06:23 20:15	05:42 20:15	05:25 20:39
16	07:28 16:56	15:43 (AB01) 16:04 (AB01)	06:58 17:35	16:14 (AB01) 18:09	06:14 19:43	06:21 20:16	05:41 20:16	05:25 20:39
17	07:27 16:57	15:44 (AB01) 16:06 (AB01)	06:57 17:36	16:12 (AB01) 18:10	06:12 19:44	06:20 20:17	05:40 20:17	05:26 20:40
18	07:27 16:58	15:44 (AB01) 16:07 (AB01)	06:55 17:37	16:10 (AB01) 18:11	06:10 19:45	06:18 20:18	05:39 20:18	05:26 20:40
19	07:26 16:59	15:45 (AB01) 16:08 (AB01)	06:54 17:39	16:09 (AB01) 18:12	06:09 19:46	06:17 20:19	05:38 20:19	05:26 20:40
20	07:26 17:00	15:45 (AB01) 16:09 (AB01)	06:52 17:40	16:07 (AB01) 18:13	06:07 19:48	06:15 20:20	05:38 20:20	05:26 20:41
21	07:25 17:02	15:45 (AB01) 16:10 (AB01)	06:51 17:41	16:05 (AB01) 18:14	06:05 19:49	06:14 20:21	05:37 20:21	05:26 20:41
22	07:24 17:03	15:45 (AB01) 16:11 (AB01)	06:49 17:42	16:04 (AB01) 18:15	06:04 19:50	06:12 20:22	05:36 20:22	05:26 20:41
23	07:24 17:04	15:46 (AB01) 16:13 (AB01)	06:48 17:44	16:02 (AB01) 18:16	06:02 19:51	06:11 20:23	05:35 20:23	05:26 20:41
24	07:23 17:05	15:46 (AB01) 16:15 (AB01)	06:46 17:45	16:00 (AB01) 18:18	06:00 19:52	06:09 20:24	05:34 20:24	05:27 20:41
25	07:22 17:07	15:46 (AB01) 16:16 (AB01)	06:45 17:46	16:08 (AB01) 18:19	06:08 19:53	06:08 20:24	05:33 20:24	05:27 20:42
26	07:21 17:08	15:47 (AB01) 16:17 (AB01)	06:43 17:47	16:06 (AB01) 18:20	06:06 19:54	06:06 20:25	05:33 20:25	05:27 20:42
27	07:20 17:09	15:47 (AB01) 16:18 (AB01)	06:42 17:48	16:05 (AB01) 18:21	06:05 19:55	06:05 20:26	05:32 20:26	05:28 20:42
28	07:20 17:10	15:48 (AB01) 16:19 (AB01)	06:40 17:50	16:03 (AB01) 18:22	06:03 19:56	06:03 20:27	05:31 20:27	05:28 20:42
29	07:19 17:12	15:48 (AB01) 16:20 (AB01)	06:39 17:51	16:02 (AB01) 18:23	06:02 19:58	06:02 20:28	05:31 20:28	05:28 20:42
30	07:18 17:13	15:49 (AB01) 16:22 (AB01)	06:38 17:52	16:01 (AB01) 18:24	06:01 19:59	06:01 20:29	05:30 20:29	05:29 20:42
31	07:17 17:14	15:50 (AB01) 16:23 (AB01)	06:37 17:53	16:00 (AB01) 18:25	06:00 19:59	06:00 20:30	05:30 20:30	05:29 20:42
Potential sun hours	295		296	369	400	451		456
Total, worst case	654		403					

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: WF Abruzzo shadow flikering worst case Shadow receptor: R065 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (98)

### 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	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	15:31 (AB01) 16:02 (AB01)	07:09 16:32	15:25 (AB01) 15:41 (AB01)
2	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:43	06:35 16:56	15:30 (AB01) 16:05 (AB01)	07:11 16:31	15:25 (AB01) 15:41 (AB01)
3	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	15:28 (AB01) 16:03 (AB01)	07:12 16:31	15:26 (AB01) 15:40 (AB01)
4	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	15:26 (AB01) 16:02 (AB01)	07:13 16:31	15:26 (AB01) 15:40 (AB01)
5	05:32 20:41	05:58 20:17	06:30 19:30	07:02 18:38	06:38 16:52	15:26 (AB01) 16:01 (AB01)	07:14 16:31	15:27 (AB01) 15:40 (AB01)
6	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	15:24 (AB01) 16:00 (AB01)	07:15 16:30	15:27 (AB01) 15:40 (AB01)
7	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	15:23 (AB01) 15:58 (AB01)	07:16 16:30	15:28 (AB01) 15:40 (AB01)
8	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	15:23 (AB01) 15:58 (AB01)	07:17 16:30	15:29 (AB01) 15:40 (AB01)
9	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	15:22 (AB01) 15:56 (AB01)	07:17 16:30	15:29 (AB01) 15:40 (AB01)
10	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:46	15:21 (AB01) 15:55 (AB01)	07:18 16:30	15:30 (AB01) 15:40 (AB01)
11	05:35 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:45	15:21 (AB01) 15:55 (AB01)	07:19 16:30	15:30 (AB01) 15:39 (AB01)
12	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	15:21 (AB01) 15:54 (AB01)	07:20 16:30	15:31 (AB01) 15:39 (AB01)
13	05:37 20:38	06:06 20:07	06:39 19:17	07:11 18:25	06:48 16:43	15:20 (AB01) 15:52 (AB01)	07:21 16:30	15:31 (AB01) 15:40 (AB01)
14	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:23	06:50 16:42	15:21 (AB01) 15:52 (AB01)	07:22 16:31	15:32 (AB01) 15:40 (AB01)
15	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	15:20 (AB01) 15:51 (AB01)	07:22 16:31	15:33 (AB01) 15:41 (AB01)
16	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	15:20 (AB01) 15:50 (AB01)	07:23 16:31	15:33 (AB01) 15:40 (AB01)
17	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	15:20 (AB01) 15:50 (AB01)	07:24 16:31	15:34 (AB01) 15:41 (AB01)
18	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	15:20 (AB01) 15:48 (AB01)	07:24 16:32	15:35 (AB01) 15:41 (AB01)
19	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	15:20 (AB01) 15:47 (AB01)	07:25 16:32	15:35 (AB01) 15:41 (AB01)
20	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:37	15:20 (AB01) 15:46 (AB01)	07:26 16:32	15:36 (AB01) 15:42 (AB01)
21	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	15:21 (AB01) 15:46 (AB01)	07:26 16:33	15:36 (AB01) 15:42 (AB01)
22	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	15:21 (AB01) 15:45 (AB01)	07:27 16:33	15:37 (AB01) 15:43 (AB01)
23	05:45 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35	15:21 (AB01) 15:45 (AB01)	07:27 16:34	15:37 (AB01) 15:43 (AB01)
24	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	15:21 (AB01) 15:44 (AB01)	07:28 16:34	15:37 (AB01) 15:43 (AB01)
25	05:47 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	15:22 (AB01) 15:44 (AB01)	07:28 16:35	15:38 (AB01) 15:44 (AB01)
26	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34	15:22 (AB01) 15:43 (AB01)	07:29 16:36	15:38 (AB01) 15:45 (AB01)
27	05:49 20:27	06:21 19:45	06:53 18:52	06:27 17:04	07:05 16:33	15:22 (AB01) 15:42 (AB01)	07:29 16:36	15:38 (AB01) 15:45 (AB01)
28	05:50 20:26	06:22 19:44	06:55 18:50	06:29 17:02	07:06 16:33	15:23 (AB01) 15:42 (AB01)	07:29 16:37	15:39 (AB01) 15:46 (AB01)
29	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	15:23 (AB01) 15:41 (AB01)	07:29 16:38	15:39 (AB01) 15:47 (AB01)
30	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00	07:08 16:32	15:24 (AB01) 15:42 (AB01)	07:30 16:38	15:39 (AB01) 15:47 (AB01)
31	05:53 20:23	06:25 19:39		06:32 16:58	15:33 (AB01) 16:01 (AB01)		07:30 16:39	15:40 (AB01) 15:48 (AB01)
Potential sun hours	462	430	375	344	296	285	279	
Total, worst case				62	862		279	

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: WF Abruzzo shadow flickering worst case Shadow receptor: R066 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (99)  
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	07:30 16:40	15:21 (AB01) 16:01 (AB01)	07:16 17:15	06:39 19:26	06:46 20:00	05:59 20:30	05:29 20:42	05:29 20:22	05:54 19:37	06:26 18:45	06:58 16:57	06:33 16:52	07:09 16:32	15:10 (AB01) 42 15:52 (AB01)
2	07:30 16:41	15:21 (AB01) 16:01 (AB01)	07:15 17:17	06:37 19:28	06:45 20:01	05:58 20:31	05:29 20:41	05:30 20:21	05:55 19:36	06:27 18:43	06:59 16:56	06:35 16:56	07:11 16:31	15:10 (AB01) 42 15:52 (AB01)
3	07:30 16:42	15:22 (AB01) 16:02 (AB01)	07:14 17:18	06:35 19:29	06:43 20:02	05:56 20:32	05:28 20:41	05:30 20:19	05:56 19:34	06:28 18:42	06:28 16:55	06:36 16:55	07:00 16:31	15:10 (AB01) 42 15:52 (AB01)
4	07:30 16:43	15:23 (AB01) 16:03 (AB01)	07:13 17:19	06:34 19:30	06:41 20:03	05:55 20:33	05:28 20:41	05:31 20:18	05:57 19:32	06:29 18:40	06:29 16:53	06:37 16:53	07:01 16:31	15:10 (AB01) 41 15:51 (AB01)
5	07:30 16:44	15:23 (AB01) 16:04 (AB01)	07:12 17:21	06:32 19:31	06:40 20:04	05:54 20:33	05:27 20:41	05:32 20:17	05:58 19:30	06:30 18:38	06:30 16:52	06:38 16:52	07:02 16:31	15:10 (AB01) 41 15:51 (AB01)
6	07:30 16:45	15:24 (AB01) 16:05 (AB01)	07:11 17:22	06:31 19:32	06:38 20:05	05:53 20:34	05:27 20:41	05:32 20:16	05:59 19:29	06:32 18:37	06:32 16:51	06:40 16:51	07:03 16:30	15:10 (AB01) 41 15:51 (AB01)
7	07:30 16:46	15:25 (AB01) 16:06 (AB01)	07:09 17:23	06:29 19:33	06:36 20:06	05:51 20:35	05:27 20:40	05:33 20:15	06:00 19:27	06:33 18:35	06:33 16:50	06:41 16:50	07:04 16:30	15:10 (AB01) 41 15:51 (AB01)
8	07:30 16:47	15:26 (AB01) 16:07 (AB01)	07:08 17:25	06:27 19:34	06:35 20:07	05:50 20:35	05:26 20:40	05:33 20:13	06:01 19:25	06:34 18:33	06:34 16:49	06:42 16:49	07:05 16:30	15:11 (AB01) 40 15:51 (AB01)
9	07:30 16:48	15:26 (AB01) 16:07 (AB01)	07:07 17:26	06:26 19:35	06:33 20:08	05:49 20:36	05:26 20:40	05:34 20:12	06:02 19:24	06:35 18:32	06:35 16:48	06:43 16:48	07:07 16:30	15:11 (AB01) 40 15:51 (AB01)
10	07:30 16:49	15:27 (AB01) 16:09 (AB01)	07:06 17:27	06:24 19:36	06:31 20:10	05:48 20:37	05:26 20:39	05:35 20:11	06:03 19:22	06:36 18:30	06:36 16:46	06:45 16:46	07:08 16:30	15:12 (AB01) 39 15:51 (AB01)
11	07:29 16:50	15:28 (AB01) 16:10 (AB01)	07:05 17:28	06:22 19:38	06:30 20:11	05:47 20:37	05:26 20:39	05:35 20:09	06:04 19:20	06:37 18:28	06:37 16:45	06:46 16:45	07:09 16:30	15:11 (AB01) 40 15:51 (AB01)
12	07:29 16:51	15:28 (AB01) 16:10 (AB01)	07:03 17:30	06:21 19:39	06:28 20:12	05:46 20:38	05:26 20:38	05:36 20:08	06:05 19:18	06:38 18:27	06:38 16:44	06:47 16:44	07:10 16:30	15:12 (AB01) 39 15:51 (AB01)
13	07:29 16:52	15:29 (AB01) 16:12 (AB01)	07:02 17:31	06:19 19:40	06:26 20:13	05:44 20:38	05:26 20:37	06:06 20:07	06:39 19:17	06:39 18:25	06:39 16:43	06:48 16:43	07:11 16:30	15:12 (AB01) 39 15:51 (AB01)
14	07:29 16:53	15:29 (AB01) 16:12 (AB01)	07:01 17:32	06:17 19:41	06:25 20:14	05:43 20:39	05:26 20:37	06:08 20:05	06:40 19:15	06:40 18:23	06:40 16:42	06:49 16:42	07:12 16:31	15:13 (AB01) 39 15:52 (AB01)
15	07:28 16:54	15:31 (AB01) 16:14 (AB01)	06:59 17:34	06:16 19:42	06:23 20:15	05:42 20:39	05:25 20:37	06:09 20:04	06:41 19:13	06:41 18:22	06:51 16:41	06:48 16:41	07:13 16:31	15:13 (AB01) 39 15:52 (AB01)
16	07:28 16:56	15:31 (AB01) 16:14 (AB01)	06:58 17:35	06:14 19:43	06:21 20:16	05:41 20:39	05:25 20:36	06:10 20:02	06:42 19:11	06:42 18:20	06:52 16:41	06:48 16:41	07:14 16:31	15:13 (AB01) 39 15:52 (AB01)
17	07:27 16:57	15:33 (AB01) 16:16 (AB01)	06:57 17:36	06:12 19:44	06:20 20:17	05:40 20:40	05:26 20:35	06:11 20:01	06:43 19:10	06:43 18:19	06:53 16:40	06:49 16:40	07:16 16:31	15:14 (AB01) 38 15:52 (AB01)
18	07:27 16:58	15:33 (AB01) 16:17 (AB01)	06:55 17:37	06:10 19:45	06:18 20:18	05:39 20:40	05:26 20:35	06:12 20:05	06:44 19:08	06:44 18:17	06:54 16:39	06:49 16:39	07:17 16:32	15:15 (AB01) 38 15:53 (AB01)
19	07:26 16:59	15:35 (AB01) 16:18 (AB01)	06:54 17:39	06:09 19:46	06:17 20:19	05:38 20:40	05:26 20:34	06:13 20:04	06:45 19:06	06:45 18:16	06:56 16:38	06:49 16:38	07:18 16:32	15:15 (AB01) 39 15:53 (AB01)
20	07:26 17:00	15:36 (AB01) 16:18 (AB01)	06:52 17:40	06:07 19:48	06:15 20:20	05:38 20:41	05:26 20:33	06:14 20:04	06:46 19:04	06:46 18:14	06:57 16:37	06:49 16:37	07:19 16:32	15:15 (AB01) 39 15:54 (AB01)
21	07:25 17:02	15:37 (AB01) 16:17 (AB01)	06:51 17:41	06:05 19:49	06:14 20:21	05:37 20:41	05:26 20:32	06:15 20:03	06:47 19:03	06:47 18:13	06:58 16:37	06:49 16:37	07:20 16:33	15:15 (AB01) 39 15:54 (AB01)
22	07:24 17:03	15:38 (AB01) 16:16 (AB01)	06:49 17:42	06:04 19:50	06:12 20:22	05:36 20:41	05:26 20:31	06:16 20:01	06:48 19:01	06:48 18:11	06:59 16:36	06:49 16:36	07:21 16:33	15:16 (AB01) 39 15:55 (AB01)
23	07:24 17:04	15:40 (AB01) 16:16 (AB01)	06:48 17:44	06:02 19:51	06:11 20:23	05:35 20:41	05:26 20:31	06:17 20:05	06:49 18:59	06:49 18:10	07:00 16:35	06:49 16:35	07:23 16:34	15:16 (AB01) 39 15:55 (AB01)
24	07:23 17:05	15:41 (AB01) 16:15 (AB01)	06:46 17:45	06:00 19:52	06:09 20:24	05:34 20:41	05:27 20:30	06:18 20:04	06:50 18:57	06:50 18:08	07:02 16:35	06:49 16:35	07:24 16:34	15:16 (AB01) 39 15:55 (AB01)
25	07:22 17:07	15:43 (AB01) 16:14 (AB01)	06:45 17:46	05:58 19:53	06:08 20:24	05:33 20:42	05:27 20:29	06:19 20:05	06:51 18:56	06:51 17:07	06:25 16:34	06:49 16:34	07:25 16:34	15:18 (AB01) 38 15:56 (AB01)
26	07:21 17:08	15:45 (AB01) 16:12 (AB01)	06:43 17:47	06:06 19:54	06:06 20:25	05:33 20:42	05:27 20:28	06:20 20:05	06:52 18:54	06:52 17:05	06:26 16:34	06:49 16:34	07:26 16:34	15:18 (AB01) 38 15:56 (AB01)
27	07:20 17:09	15:47 (AB01) 16:10 (AB01)	06:42 17:48	06:05 19:55	06:05 20:26	05:32 20:42	05:28 20:27	06:21 20:05	06:53 18:52	06:53 17:04	06:27 16:33	06:49 16:33	07:27 16:34	15:18 (AB01) 39 15:57 (AB01)
28	07:20 17:10	15:51 (AB01) 16:07 (AB01)	06:40 17:50	06:03 19:56	06:03 20:27	05:31 20:42	05:28 20:26	06:22 20:06	06:55 18:50	06:55 17:02	06:29 16:33	06:49 16:33	07:28 16:34	15:19 (AB01) 39 15:58 (AB01)
29	07:19 17:12	15:56 (AB01) 16:02 (AB01)	06:39 19:58	06:02 19:58	06:02 20:28	05:31 20:42	05:28 20:25	06:23 20:06	06:56 18:49	06:56 17:01	06:30 16:32	06:49 16:32	07:29 16:34	15:20 (AB01) 39 15:59 (AB01)
30	07:18 17:13	16:02 (AB01)	06:38 19:59	06:01 19:59	06:01 20:29	05:30 20:42	05:29 20:24	06:24 20:06	06:57 18:47	06:57 17:00	06:31 16:32	06:49 16:32	07:30 16:34	15:20 (AB01) 39 15:59 (AB01)
31	07:17 17:14		06:48 19:25	06:00 19:25	06:00 20:30	05:30 20:42	05:29 20:23	06:25 20:09	06:25 18:39	06:25 16:58	06:32 16:58	06:49 16:58	07:30 16:34	15:20 (AB01) 40 16:00 (AB01)
Potential sun hours	295		296	369	400	451	456	462	430	375	344	296	638	285
Total, worst case	1086												1226	

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: WF Abruzzo shadow flikering worst case Shadow receptor: R067 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (100)  
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	07:30 16:40	15:16 (AB01) 15:58 (AB01)	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32	15:05 (AB01) 15:50 (AB01)
2	07:30 16:41	15:16 (AB01) 15:59 (AB01)	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31	15:05 (AB01) 15:49 (AB01)
3	07:30 16:42	15:17 (AB01) 15:59 (AB01)	07:14 17:18	06:35 17:53	06:43 19:29	05:56 20:02	05:28 20:32	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31	15:05 (AB01) 15:49 (AB01)
4	07:30 16:43	15:18 (AB01) 16:00 (AB01)	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	07:13 16:31	15:05 (AB01) 15:49 (AB01)
5	07:30 16:44	15:18 (AB01) 16:01 (AB01)	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:27 20:33	05:32 20:41	05:58 20:17	06:30 19:30	07:02 18:38	06:38 16:52	07:14 16:31	15:05 (AB01) 15:49 (AB01)
6	07:30 16:45	15:19 (AB01) 16:02 (AB01)	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:30	15:05 (AB01) 15:48 (AB01)
7	07:30 16:46	15:20 (AB01) 16:03 (AB01)	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30	15:05 (AB01) 15:48 (AB01)
8	07:30 16:47	15:21 (AB01) 16:05 (AB01)	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:26 20:35	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:17 16:30	15:06 (AB01) 15:48 (AB01)
9	07:30 16:48	15:21 (AB01) 16:05 (AB01)	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30	15:06 (AB01) 15:48 (AB01)
10	07:30 16:49	15:22 (AB01) 16:06 (AB01)	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:46	07:18 16:30	15:06 (AB01) 15:49 (AB01)
11	07:30 16:50	15:23 (AB01) 16:07 (AB01)	07:05 17:28	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:35 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:45	07:19 16:30	15:06 (AB01) 15:48 (AB01)
12	07:29 16:51	15:23 (AB01) 16:08 (AB01)	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	07:20 16:30	15:06 (AB01) 15:48 (AB01)
13	07:29 16:52	15:25 (AB01) 16:09 (AB01)	07:02 17:31	06:19 18:05	06:26 19:40	05:44 20:13	05:26 20:38	05:37 20:38	06:06 20:07	06:39 19:17	07:11 18:25	06:48 16:43	07:21 16:30	15:07 (AB01) 15:48 (AB01)
14	07:29 16:53	15:25 (AB01) 16:10 (AB01)	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:23	06:50 16:42	07:22 16:31	15:07 (AB01) 15:49 (AB01)
15	07:28 16:54	15:27 (AB01) 16:11 (AB01)	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:25 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	7 15:24 (AB01) 16:31	15:08 (AB01) 15:49 (AB01)
16	07:28 16:56	15:27 (AB01) 16:12 (AB01)	06:58 17:35	06:14 18:09	06:21 19:43	05:41 20:16	05:25 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	18 15:18 (AB01) 16:31	15:08 (AB01) 15:49 (AB01)
17	07:27 16:57	15:29 (AB01) 16:14 (AB01)	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	23 15:16 (AB01) 16:31	15:08 (AB01) 15:50 (AB01)
18	07:27 16:58	15:30 (AB01) 16:13 (AB01)	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	27 15:14 (AB01) 16:32	15:09 (AB01) 15:50 (AB01)
19	07:26 16:59	15:32 (AB01) 16:13 (AB01)	06:54 17:39	06:09 18:12	06:17 19:46	05:38 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	31 15:12 (AB01) 16:32	15:09 (AB01) 15:50 (AB01)
20	07:26 17:00	15:33 (AB01) 16:12 (AB01)	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:37	34 15:10 (AB01) 16:32	15:10 (AB01) 15:51 (AB01)
21	07:25 17:02	15:34 (AB01) 16:11 (AB01)	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	37 15:07 (AB01) 16:33	15:10 (AB01) 15:51 (AB01)
22	07:24 17:03	15:35 (AB01) 16:09 (AB01)	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	39 15:09 (AB01) 16:33	15:11 (AB01) 15:52 (AB01)
23	07:24 17:04	15:38 (AB01) 16:09 (AB01)	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:26 20:41	05:45 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35	41 15:08 (AB01) 16:34	15:11 (AB01) 15:52 (AB01)
24	07:23 17:05	15:40 (AB01) 16:07 (AB01)	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:42	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	43 15:07 (AB01) 16:34	15:11 (AB01) 15:52 (AB01)
25	07:22 17:07	15:42 (AB01) 16:05 (AB01)	06:45 17:46	05:58 18:19	06:08 19:53	05:33 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	45 15:07 (AB01) 16:35	15:12 (AB01) 15:53 (AB01)
26	07:21 17:08	15:45 (AB01) 16:02 (AB01)	06:43 17:47	06:06 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	45 15:06 (AB01) 16:36	15:12 (AB01) 15:53 (AB01)
27	07:20 17:09	15:51 (AB01) 15:57 (AB01)	06:42 17:48	06:05 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:53 18:52	07:27 17:04	07:05 16:33	45 15:06 (AB01) 16:36	15:12 (AB01) 15:54 (AB01)
28	07:20 17:10	15:57 (AB01)	06:40 17:50	06:03 18:22	06:03 19:56	05:31 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:29 17:02	07:06 16:33	45 15:05 (AB01) 16:37	15:14 (AB01) 15:55 (AB01)
29	07:19 17:12		06:51 19:23	06:02 19:58	06:02 19:58	05:31 20:28	05:28 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:30 17:01	07:07 16:32	44 15:05 (AB01) 16:38	15:14 (AB01) 15:56 (AB01)
30	07:18 17:13		06:50 19:24	06:01 19:59	06:01 19:59	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	07:31 17:00	07:08 16:32	44 15:06 (AB01) 16:38	15:15 (AB01) 15:56 (AB01)
31	07:17 17:14		06:48 19:25	06:00 19:59	06:00 19:59	05:30 20:30	05:30 20:42	05:53 20:23	06:25 19:39	06:25 18:58	07:32 16:58	07:09 16:32	44 15:06 (AB01) 16:39	15:15 (AB01) 15:57 (AB01)
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	568	285	1302
Total, worst case	1040											768		1302

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: WF Abruzzo shadow flikering worst case Shadow receptor: R079 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (101)  
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	07:30 15:43 (AB02)	07:16 06:39	06:46 05:59	05:29 05:29	05:54 06:26	06:58 06:33	07:10 15:33 (AB02)						
2	16:40 30 07:30 15:44 (AB02)	17:16 06:37	17:51 06:45	20:00 05:58	20:30 05:29	20:42 05:55	20:22 06:27	19:37 18:45	16:57 06:35	16:32 33 07:11	16:06 (AB02) 15:33 (AB02)		
3	16:41 30 07:30 15:44 (AB02)	17:17 06:36	17:52 06:43	20:01 05:57	20:31 05:28	20:41 05:56	20:21 06:28	19:36 18:44	16:56 06:36	16:31 33 07:12	16:06 (AB02) 15:33 (AB02)		
4	16:42 31 07:30 15:45 (AB02)	17:18 06:34	17:53 06:41	20:02 05:55	20:32 05:28	20:41 05:57	20:19 06:29	19:34 18:42	16:55 06:37	16:31 33 07:13	16:06 (AB02) 15:33 (AB02)		
5	16:43 31 07:30 15:46 (AB02)	17:19 06:32	17:54 06:40	20:03 05:54	20:33 05:27	20:41 05:58	20:18 06:31	19:32 18:40	16:53 06:38	16:31 32 07:14	16:05 (AB02) 15:33 (AB02)		
6	16:44 31 07:30 15:47 (AB02)	17:21 06:31	17:56 06:38	20:04 05:53	20:33 05:27	20:41 05:59	20:17 06:32	19:31 18:38	16:52 06:40	16:31 32 07:15	16:05 (AB02) 15:33 (AB02)		
7	16:45 31 07:30 15:48 (AB02)	17:22 06:29	17:57 06:36	20:05 05:51	20:34 05:27	20:41 05:33	20:16 06:00	19:29 18:37	16:51 06:41	16:30 32 07:16	16:05 (AB02) 15:33 (AB02)		
8	16:46 32 07:30 15:49 (AB02)	17:23 06:27	17:58 06:35	20:06 05:50	20:35 05:27	20:40 05:33	20:15 06:01	19:27 18:35	16:50 06:42	16:30 31 07:17	16:04 (AB02) 15:33 (AB02)		
9	16:47 33 07:30 15:50 (AB02)	17:25 06:26	17:59 06:33	20:07 05:49	20:35 05:26	20:40 05:34	20:13 06:02	19:25 18:33	16:49 06:43	16:30 31 07:17	16:04 (AB02) 15:33 (AB02)		
10	16:48 32 07:30 15:50 (AB02)	17:26 06:24	18:00 06:31	20:09 05:48	20:36 05:26	20:40 05:35	20:12 06:03	19:24 18:32	16:48 06:45	16:30 31 07:18	16:04 (AB02) 15:33 (AB02)		
11	16:49 33 07:30 15:51 (AB02)	17:27 06:22	18:02 06:30	20:10 05:47	20:37 05:26	20:39 05:36	20:11 06:04	19:22 18:30	16:47 06:46	16:30 30 07:19	16:04 (AB02) 15:33 (AB02)		
12	16:50 33 07:29 15:51 (AB02)	17:28 06:21	18:03 06:28	20:11 05:46	20:37 05:26	20:39 05:36	20:09 06:05	19:20 18:28	16:45 06:47	16:30 30 07:20	16:03 (AB02) 15:34 (AB02)		
13	16:51 34 07:29 15:52 (AB02)	17:30 06:20	18:04 06:26	20:12 05:44	20:38 05:26	20:38 05:37	20:08 06:06	19:18 18:26	16:44 06:48	16:30 29 07:21	16:03 (AB02) 15:34 (AB02)		
14	16:52 34 07:29 15:53 (AB02)	17:31 06:19	18:05 06:25	20:13 05:43	20:38 05:26	20:38 05:38	20:07 06:08	19:17 18:25	16:43 06:50	16:31 29 07:22	16:03 (AB02) 15:35 (AB02)		
15	16:53 34 07:28 15:53 (AB02)	17:32 06:17	18:06 06:23	20:14 05:42	20:39 05:26	20:37 05:39	20:05 06:09	19:15 18:23	16:43 06:51	16:31 28 07:22	16:03 (AB02) 15:35 (AB02)		
16	16:55 34 07:28 15:55 (AB02)	17:34 06:16	18:07 06:23	20:15 05:42	20:39 05:26	20:37 05:39	20:04 06:10	19:13 18:22	16:42 06:52	16:31 29 07:23	16:04 (AB02) 15:35 (AB02)		
17	16:56 33 07:28 15:55 (AB02)	17:35 06:14	18:09 06:21	20:16 05:41	20:39 05:26	20:36 05:39	20:02 06:11	19:11 18:20	16:41 06:53	16:31 28 07:24	16:03 (AB02) 15:36 (AB02)		
18	16:57 31 07:27 15:57 (AB02)	17:36 06:12	18:10 06:20	20:17 05:40	20:40 05:26	20:35 05:40	20:01 06:12	19:10 18:19	16:40 06:54	16:31 27 07:25	16:03 (AB02) 15:37 (AB02)		
19	16:58 29 07:27 15:58 (AB02)	17:37 06:10	18:11 06:18	20:18 05:39	20:40 05:26	20:35 05:41	19:59 06:12	19:08 18:17	16:39 06:54	16:32 27 07:25	16:04 (AB02) 15:36 (AB02)		
20	16:59 27 07:26 16:00 (AB02)	17:39 06:09	18:12 06:17	20:19 05:38	20:40 05:26	20:34 05:42	19:58 06:13	19:06 18:16	16:38 06:56	7 15:45 (AB02) 07:25	16:04 (AB02) 15:36 (AB02)		
21	17:00 23 07:26 16:02 (AB02)	17:40 06:07	18:13 06:15	20:20 05:38	20:41 05:26	20:33 05:43	19:56 06:14	19:04 18:14	16:38 06:57	15 15:52 (AB02) 07:26	16:04 (AB02) 15:37 (AB02)		
22	17:02 20 07:25 16:04 (AB02)	17:41 06:05	18:14 06:14	20:21 05:37	20:41 05:26	20:32 05:44	19:55 06:15	19:03 18:13	16:37 06:58	20 15:56 (AB02) 07:26	16:04 (AB02) 15:38 (AB02)		
23	17:03 15 07:24 16:06 (AB02)	17:42 06:04	18:15 06:12	20:22 05:36	20:41 05:26	20:32 05:45	19:53 06:16	19:01 18:11	16:36 06:59	23 15:38 (AB02) 07:27	16:05 (AB02) 15:38 (AB02)		
24	17:04 7 07:24 16:11 (AB02)	17:44 06:02	18:16 06:11	20:23 05:35	20:41 05:26	20:31 05:45	19:52 06:17	18:59 18:07	16:35 07:00	27 16:01 (AB02) 07:27	16:04 (AB02) 15:38 (AB02)		
25	17:05 29 07:23 16:18 (AB02)	17:45 06:00	18:18 06:09	20:24 05:34	20:42 05:27	20:30 05:46	19:50 06:18	18:57 18:05	16:35 07:02	29 15:35 (AB02) 07:28	16:04 (AB02) 15:39 (AB02)		
26	17:07 31 07:22 16:05 (AB02)	17:46 06:09	18:19 06:09	20:25 05:34	20:42 05:27	20:29 05:47	19:49 18:56	18:56 18:04	16:34 07:03	31 15:35 (AB02) 07:28	16:04 (AB02) 15:40 (AB02)		
27	17:08 33 07:21 16:07 (AB02)	17:47 06:06	18:20 06:06	20:26 05:33	20:42 05:27	20:28 05:48	19:47 18:54	18:54 18:02	16:34 07:04	33 15:34 (AB02) 07:29	16:04 (AB02) 15:40 (AB02)		
28	17:09 34 07:21 16:08 (AB02)	17:49 06:05	18:21 06:05	20:27 05:32	20:42 05:28	20:27 05:49	19:45 18:52	18:52 18:00	16:33 07:05	34 15:34 (AB02) 07:29	16:04 (AB02) 15:40 (AB02)		
29	17:10 28 07:20 16:09 (AB02)	17:50 06:04	18:22 06:04	20:28 05:31	20:42 05:28	20:26 05:50	19:44 18:51	18:50 18:00	16:33 07:06	34 15:33 (AB02) 07:29	16:04 (AB02) 15:41 (AB02)		
30	17:11 28 07:19 16:10 (AB02)	17:51 06:02	18:23 06:02	20:29 05:31	20:42 05:28	20:25 05:51	19:42 18:50	18:50 18:00	16:32 07:07	34 15:33 (AB02) 07:30	16:04 (AB02) 15:42 (AB02)		
31	17:12 28 07:18 16:11 (AB02)	17:52 06:01	18:24 06:01	20:30 05:30	20:42 05:29	20:24 05:52	19:41 18:47	18:49 17:57	16:32 07:08	34 15:33 (AB02) 07:30	16:04 (AB02) 15:42 (AB02)		
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	321	907
Total, worst case	668												

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: WF Abruzzo shadow flikering worst case Shadow receptor: R080 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (102)  
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	07:30 16:40	16:08 (AB02) 16:14 (AB02)	07:16 12	16:33 (AB02) 16:45 (AB02)	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:10 16:32	15:54 (AB02) 16:06 (AB02)
2	07:30 16:41	16:08 (AB02) 16:15 (AB02)	07:15 17:17	16:33 (AB02) 17:52	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31	15:55 (AB02) 16:06 (AB02)
3	07:30 16:42	16:09 (AB02) 16:15 (AB02)	07:14 17:18	16:34 (AB02) 17:53	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31	15:55 (AB02) 16:06 (AB02)
4	07:30 16:43	16:09 (AB02) 16:16 (AB02)	07:13 17:19	16:34 (AB02) 17:55	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	07:13 16:31	15:55 (AB02) 16:06 (AB02)
5	07:30 16:44	16:10 (AB02) 16:17 (AB02)	07:12 17:21	16:35 (AB02) 17:56	06:32 17:56	06:40 19:31	05:54 20:04	05:27 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:14 16:31	15:56 (AB02) 16:05 (AB02)
6	07:30 16:45	16:11 (AB02) 16:19 (AB02)	07:11 17:22	16:36 (AB02) 17:57	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:30	15:56 (AB02) 16:05 (AB02)
7	07:30 16:46	16:11 (AB02) 16:20 (AB02)	07:09 17:23	16:37 (AB02) 17:58	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	05:59 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30	15:57 (AB02) 16:05 (AB02)
8	07:30 16:47	16:11 (AB02) 16:21 (AB02)	07:08 17:25	16:38 (AB02) 17:59	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:17 16:30	15:57 (AB02) 16:05 (AB02)
9	07:30 16:48	16:11 (AB02) 16:22 (AB02)	07:07 17:26	16:39 (AB02) 18:00	06:26 18:00	06:33 19:35	05:49 20:09	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30	15:58 (AB02) 16:05 (AB02)
10	07:30 16:49	16:12 (AB02) 16:23 (AB02)	07:06 17:27	16:40 (AB02) 18:02	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	16:03 (AB02) 16:30	15:59 (AB02) 16:05 (AB02)
11	07:30 16:50	16:12 (AB02) 16:24 (AB02)	07:05 17:28	16:41 (AB02) 18:03	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:45	16:16 (AB02) 16:30	16:05 (AB02) 16:04 (AB02)
12	07:29 16:51	16:12 (AB02) 16:25 (AB02)	07:03 17:30	16:42 (AB02) 18:04	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	16:17 (AB02) 16:30	15:59 (AB02) 16:04 (AB02)
13	07:29 16:52	16:13 (AB02) 16:26 (AB02)	07:02 17:31	16:43 (AB02) 18:05	06:19 18:05	06:26 19:40	05:44 20:13	05:26 20:38	05:37 20:38	06:06 20:07	06:39 19:17	07:11 18:25	06:48 16:43	16:19 (AB02) 16:30	16:04 (AB02) 16:04 (AB02)
14	07:29 16:53	16:13 (AB02) 16:27 (AB02)	07:01 17:32	16:44 (AB02) 18:06	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:23	06:50 16:43	16:20 (AB02) 16:31	16:00 (AB02) 16:05 (AB02)
15	07:28 16:55	16:14 (AB02) 16:29 (AB02)	06:59 17:34	16:45 (AB02) 18:07	06:16 18:07	06:23 19:42	05:42 20:15	05:29 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	16:18 (AB02) 16:31	15:56 (AB02) 16:01 (AB02)
16	07:28 16:56	16:14 (AB02) 16:30 (AB02)	06:58 17:35	16:46 (AB02) 18:09	06:14 18:09	06:21 19:43	05:41 20:16	05:26 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	16:17 (AB02) 16:31	16:01 (AB02) 16:05 (AB02)
17	07:27 16:57	16:15 (AB02) 16:31 (AB02)	06:57 17:36	16:47 (AB02) 18:10	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	16:18 (AB02) 16:31	16:02 (AB02) 16:05 (AB02)
18	07:27 16:58	16:15 (AB02) 16:32 (AB02)	06:55 17:37	16:48 (AB02) 18:11	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 20:08	06:44 19:08	07:17 18:17	06:54 16:39	16:19 (AB02) 16:32	16:03 (AB02) 16:06 (AB02)
19	07:26 16:59	16:16 (AB02) 16:34 (AB02)	06:54 17:39	16:49 (AB02) 18:12	06:09 18:12	06:17 19:47	05:38 20:19	05:26 20:40	05:42 20:34	06:13 20:06	06:45 19:06	07:18 18:16	06:56 16:38	16:20 (AB02) 16:33	16:03 (AB02) 16:06 (AB02)
20	07:26 17:00	16:17 (AB02) 16:35 (AB02)	06:52 17:40	16:50 (AB02) 18:13	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 20:04	06:46 19:04	07:19 18:14	06:57 16:37	16:21 (AB02) 16:33	16:04 (AB02) 16:06 (AB02)
21	07:25 17:02	16:17 (AB02) 16:36 (AB02)	06:51 17:41	16:51 (AB02) 18:14	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 20:03	06:47 19:03	07:20 18:13	06:58 16:37	16:22 (AB02) 16:33	16:04 (AB02) 16:06 (AB02)
22	07:24 17:03	16:17 (AB02) 16:37 (AB02)	06:49 17:42	16:52 (AB02) 18:15	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:32	06:16 20:05	06:48 19:01	07:21 18:11	06:59 16:36	16:23 (AB02) 16:33	16:05 (AB02) 16:07 (AB02)
23	07:24 17:04	16:19 (AB02) 16:39 (AB02)	06:48 17:44	16:53 (AB02) 18:16	06:02 18:16	06:11 19:51	05:35 20:23	05:26 20:41	05:45 20:31	06:17 20:02	06:49 18:59	07:23 18:10	07:00 16:35	16:24 (AB02) 16:34	16:05 (AB02) 16:07 (AB02)
24	07:23 17:05	16:20 (AB02) 16:40 (AB02)	06:46 17:45	16:54 (AB02) 18:18	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:42	05:46 20:30	06:18 20:05	06:50 18:57	07:24 18:08	07:02 16:35	16:25 (AB02) 16:34	16:06 (AB02) 16:09 (AB02)
25	07:22 17:07	16:21 (AB02) 16:42 (AB02)	06:45 17:46	16:55 (AB02) 18:19	05:58 18:19	06:08 19:53	05:33 20:25	05:27 20:42	05:47 20:29	06:19 20:09	06:51 18:56	07:25 17:07	06:25 16:34	16:26 (AB02) 16:35	16:06 (AB02) 16:09 (AB02)
26	07:21 17:08	16:21 (AB02) 16:43 (AB02)	06:43 17:47	16:56 (AB02) 18:20	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 20:07	06:52 18:54	07:26 17:05	06:26 16:34	16:27 (AB02) 16:36	16:06 (AB02) 16:09 (AB02)
27	07:21 17:09	16:23 (AB02) 16:44 (AB02)	06:42 17:49	16:57 (AB02) 18:21	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 20:05	06:53 18:52	07:27 17:04	07:05 16:33	16:28 (AB02) 16:36	16:06 (AB02) 16:09 (AB02)
28	07:20 17:10	16:24 (AB02) 16:45 (AB02)	06:40 17:50	16:58 (AB02) 18:22	05:53 18:22	06:03 19:56	05:31 20:27	05:28 20:42	05:50 20:26	06:22 20:05	06:55 18:50	07:29 17:02	07:06 16:33	16:29 (AB02) 16:37	16:07 (AB02) 16:11 (AB02)
29	07:19 17:12	16:25 (AB02) 16:47 (AB02)	06:39 17:51	16:59 (AB02) 18:23	05:52 18:23	06:02 19:58	05:31 20:28	05:28 20:42	05:51 20:25	06:23 20:05	06:56 18:49	07:30 17:01	07:07 16:32	16:30 (AB02) 16:38	16:07 (AB02) 16:11 (AB02)
30	07:18 17:13	16:27 (AB02) 16:48 (AB02)	06:38 17:52	17:00 (AB02) 18:24	05:50 18:24	06:01 19:59	05:30 20:29	05:29 20:42	05:52 20:24	06:24 20:05	06:57 19:41	07:31 18:47	07:08 16:32	16:31 (AB02) 16:39	16:08 (AB02) 16:12 (AB02)
31	07:17 17:14	16:29 (AB02) 16:48 (AB02)	06:37 17:53	17:01 (AB02) 18:25	05:48 18:25	06:02 19:59	05:30 20:30	05:29 20:42	05:53 20:23	06:25 20:09	06:58 18:50	07:32 17:00	07:09 16:33	16:32 (AB02) 16:40	16:08 (AB02) 16:13 (AB02)
Potential sun hours	295														
Total, worst case	460	296	12	369	400	451	456	462	430	375	344	379		285	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: WF Abruzzo shadow flickering worst case Shadow receptor: R082 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (103)  
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	07:30	08:15 (AB01) 07:16	08:25 (AB01) 06:39	06:46	05:59	05:29	05:29	05:54	06:26	06:58	06:34	07:10	07:53 (AB01)	
2	16:40	08:57 (AB01) 17:16	08:56 (AB01) 17:51	19:27	20:00	20:30	20:42	20:22	19:37	18:45	16:57	16:32	51	08:44 (AB01)
3	16:41	08:57 (AB01) 17:17	08:27 (AB01) 06:37	06:45	05:58	05:29	05:30	05:55	06:27	06:59	06:35	07:11	50	07:54 (AB01)
4	07:30	08:15 (AB01) 07:14	08:29 (AB01) 06:36	06:43	05:57	05:28	05:30	05:56	06:28	07:00	06:36	07:12	49	07:56 (AB01)
5	16:42	08:58 (AB01) 17:18	08:52 (AB01) 17:53	19:29	20:02	20:32	20:41	20:19	19:34	18:42	16:55	16:31	48	08:45 (AB01)
6	07:30	08:14 (AB01) 07:13	08:32 (AB01) 06:34	06:41	05:55	05:28	05:31	05:57	06:29	07:01	06:37	07:13	47	07:57 (AB01)
7	16:43	08:58 (AB01) 17:19	08:49 (AB01) 17:55	19:30	20:03	20:33	20:41	20:18	19:32	18:40	16:53	16:31	46	08:46 (AB01)
8	07:30	08:14 (AB01) 07:12	08:38 (AB01) 06:32	06:40	05:54	05:27	05:32	05:58	06:31	07:02	06:38	07:14	45	07:58 (AB01)
9	16:44	08:59 (AB01) 17:21	08:44 (AB01) 17:56	19:31	20:04	20:33	20:41	20:17	19:31	18:38	16:52	16:31	44	08:45 (AB01)
10	07:30	08:14 (AB01) 07:11	06:31	06:38	05:53	05:27	05:32	05:59	06:32	07:03	06:40	07:15	43	08:00 (AB01)
11	16:45	09:00 (AB01) 17:22	17:57	19:32	20:05	20:34	20:41	20:16	19:29	18:37	16:51	16:30	42	08:46 (AB01)
12	07:30	08:13 (AB01) 07:09	06:29	06:36	05:51	05:27	05:33	06:00	06:33	07:04	06:41	07:16	41	08:01 (AB01)
13	16:46	09:00 (AB01) 17:23	17:58	19:33	20:06	20:35	20:40	20:15	19:27	18:35	16:50	16:30	40	08:45 (AB01)
14	07:30	08:13 (AB01) 07:08	06:27	06:35	05:50	05:27	05:33	06:01	06:34	07:05	06:42	07:17	39	08:02 (AB01)
15	16:47	09:01 (AB01) 17:25	17:59	19:34	20:07	20:35	20:40	20:13	19:25	18:33	16:49	16:30	38	08:47 (AB01)
16	07:30	08:12 (AB01) 07:07	06:26	06:33	05:49	05:26	05:34	06:02	06:35	07:07	06:43	07:17	37	08:04 (AB01)
17	16:48	09:01 (AB01) 17:26	18:00	19:35	20:09	20:36	20:40	20:12	19:24	18:32	16:48	16:30	36	08:47 (AB01)
18	07:30	08:11 (AB01) 07:06	06:24	06:31	05:48	05:26	05:35	06:03	06:36	07:08	06:45	07:18	35	08:05 (AB01)
19	16:49	09:01 (AB01) 17:27	18:02	19:37	20:10	20:37	20:39	20:11	19:22	18:30	16:47	16:30	34	08:47 (AB01)
20	07:30	08:11 (AB01) 07:05	06:22	06:30	05:47	05:26	05:36	06:04	06:37	07:09	06:46	07:19	33	08:05 (AB01)
21	16:50	09:02 (AB01) 17:29	18:03	19:38	20:11	20:37	20:39	20:09	19:20	18:28	16:45	16:30	32	08:47 (AB01)
22	07:29	08:10 (AB01) 07:03	06:21	06:28	05:46	05:26	05:36	06:05	06:38	07:10	06:47	07:20	31	08:07 (AB01)
23	16:51	09:02 (AB01) 17:30	18:04	19:39	20:12	20:38	20:38	20:08	19:18	18:27	16:44	16:30	30	08:48 (AB01)
24	07:29	08:10 (AB01) 07:02	06:19	06:26	05:44	05:26	05:37	06:07	06:39	07:11	06:48	07:21	29	08:08 (AB01)
25	16:52	09:02 (AB01) 17:31	18:05	19:40	20:13	20:38	20:38	20:07	19:17	18:25	16:44	16:31	28	08:48 (AB01)
26	07:29	08:10 (AB01) 07:01	06:17	06:25	05:43	05:26	05:38	06:08	06:40	07:12	06:50	07:22	27	08:09 (AB01)
27	16:53	09:02 (AB01) 17:32	18:06	19:41	20:14	20:39	20:37	20:05	19:15	18:24	16:43	16:31	26	08:49 (AB01)
28	07:28	08:11 (AB01) 06:59	06:16	06:23	05:42	05:26	05:39	06:09	06:41	07:13	06:51	07:22	25	08:10 (AB01)
29	16:55	09:03 (AB01) 17:34	18:07	19:42	20:15	20:39	20:37	20:04	19:13	18:22	16:42	16:31	24	08:49 (AB01)
30	07:28	08:11 (AB01) 06:58	06:14	06:22	05:41	05:26	05:39	06:10	06:42	07:14	06:52	07:23	23	08:10 (AB01)
31	16:56	09:03 (AB01) 17:35	18:09	19:43	20:16	20:39	20:36	20:02	19:11	18:20	16:41	16:31	22	08:49 (AB01)
1	07:27	08:12 (AB01) 06:57	06:12	06:20	05:40	05:26	05:40	06:11	06:43	07:16	06:53	07:24	21	08:11 (AB01)
2	16:57	09:03 (AB01) 17:36	18:10	19:44	20:17	20:40	20:35	20:01	19:10	18:19	16:40	16:31	20	08:50 (AB01)
3	07:27	08:12 (AB01) 06:55	06:10	06:18	05:39	05:26	05:41	06:12	06:44	07:17	06:54	07:25	19	08:12 (AB01)
4	16:58	09:03 (AB01) 17:37	18:11	19:45	20:18	20:40	20:35	19:59	19:08	18:17	16:39	16:32	18	08:51 (AB01)
5	07:26	08:13 (AB01) 06:54	06:09	06:17	05:38	05:26	05:42	06:13	06:45	07:18	06:56	07:25	17	08:13 (AB01)
6	16:59	09:04 (AB01) 17:39	18:12	19:47	20:19	20:40	20:34	19:58	19:06	18:16	16:36	16:32	16	08:51 (AB01)
7	07:26	08:13 (AB01) 06:52	06:07	06:15	05:38	05:26	05:43	06:14	06:46	07:19	06:57	07:26	15	08:14 (AB01)
8	17:00	09:03 (AB01) 17:40	18:13	19:48	20:20	20:41	20:33	19:56	19:04	18:14	16:38	16:33	14	08:52 (AB01)
9	07:25	08:14 (AB01) 06:51	06:05	06:14	05:37	05:26	05:44	06:15	06:47	07:20	06:58	07:26	13	08:14 (AB01)
10	17:02	09:03 (AB01) 17:41	18:14	19:49	20:21	20:41	20:32	19:55	19:03	18:13	16:37	16:33	12	08:51 (AB01)
11	07:24	08:14 (AB01) 06:49	06:04	06:12	05:36	05:26	05:45	06:16	06:48	07:21	06:59	07:27	11	08:15 (AB01)
12	17:03	09:02 (AB01) 17:42	18:15	19:50	20:22	20:41	20:32	19:53	19:01	18:11	16:36	16:33	10	08:52 (AB01)
13	07:24	08:16 (AB01) 06:48	06:02	06:11	05:35	05:26	05:46	06:17	06:49	07:23	07:00	07:27	9	08:15 (AB01)
14	17:04	09:03 (AB01) 17:44	18:16	19:51	20:23	20:41	20:31	19:52	18:59	18:10	16:35	16:35	8	08:53 (AB01)
15	07:23	08:16 (AB01) 06:46	06:00	06:09	05:34	05:27	05:46	06:18	06:50	07:24	07:02	07:28	7	08:16 (AB01)
16	17:05	09:03 (AB01) 17:45	18:18	19:52	20:24	20:42	20:30	19:50	18:57	18:08	16:35	16:35	6	08:54 (AB01)
17	07:22	08:17 (AB01) 06:45	05:58	06:08	05:34	05:27	05:47	06:19	06:51	06:25	07:03	07:28	5	08:15 (AB01)
18	17:07	09:02 (AB01) 17:46	18:19	19:53	20:25	20:42	20:29	19:49	18:56	17:07	16:34	16:35	4	08:54 (AB01)
19	07:21	08:18 (AB01) 06:43	05:57	06:06	05:33	05:27	05:48	06:20	06:52	06:26	07:04	07:29	3	08:15 (AB01)
20	17:08	09:01 (AB01) 17:47	18:20	19:54	20:25	20:42	20:28	19:47	18:54	17:05	16:34	16:36	2	08:54 (AB01)
21	07:21	08:18 (AB01) 06:42	05:55	06:05	05:32	05:28	05:49	06:21	06:54	06:27	07:05	07:29	1	08:15 (AB01)
22	17:09	09:01 (AB01) 17:49	18:21	19:55	20:26	20:42	20:27	19:45	18:52	17:04	16:33	16:36	0	08:54 (AB01)
23	07:20	08:19 (AB01) 06:40	05:53	06:03	05:31	05:28	05:50	06:22	06:55	06:29	07:06	07:29	0	08:16 (AB01)
24	17:10	09:00 (AB01) 17:50	18:22	19:57	20:27	20:42	20:26	19:44	18:50	17:02	16:33	16:37	0	08:55 (AB01)
25	07:19	08:21 (AB01)	06:52	06:02	05:31	05:29	05:51	06:23	06:56	06:30	07:07	07:30	0	08:16 (AB01)
26	17:12	08:59 (AB01)	19:23	19:58	20:28	20:42	20:25	19:42	18:49	17:01	16:32	16:38	0	08:56 (AB01)
27	07:18	08:22 (AB01)	06:50	06:01	05:30	05:29	05:52	06:24	06:57	06:31	07:08	07:30	0	08:16 (AB01)
28	17:13	08:58 (AB01)	19:24	19:59	20:29	20:42	20:24	19:41	18:47	17:00	16:32	16:39	0	08:56 (AB01)
29	07:17	08:23 (AB01)	06:48	06:00	05:30	05:29	05:53	06:25	06:58	06:32	07:09	07:30	0	08:16 (AB01)
30	17:14	08:57 (AB01)	19:25	19:59	20:30	20:42	20:23	19:39	18:45	16:58	16:39	16:40	0	08:56 (AB01)
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285	1287	
Total, worst case	1441	104									1041			

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: WF Abruzzo shadow flikering worst case Shadow receptor: R083 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (104)

### 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	07:30 16:40	08:19 (AB01) 08:21 (AB01)	07:16 17:16	07:54 (AB01) 08:41 (AB01)	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30
2	07:30 16:41	08:19 (AB01) 08:22 (AB01)	07:15 17:17	07:53 (AB01) 08:41 (AB01)	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31
3	07:30 16:42	08:19 (AB01) 08:23 (AB01)	07:14 17:18	07:54 (AB01) 08:41 (AB01)	06:36 17:53	06:43 19:29	05:57 20:02	05:28 20:32
4	07:30 16:43	08:18 (AB01) 08:24 (AB01)	07:13 17:19	07:54 (AB01) 08:41 (AB01)	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33
5	07:30 16:44	08:18 (AB01) 08:25 (AB01)	07:12 17:21	07:55 (AB01) 08:40 (AB01)	06:32 17:56	06:40 19:31	05:54 20:04	05:27 20:33
6	07:30 16:45	08:18 (AB01) 08:26 (AB01)	07:11 17:22	07:56 (AB01) 08:40 (AB01)	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34
7	07:30 16:46	08:18 (AB01) 08:27 (AB01)	07:09 17:23	07:57 (AB01) 08:40 (AB01)	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35
8	07:30 16:47	08:18 (AB01) 08:29 (AB01)	07:08 17:25	07:57 (AB01) 08:38 (AB01)	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35
9	07:30 16:48	08:17 (AB01) 08:29 (AB01)	07:07 17:26	07:58 (AB01) 08:37 (AB01)	06:26 18:00	06:33 19:35	05:49 20:09	05:26 20:36
10	07:30 16:49	08:16 (AB01) 08:30 (AB01)	07:06 17:27	08:00 (AB01) 08:36 (AB01)	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37
11	07:30 16:50	08:16 (AB01) 08:31 (AB01)	07:05 17:29	08:00 (AB01) 08:34 (AB01)	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37
12	07:29 16:51	08:15 (AB01) 08:32 (AB01)	07:03 17:30	08:02 (AB01) 08:33 (AB01)	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38
13	07:29 16:52	08:15 (AB01) 08:33 (AB01)	07:02 17:31	08:04 (AB01) 08:32 (AB01)	06:19 18:05	06:26 19:40	05:44 20:13	05:26 20:38
14	07:29 16:53	08:13 (AB01) 08:33 (AB01)	07:01 17:32	08:06 (AB01) 08:29 (AB01)	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39
15	07:28 16:55	08:13 (AB01) 08:34 (AB01)	06:59 17:34	08:09 (AB01) 08:26 (AB01)	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39
16	07:28 16:56	08:12 (AB01) 08:35 (AB01)	06:58 17:35	08:15 (AB01) 08:20 (AB01)	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39
17	07:27 16:57	08:12 (AB01) 08:36 (AB01)	06:57 17:36		06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40
18	07:27 16:58	08:10 (AB01) 08:36 (AB01)	06:55 17:37		06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40
19	07:26 16:59	08:10 (AB01) 08:38 (AB01)	06:54 17:39		06:09 18:12	06:17 19:47	05:38 20:19	05:26 20:40
20	07:26 17:00	08:09 (AB01) 08:38 (AB01)	06:52 17:40		06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41
21	07:25 17:02	08:08 (AB01) 08:38 (AB01)	06:51 17:41		06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41
22	07:24 17:03	08:07 (AB01) 08:40 (AB01)	06:49 17:42		06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41
23	07:24 17:04	08:06 (AB01) 08:40 (AB01)	06:48 17:44		06:02 18:16	06:11 19:51	05:35 20:23	05:26 20:41
24	07:23 17:05	08:05 (AB01) 08:40 (AB01)	06:46 17:45		06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:42
25	07:22 17:07	08:03 (AB01) 08:40 (AB01)	06:45 17:46		05:58 18:19	06:08 19:53	05:34 20:25	05:27 20:42
26	07:21 17:08	08:02 (AB01) 08:41 (AB01)	06:43 17:47		05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42
27	07:21 17:09	08:01 (AB01) 08:41 (AB01)	06:42 17:49		05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42
28	07:20 17:10	07:59 (AB01) 08:41 (AB01)	06:40 17:50		05:53 18:22	06:03 19:57	05:31 20:27	05:28 20:42
29	07:19 17:12	07:58 (AB01) 08:41 (AB01)			06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42
30	07:18 17:13	07:57 (AB01) 08:41 (AB01)			06:50 19:24	06:01 19:59	05:30 20:29	05:29 20:42
31	07:17 17:14	07:55 (AB01) 08:41 (AB01)			06:48 19:25		05:30 20:30	
Potential sun hours	295		296		369	400	451	456
Total, worst case	720		575					

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: WF Abruzzo shadow flikering worst case Shadow receptor: R083 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (104)

### 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	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45		06:34 16:57	37	07:28 (AB01) 08:05 (AB01)	07:10 16:32	15	07:58 (AB01) 08:13 (AB01)
2	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44		06:35 16:56	39	07:28 (AB01) 08:07 (AB01)	07:11 16:31	14	07:59 (AB01) 08:13 (AB01)
3	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42		06:36 16:55	41	07:27 (AB01) 08:08 (AB01)	07:12 16:31	12	08:01 (AB01) 08:13 (AB01)
4	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40		06:37 16:53	42	07:26 (AB01) 08:08 (AB01)	07:13 16:31	11	08:02 (AB01) 08:13 (AB01)
5	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38		06:38 16:52	44	07:26 (AB01) 08:10 (AB01)	07:14 16:31	10	08:03 (AB01) 08:13 (AB01)
6	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37		06:40 16:51	45	07:25 (AB01) 08:10 (AB01)	07:15 16:30	8	08:04 (AB01) 08:12 (AB01)
7	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35		06:41 16:50	46	07:24 (AB01) 08:10 (AB01)	07:16 16:30	7	08:05 (AB01) 08:12 (AB01)
8	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33		06:42 16:49	48	07:24 (AB01) 08:12 (AB01)	07:17 16:30	6	08:06 (AB01) 08:12 (AB01)
9	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32		06:43 16:48	48	07:24 (AB01) 08:12 (AB01)	07:17 16:30	4	08:08 (AB01) 08:12 (AB01)
10	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30		06:45 16:47	47	07:25 (AB01) 08:12 (AB01)	07:18 16:30	3	08:09 (AB01) 08:12 (AB01)
11	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28		06:46 16:46	46	07:27 (AB01) 08:13 (AB01)	07:19 16:30	2	08:10 (AB01) 08:12 (AB01)
12	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27		06:47 16:44	44	07:29 (AB01) 08:13 (AB01)	07:20 16:30	1	08:10 (AB01) 08:11 (AB01)
13	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25		06:48 16:44	43	07:30 (AB01) 08:13 (AB01)	07:21 16:31		
14	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24		06:50 16:43	42	07:32 (AB01) 08:14 (AB01)	07:22 16:31		
15	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22		06:51 16:42	40	07:34 (AB01) 08:14 (AB01)	07:22 16:31		
16	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20		06:52 16:41	38	07:35 (AB01) 08:13 (AB01)	07:23 16:31		
17	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19		06:53 16:40	37	07:37 (AB01) 08:14 (AB01)	07:24 16:31		
18	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17		06:54 16:39	35	07:39 (AB01) 08:14 (AB01)	07:25 16:32		
19	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16		06:56 16:38	34	07:40 (AB01) 08:14 (AB01)	07:25 16:32		
20	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14		06:57 16:38	33	07:41 (AB01) 08:14 (AB01)	07:26 16:33		
21	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13		06:58 16:37	30	07:44 (AB01) 08:14 (AB01)	07:26 16:33		
22	05:45 20:32	06:16 19:53	06:48 19:01	07:21 18:11		06:59 16:36	29	07:45 (AB01) 08:14 (AB01)	07:27 16:33		
23	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10		07:00 16:35	28	07:46 (AB01) 08:14 (AB01)	07:27 16:34		
24	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08		07:02 16:35	26	07:47 (AB01) 08:13 (AB01)	07:28 16:35		
25	05:47 20:29	06:19 19:49	06:51 18:56	07:25 17:07		07:03 16:34	24	07:50 (AB01) 08:14 (AB01)	07:28 16:35		
26	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	9	07:04 07:52 (AB01)	23	07:51 (AB01) 08:14 (AB01)	07:29 16:36		
27	05:49 20:27	06:21 19:45	06:54 18:52	07:27 17:04	19	07:05 07:57 (AB01)	22	07:52 (AB01) 08:14 (AB01)	07:29 16:36		
28	05:50 20:26	06:22 19:44	06:55 18:50	07:29 17:02	24	07:06 07:59 (AB01)	20	07:53 (AB01) 08:13 (AB01)	07:29 16:37		
29	05:51 20:25	06:23 19:42	06:56 18:49	07:30 17:01	29	07:07 08:02 (AB01)	18	07:55 (AB01) 08:13 (AB01)	07:30 16:38		
30	05:52 20:24	06:24 19:41	06:57 18:47	07:31 17:00	32	07:08 08:03 (AB01)	17	07:57 (AB01) 08:14 (AB01)	07:30 16:39		
31	05:53 20:23	06:25 19:39	06:58 18:45	07:32 16:58	34	07:09 08:04 (AB01)			07:30 16:39	1	08:19 (AB01) 08:20 (AB01)
Potential sun hours	462	430	375	344		296			285		
Total, worst case				147		1066			94		

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 Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:

15/11/2023 18:49/3.5.587

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flikering worst caseShadow receptor: R084 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (105)  
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	07:30	07:58 (AB01) 07:16	08:01 (AB01) 06:39	06:46	05:59	05:29	05:29	05:54	06:26	06:58	06:34	07:10	07:38 (AB01)		
2	16:40	08:28 (AB01) 07:16	08:38 (AB01) 06:39	06:46	05:59	05:29	05:29	05:54	06:26	06:58	06:34	07:10	07:38 (AB01)		
3	16:41	08:29 (AB01) 07:17	08:39 (AB01) 06:40	06:47	05:59	05:30	05:30	05:55	06:27	06:59	06:35	07:11	07:40 (AB01)		
4	07:30	07:58 (AB01) 07:14	08:03 (AB01) 06:36	06:43	05:57	05:28	05:30	05:56	06:28	07:00	06:36	07:12	07:41 (AB01)		
5	16:42	08:30 (AB01) 07:18	08:37 (AB01) 07:53	19:29	20:02	20:32	20:41	20:20	19:34	18:42	16:55	16	07:58 (AB01) 16:31	37	08:18 (AB01)
6	07:30	07:58 (AB01) 07:13	08:05 (AB01) 06:34	06:41	05:55	05:28	05:31	05:57	06:30	07:01	06:37	07:39	07:13	07:42 (AB01)	
7	16:43	08:31 (AB01) 07:19	08:36 (AB01) 07:55	19:30	20:03	20:33	20:41	20:18	19:32	18:40	16:53	22	08:01 (AB01) 16:31	36	08:18 (AB01)
8	07:30	07:58 (AB01) 07:12	08:06 (AB01) 06:32	06:40	05:54	05:27	05:32	05:58	06:31	07:02	06:38	07:38	07:14	07:43 (AB01)	
9	16:44	08:31 (AB01) 07:21	08:35 (AB01) 07:56	19:31	20:04	20:33	20:41	20:17	19:31	18:38	16:52	25	08:03 (AB01) 16:31	35	08:18 (AB01)
10	07:30	07:58 (AB01) 07:11	08:08 (AB01) 06:31	06:38	05:53	05:27	05:32	05:59	06:32	07:03	06:40	07:36	07:15	07:44 (AB01)	
11	16:45	08:32 (AB01) 07:22	08:33 (AB01) 07:57	19:32	20:05	20:34	20:41	20:16	19:29	18:37	16:51	29	08:05 (AB01) 16:30	34	08:18 (AB01)
12	07:30	07:58 (AB01) 07:09	08:11 (AB01) 06:29	06:36	05:51	05:27	05:33	06:00	06:33	07:04	06:41	07:35	07:16	07:45 (AB01)	
13	16:46	08:33 (AB01) 07:23	08:31 (AB01) 07:58	19:33	20:06	20:35	20:40	20:15	19:27	18:35	16:50	31	08:06 (AB01) 16:30	34	08:19 (AB01)
14	07:30	07:58 (AB01) 07:08	08:13 (AB01) 06:27	06:35	05:50	05:27	05:33	06:01	06:34	07:05	06:42	07:34	07:17	07:46 (AB01)	
15	16:47	08:34 (AB01) 07:25	08:28 (AB01) 07:59	19:34	20:07	20:35	20:40	20:13	19:25	18:33	16:49	34	08:08 (AB01) 16:30	33	08:19 (AB01)
16	07:30	07:57 (AB01) 07:07	08:02 (AB01) 06:37	06:45	05:58	05:29	05:30	05:55	06:27	06:59	06:35	07:47	07:11	07:40 (AB01)	
17	16:48	08:34 (AB01) 07:26	08:34 (AB01) 07:56	19:32	20:05	20:34	20:41	20:16	19:29	18:37	16:51	29	08:05 (AB01) 16:30	34	08:19 (AB01)
18	07:30	07:57 (AB01) 07:06	08:04 (AB01) 06:32	06:40	05:54	05:27	05:32	05:59	06:32	07:03	06:40	07:36	07:15	07:44 (AB01)	
19	16:49	08:35 (AB01) 07:27	08:33 (AB01) 07:57	19:32	20:05	20:34	20:41	20:16	19:29	18:37	16:51	29	08:05 (AB01) 16:30	34	08:19 (AB01)
20	07:30	07:56 (AB01) 07:05	08:02 (AB01) 06:32	06:40	05:54	05:27	05:32	05:59	06:32	07:03	06:40	07:36	07:15	07:44 (AB01)	
21	16:50	08:36 (AB01) 07:29	08:34 (AB01) 07:56	19:32	20:05	20:34	20:41	20:16	19:29	18:37	16:51	29	08:05 (AB01) 16:30	34	08:19 (AB01)
22	07:29	07:55 (AB01) 07:03	08:01 (AB01) 06:30	06:37	05:54	05:28	05:31	05:57	06:30	07:01	06:37	07:39	07:13	07:42 (AB01)	
23	16:51	08:36 (AB01) 07:30	08:34 (AB01) 07:56	19:32	20:05	20:34	20:41	20:16	19:29	18:37	16:51	29	08:05 (AB01) 16:30	34	08:19 (AB01)
24	07:29	07:55 (AB01) 07:02	08:01 (AB01) 06:30	06:37	05:54	05:28	05:31	05:57	06:30	07:01	06:37	07:39	07:13	07:42 (AB01)	
25	16:52	08:37 (AB01) 07:31	08:35 (AB01) 07:57	19:33	20:06	20:35	20:40	20:15	19:27	18:35	16:50	31	08:06 (AB01) 16:30	34	08:19 (AB01)
26	07:29	07:54 (AB01) 07:01	08:01 (AB01) 06:30	06:37	05:54	05:28	05:31	05:57	06:30	07:01	06:37	07:39	07:13	07:42 (AB01)	
27	16:53	08:37 (AB01) 07:32	08:35 (AB01) 07:57	19:33	20:06	20:35	20:40	20:15	19:27	18:35	16:50	31	08:06 (AB01) 16:30	34	08:19 (AB01)
28	07:28	07:54 (AB01) 06:59	08:01 (AB01) 06:30	06:37	05:54	05:28	05:31	05:57	06:30	07:01	06:37	07:39	07:13	07:42 (AB01)	
29	16:55	08:38 (AB01) 07:34	08:36 (AB01) 07:58	19:34	20:07	20:35	20:40	20:13	19:25	18:33	16:49	34	08:08 (AB01) 16:30	33	08:19 (AB01)
30	07:28	07:54 (AB01) 06:58	08:01 (AB01) 06:30	06:37	05:54	05:28	05:31	05:57	06:30	07:01	06:37	07:39	07:13	07:42 (AB01)	
31	16:56	08:38 (AB01) 07:35	08:36 (AB01) 07:58	19:34	20:07	20:35	20:40	20:13	19:25	18:33	16:49	34	08:08 (AB01) 16:30	33	08:19 (AB01)
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285	285		
Total, worst case	1246	227									1103		928		

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: WF Abruzzo shadow flikering worst case Shadow receptor: R085 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (106)

### 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	07:30 16:40	08:00 (AB01) 08:23 (AB01)	07:16 17:16	07:56 (AB01) 08:37 (AB01)	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30
2	07:30 16:41	08:00 (AB01) 08:23 (AB01)	07:15 17:17	07:57 (AB01) 08:36 (AB01)	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31
3	07:30 16:42	08:00 (AB01) 08:24 (AB01)	07:14 17:18	07:58 (AB01) 08:36 (AB01)	06:36 17:53	06:43 19:29	05:57 20:02	05:28 20:32
4	07:30 16:43	08:00 (AB01) 08:25 (AB01)	07:13 17:19	07:59 (AB01) 08:35 (AB01)	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33
5	07:30 16:44	07:59 (AB01) 08:26 (AB01)	07:12 17:21	08:00 (AB01) 08:34 (AB01)	06:32 17:56	06:40 19:31	05:54 20:04	05:27 20:33
6	07:30 16:45	07:59 (AB01) 08:27 (AB01)	07:11 17:22	08:02 (AB01) 08:33 (AB01)	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34
7	07:30 16:46	07:59 (AB01) 08:28 (AB01)	07:09 17:23	08:04 (AB01) 08:32 (AB01)	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35
8	07:30 16:47	07:59 (AB01) 08:29 (AB01)	07:08 17:25	08:05 (AB01) 08:30 (AB01)	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35
9	07:30 16:48	07:58 (AB01) 08:29 (AB01)	07:07 17:26	08:07 (AB01) 08:28 (AB01)	06:26 18:00	06:33 19:35	05:49 20:09	05:26 20:36
10	07:30 16:49	07:58 (AB01) 08:30 (AB01)	07:06 17:27	08:10 (AB01) 08:25 (AB01)	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37
11	07:30 16:50	07:58 (AB01) 08:31 (AB01)	07:05 17:29		06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37
12	07:29 16:51	07:57 (AB01) 08:31 (AB01)	07:03 17:30		06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38
13	07:29 16:52	07:57 (AB01) 08:32 (AB01)	07:02 17:31		06:19 18:05	06:26 19:40	05:44 20:13	05:26 20:38
14	07:29 16:53	07:55 (AB01) 08:33 (AB01)	07:01 17:32		06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39
15	07:28 16:55	07:55 (AB01) 08:34 (AB01)	06:59 17:34		06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39
16	07:28 16:56	07:54 (AB01) 08:34 (AB01)	06:58 17:35		06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39
17	07:27 16:57	07:54 (AB01) 08:35 (AB01)	06:57 17:36		06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40
18	07:27 16:58	07:53 (AB01) 08:35 (AB01)	06:55 17:37		06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40
19	07:26 16:59	07:53 (AB01) 08:36 (AB01)	06:54 17:39		06:09 18:12	06:17 19:47	05:38 20:19	05:26 20:40
20	07:26 17:00	07:52 (AB01) 08:36 (AB01)	06:52 17:40		06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41
21	07:25 17:02	07:52 (AB01) 08:36 (AB01)	06:51 17:41		06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41
22	07:24 17:03	07:53 (AB01) 08:38 (AB01)	06:49 17:42		06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41
23	07:24 17:04	07:53 (AB01) 08:38 (AB01)	06:48 17:44		06:02 18:17	06:11 19:51	05:35 20:23	05:26 20:41
24	07:23 17:05	07:53 (AB01) 08:38 (AB01)	06:46 17:45		06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:42
25	07:22 17:07	07:53 (AB01) 08:38 (AB01)	06:45 17:46		05:58 18:19	06:08 19:53	05:34 20:25	05:27 20:42
26	07:21 17:08	07:53 (AB01) 08:38 (AB01)	06:43 17:47		05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42
27	07:21 17:09	07:54 (AB01) 08:38 (AB01)	06:42 17:49		05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42
28	07:20 17:10	07:54 (AB01) 08:38 (AB01)	06:40 17:50		05:53 18:22	06:03 19:57	05:31 20:27	05:28 20:42
29	07:19 17:12	07:54 (AB01) 08:37 (AB01)			06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42
30	07:18 17:13	07:55 (AB01) 08:37 (AB01)			06:50 19:24	06:01 19:59	05:30 20:29	05:29 20:42
31	07:17 17:14	07:56 (AB01) 08:37 (AB01)			06:48 19:25		05:30 20:30	
Potential sun hours	295	296	308	369	400	451	456	
Total, worst case	1144	308						

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: WF Abruzzo shadow flikering worst case Shadow receptor: R085 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (106)

### 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	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45		06:34 16:57	16	07:38 (AB01) 16:32	07:10 33	07:40 (AB01) 08:13 (AB01)
2	05:30 20:42	05:55 20:21	06:27 19:36	06:59 18:44		06:35 16:56	22	07:36 (AB01) 07:58 (AB01)	07:11 16:31	07:41 (AB01) 08:13 (AB01)
3	05:30 20:41	05:56 20:20	06:28 19:34	07:00 18:42		06:36 16:55	26	07:34 (AB01) 08:00 (AB01)	07:12 16:31	07:42 (AB01) 08:13 (AB01)
4	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40		06:37 16:53	29	07:32 (AB01) 08:01 (AB01)	07:13 16:31	07:43 (AB01) 08:13 (AB01)
5	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38		06:38 16:52	31	07:32 (AB01) 08:03 (AB01)	07:14 16:31	07:44 (AB01) 08:13 (AB01)
6	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37		06:40 16:51	34	07:30 (AB01) 08:04 (AB01)	07:15 16:30	07:45 (AB01) 08:13 (AB01)
7	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35		06:41 16:50	36	07:29 (AB01) 08:05 (AB01)	07:16 16:30	07:46 (AB01) 08:13 (AB01)
8	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33		06:42 16:49	38	07:29 (AB01) 08:07 (AB01)	07:17 16:30	07:48 (AB01) 08:13 (AB01)
9	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32		06:43 16:48	39	07:28 (AB01) 08:07 (AB01)	07:18 16:30	07:49 (AB01) 08:13 (AB01)
10	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30		06:45 16:47	40	07:27 (AB01) 08:07 (AB01)	07:18 16:30	07:50 (AB01) 08:14 (AB01)
11	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28		06:46 16:46	42	07:27 (AB01) 08:09 (AB01)	07:19 16:30	07:51 (AB01) 08:14 (AB01)
12	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27		06:47 16:44	42	07:27 (AB01) 08:09 (AB01)	07:20 16:30	07:51 (AB01) 08:13 (AB01)
13	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25		06:48 16:44	43	07:26 (AB01) 08:09 (AB01)	07:21 16:31	07:52 (AB01) 08:13 (AB01)
14	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24		06:50 16:43	43	07:27 (AB01) 08:10 (AB01)	07:22 16:31	07:53 (AB01) 08:14 (AB01)
15	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22		06:51 16:42	44	07:27 (AB01) 08:11 (AB01)	07:22 16:31	07:54 (AB01) 08:14 (AB01)
16	05:39 20:36	06:10 20:02	06:42 19:12	07:14 18:20		06:52 16:41	45	07:26 (AB01) 08:11 (AB01)	07:23 16:31	07:54 (AB01) 08:14 (AB01)
17	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19		06:53 16:40	45	07:27 (AB01) 08:12 (AB01)	07:24 16:31	07:56 (AB01) 08:14 (AB01)
18	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17		06:54 16:39	45	07:27 (AB01) 08:12 (AB01)	07:25 16:32	07:57 (AB01) 08:15 (AB01)
19	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16		06:56 16:38	45	07:27 (AB01) 08:12 (AB01)	07:25 16:32	07:57 (AB01) 08:15 (AB01)
20	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14		06:57 16:38	45	07:27 (AB01) 08:12 (AB01)	07:26 16:33	07:58 (AB01) 08:16 (AB01)
21	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13		06:58 16:37	45	07:28 (AB01) 08:13 (AB01)	07:26 16:33	07:58 (AB01) 08:16 (AB01)
22	05:45 20:32	06:16 19:53	06:48 19:01	07:21 18:11		06:59 16:36	44	07:28 (AB01) 08:12 (AB01)	07:27 16:33	07:59 (AB01) 08:17 (AB01)
23	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10		07:00 16:35	43	07:29 (AB01) 08:12 (AB01)	07:27 16:34	07:59 (AB01) 08:17 (AB01)
24	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08		07:02 16:35	42	07:30 (AB01) 08:12 (AB01)	07:28 16:35	08:00 (AB01) 08:18 (AB01)
25	05:47 20:29	06:19 19:49	06:51 18:56	06:25 17:07		07:03 16:34	41	07:32 (AB01) 08:13 (AB01)	07:28 16:35	08:00 (AB01) 08:18 (AB01)
26	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05		07:04 16:34	40	07:33 (AB01) 08:13 (AB01)	07:29 16:36	08:00 (AB01) 08:18 (AB01)
27	05:49 20:27	06:21 19:45	06:54 18:52	06:27 17:04		07:05 16:33	39	07:34 (AB01) 08:13 (AB01)	07:29 16:36	08:00 (AB01) 08:19 (AB01)
28	05:50 20:26	06:22 19:44	06:55 18:50	06:29 17:02		07:06 16:33	38	07:35 (AB01) 08:13 (AB01)	07:29 16:37	08:00 (AB01) 08:20 (AB01)
29	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01		07:07 16:32	36	07:37 (AB01) 08:13 (AB01)	07:30 16:38	08:00 (AB01) 08:21 (AB01)
30	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00		07:08 16:32	34	07:39 (AB01) 08:13 (AB01)	07:30 16:39	08:00 (AB01) 08:21 (AB01)
31	05:53 20:23	06:25 19:39		06:32 16:58	07:44 (AB01) 07:50 (AB01)				07:30 16:39	08:00 (AB01) 08:22 (AB01)
Potential sun hours	462	430	375	344	6	296	1152		285	693
Total, worst case					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: WF Abruzzo shadow flikering worst case Shadow receptor: R088 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (107)  
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	07:30 16:40	16:08 (AB02) 17:16	07:16 17:51	06:39 19:27	06:46 20:00	05:59 20:30	05:29 20:42	05:29 20:22	05:54 19:37	06:26 18:45	06:58 16:57	06:33 16:32
2	07:30 16:41	16:08 (AB02) 17:17	07:15 17:52	06:37 19:28	06:45 20:01	05:58 20:31	05:29 20:41	05:30 20:21	05:55 19:36	06:27 18:44	06:59 16:56	06:35 16:31
3	07:30 16:42	16:09 (AB02) 17:18	07:14 17:53	06:35 19:29	06:43 20:02	05:56 20:32	05:28 20:41	05:30 20:19	05:56 19:34	06:28 18:42	07:00 16:55	06:36 16:31
4	07:30 16:43	16:10 (AB02) 17:19	07:13 17:55	06:34 19:30	06:41 20:03	05:55 20:33	05:28 20:41	05:31 20:18	05:57 19:32	06:29 18:40	07:01 16:53	06:37 16:31
5	07:30 16:44	16:11 (AB02) 17:21	07:12 17:56	06:32 19:31	06:40 20:04	05:54 20:33	05:27 20:41	05:32 20:17	05:58 19:31	06:30 18:38	07:02 16:52	06:38 16:31
6	07:30 16:45	16:12 (AB02) 17:22	07:11 17:57	06:31 19:32	06:38 20:05	05:53 20:34	05:27 20:41	05:32 20:16	05:59 19:29	06:32 18:37	07:03 16:51	06:40 16:30
7	07:30 16:46	16:13 (AB02) 17:23	07:09 17:58	06:29 19:33	06:36 20:06	05:51 20:35	05:27 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	06:41 16:30
8	07:30 16:47	16:15 (AB02) 17:25	07:08 17:59	06:27 19:34	06:35 20:07	05:50 20:35	05:26 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	06:42 16:30
9	07:30 16:48	16:16 (AB02) 17:26	07:07 18:00	06:26 19:35	06:33 20:09	05:49 20:36	05:26 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	06:43 16:30
10	07:30 16:49	16:17 (AB02) 17:27	07:06 18:02	06:24 19:37	06:31 20:10	05:48 20:37	05:26 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:46	06:45 16:30
11	07:30 16:50	16:19 (AB02) 17:28	07:05 18:03	06:22 19:38	06:30 20:11	05:47 20:37	05:26 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:45	06:46 16:30
12	07:29 16:51	16:20 (AB02) 17:30	07:03 18:04	06:21 19:39	06:28 20:12	05:46 20:38	05:26 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	06:47 16:30
13	07:29 16:52	16:25 (AB02) 17:31	07:02 18:05	06:19 19:40	06:26 20:13	05:44 20:38	05:26 20:38	06:06 20:07	06:39 19:17	07:11 18:25	06:48 16:43	06:48 16:30
14	07:29 16:53	17:01 17:32	07:01 18:06	06:17 19:41	06:25 20:14	05:43 20:39	05:26 20:37	06:08 20:05	06:40 19:15	07:12 18:23	06:50 16:43	06:50 16:31
15	07:28 16:54	17:01 17:34	07:01 18:07	06:17 19:42	06:25 20:15	05:43 20:39	05:26 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	06:51 16:31
16	07:28 16:56	17:01 17:35	07:01 18:09	06:16 19:43	06:24 20:16	05:42 20:39	05:26 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	06:52 16:31
17	07:27 16:57	17:01 17:36	07:01 18:10	06:16 19:44	06:23 20:17	05:41 20:40	05:26 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	06:53 16:31
18	07:27 16:58	17:01 17:37	07:01 18:11	06:16 19:45	06:23 20:18	05:41 20:40	05:26 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	06:54 16:32
19	07:26 16:59	17:01 17:39	07:01 18:12	06:16 19:47	06:23 20:19	05:41 20:40	05:26 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	06:56 16:32
20	07:26 17:00	17:01 17:40	07:01 18:13	06:16 19:48	06:23 20:20	05:41 20:41	05:26 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:37	06:57 16:32
21	07:25 17:02	17:01 17:41	07:01 18:14	06:16 19:49	06:23 20:21	05:41 20:41	05:26 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	06:58 16:33
22	07:24 17:03	17:01 17:42	07:01 18:15	06:16 19:50	06:23 20:22	05:41 20:41	05:26 20:32	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	06:59 16:33
23	07:24 17:04	17:01 17:44	07:01 18:16	06:16 19:51	06:23 20:23	05:41 20:41	05:26 20:31	06:17 19:52	06:48 18:59	07:23 18:10	07:00 16:35	07:00 16:34
24	07:23 17:05	17:01 17:45	07:01 18:18	06:16 19:52	06:23 20:24	05:41 20:42	05:26 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:02 16:34
25	07:22 17:07	17:01 17:46	07:01 18:19	06:16 19:53	06:23 20:25	05:41 20:42	05:26 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	07:03 16:35
26	07:21 17:08	17:01 17:47	07:01 18:20	06:16 19:54	06:23 20:25	05:41 20:42	05:26 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	07:04 16:36
27	07:20 17:09	17:01 17:49	07:01 18:21	06:16 19:55	06:23 20:26	05:41 20:42	05:26 20:27	06:21 19:45	06:53 18:52	07:27 17:04	07:05 16:33	07:05 16:36
28	07:20 17:10	17:01 17:50	07:01 18:22	06:16 19:56	06:23 20:27	05:41 20:42	05:26 20:26	06:22 19:44	06:55 18:50	07:29 17:02	07:06 16:33	07:06 16:37
29	07:19 17:12	17:01 17:51	07:01 18:23	06:16 19:57	06:23 20:28	05:41 20:42	05:26 20:25	06:23 19:42	06:56 18:49	07:30 17:01	07:07 16:32	07:07 16:38
30	07:18 17:13	17:01 17:52	07:01 18:24	06:16 19:58	06:23 20:29	05:41 20:42	05:26 20:24	06:24 19:41	06:57 18:47	07:31 17:00	07:08 16:32	07:08 16:39
31	07:17 17:14	17:01 17:53	07:01 18:25	06:16 19:59	06:23 20:30	05:41 20:42	05:26 20:23	06:25 19:39	06:58 18:47	07:32 17:00	07:09 16:32	07:09 16:39
Potential sun hours	294	296	369	400	451	456	462	430	375	344	296	285
Total, worst case	72										4	174

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 Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:49/3.5.587

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flikering worst case Shadow receptor: R089 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (108)  
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	07:30	07:16	06:39	06:46	05:59	05:29	05:29	05:54	06:26	06:58	06:33	07:09
	16:40	17:16	17:51	19:27	20:00	20:30	20:42	20:22	19:37	18:45	16:57	16:32
2	07:30	07:15	06:37	06:45	05:58	05:29	05:30	05:55	06:27	06:59	06:35	07:11
	16:41	17:17	17:52	19:28	20:01	20:31	20:41	20:21	19:36	18:44	16:56	16:31
3	07:30	07:14	06:35	06:43	05:56	05:28	05:30	05:56	06:28	07:00	06:36	07:12
	16:42	17:18	17:53	19:29	20:02	20:32	20:41	20:19	19:34	18:42	16:55	16:31
4	07:30	07:13	06:34	06:41	05:55	05:28	05:31	05:57	06:29	07:01	06:37	07:13
	16:43	17:19	17:55	19:30	20:03	20:33	20:41	20:18	19:32	18:40	16:53	16:31
5	07:30	07:12	06:32	06:40	05:54	05:27	05:32	05:58	06:30	07:02	06:38	07:14
	16:44	17:21	17:56	19:31	20:04	20:33	20:41	20:17	19:31	18:38	16:52	16:31
6	07:30	07:11	06:31	06:38	05:53	05:27	05:32	05:59	06:32	07:03	06:40	07:15
	16:45	17:22	17:57	19:32	20:05	20:34	20:41	20:16	19:29	18:37	16:51	16:30
7	07:30	07:09	06:29	06:36	05:51	05:27	05:33	06:00	06:33	07:04	06:41	07:16
	16:46	17:23	17:58	19:33	20:06	20:35	20:40	20:15	19:27	18:35	16:50	16:30
8	07:30	07:08	06:27	06:35	05:50	05:26	05:33	06:01	06:34	07:05	06:42	07:17
	16:47	17:25	17:59	19:34	20:07	20:35	20:40	20:13	19:25	18:33	16:49	16:30
9	07:30	07:07	06:26	06:33	05:49	05:26	05:34	06:02	06:35	07:07	06:43	07:17
	16:48	17:26	18:00	19:35	20:08	20:36	20:40	20:12	19:24	18:32	16:48	16:30
10	07:30	16:22 (AB02)	07:06	06:24	06:31	05:48	05:26	05:35	06:03	06:36	07:08	06:45
	16:49	16:23 (AB02)	17:27	18:02	19:37	20:10	20:37	20:39	20:11	19:22	18:30	16:46
11	07:30	16:23 (AB02)	07:05	06:22	06:30	05:47	05:26	05:35	06:04	06:37	07:09	06:46
	16:50	16:24 (AB02)	17:28	18:03	19:38	20:11	20:37	20:39	20:09	19:20	18:28	16:45
12	07:29	16:23 (AB02)	07:03	06:21	06:28	05:46	05:26	05:36	06:05	06:38	07:10	06:47
	16:51	16:25 (AB02)	17:30	18:04	19:39	20:12	20:38	20:38	20:08	19:18	18:27	16:44
13	07:29	16:25 (AB02)	07:02	06:19	06:26	05:44	05:26	05:37	06:06	06:39	07:11	06:48
	16:52	16:26 (AB02)	17:31	18:05	19:40	20:13	20:38	20:38	20:07	19:17	18:25	16:43
14	07:29	16:25 (AB02)	07:01	06:17	06:25	05:43	05:26	05:38	06:08	06:40	07:12	06:50
	16:53	16:27 (AB02)	17:32	18:06	19:41	20:14	20:39	20:37	20:05	19:15	18:23	16:43
15	07:28	16:26 (AB02)	06:59	06:16	06:23	05:42	05:25	05:39	06:09	06:41	07:13	06:51
	16:54	16:29 (AB02)	17:34	18:07	19:42	20:15	20:39	20:37	20:04	19:13	18:22	16:42
16	07:28	16:27 (AB02)	06:58	06:14	06:21	05:41	05:25	05:39	06:10	06:42	07:14	06:52
	16:56	16:29 (AB02)	17:35	18:09	19:43	20:16	20:39	20:36	20:02	19:11	18:20	16:41
17	07:27	16:29 (AB02)	06:57	06:12	06:20	05:40	05:26	05:40	06:11	06:43	07:16	06:53
	16:57	16:31 (AB02)	17:36	18:10	19:44	20:17	20:40	20:35	20:01	19:10	18:19	16:40
18	07:27	16:30 (AB02)	06:55	06:10	06:18	05:39	05:26	05:41	06:12	06:44	07:17	06:54
	16:58	16:32 (AB02)	17:37	18:11	19:45	20:18	20:40	20:35	19:59	19:08	18:17	16:39
19	07:26	16:33 (AB02)	06:54	06:09	06:17	05:38	05:26	05:42	06:13	06:45	07:18	06:56
	16:59	16:34 (AB02)	17:39	18:12	19:47	20:19	20:40	20:34	19:58	19:06	18:16	16:38
20	07:26	06:52	06:07	06:15	05:38	05:26	05:43	06:14	06:46	07:19	06:57	07:26
	17:00	17:40	18:13	19:48	20:20	20:41	20:33	19:56	19:04	18:14	16:37	16:32
21	07:25	06:51	06:05	06:14	05:37	05:26	05:44	06:15	06:47	07:20	06:58	07:26
	17:02	17:41	18:14	19:49	20:21	20:41	20:32	19:55	19:03	18:13	16:37	16:33
22	07:24	06:49	06:04	06:12	05:36	05:26	05:45	06:16	06:48	07:21	06:59	07:27
	17:03	17:42	18:15	19:50	20:22	20:41	20:32	19:53	19:01	18:11	16:36	16:33
23	07:24	06:48	06:02	06:11	05:35	05:26	05:45	06:17	06:49	07:23	07:00	16:09 (AB02)
	17:04	17:44	18:16	19:51	20:23	20:41	20:31	19:52	18:59	18:10	16:35	16:10 (AB02)
24	07:23	06:46	06:00	06:09	05:34	05:27	05:46	06:18	06:50	07:24	07:02	16:07 (AB02)
	17:05	17:45	18:18	19:52	20:24	20:42	20:30	19:50	18:57	18:08	16:35	16:09 (AB02)
25	07:22	06:45	05:58	06:08	05:33	05:27	05:47	06:19	06:51	06:25	07:03	16:07 (AB02)
	17:07	17:46	18:19	19:53	20:25	20:42	20:29	19:49	18:56	17:07	16:34	16:09 (AB02)
26	07:21	06:43	05:57	06:06	05:33	05:27	05:48	06:20	06:52	06:26	07:04	16:06 (AB02)
	17:08	17:47	18:20	19:54	20:25	20:42	20:28	19:47	18:54	17:05	16:34	16:09 (AB02)
27	07:20	06:42	05:55	06:05	05:32	05:28	05:49	06:21	06:53	06:27	07:05	16:06 (AB02)
	17:09	17:48	18:21	19:55	20:26	20:42	20:27	19:45	18:52	17:04	16:33	16:08 (AB02)
28	07:20	06:40	05:53	06:03	05:31	05:28	05:50	06:22	06:55	06:29	07:06	16:05 (AB02)
	17:10	17:50	18:22	19:56	20:27	20:42	20:26	19:44	18:50	17:02	16:33	16:07 (AB02)
29	07:19	06:52	06:02	05:31	05:28	05:28	05:51	06:23	06:56	06:30	07:07	16:05 (AB02)
	17:12	19:23	19:58	20:28	20:42	20:25	19:42	18:49	17:01	16:32	16:06 (AB02)	16:38
30	07:18	06:50	06:01	05:30	05:29	05:29	05:52	06:24	06:57	06:31	07:08	16:05 (AB02)
	17:13	19:24	19:59	20:29	20:42	20:24	19:41	18:47	17:00	16:32	16:07 (AB02)	16:38
31	07:17	06:48	06:00	05:30	05:30	05:30	05:53	06:25	06:58	06:32	07:09	16:30
	17:14	19:25	19:59	20:30	20:42	20:23	19:39	18:44	17:00	16:32	16:07 (AB02)	16:38
Potential sun hours	294	296	369	400	451	456	462	430	375	344	296	285
Total, worst case	17										15	3

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: WF Abruzzo shadow flikering worst case Shadow receptor: R090 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (109)  
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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:56 20:02	05:28 20:32	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	16:15 (AB02) 16:16 (AB02)	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	16:16 (AB02) 16:17 (AB02)	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:27 20:33	05:58 20:41	06:30 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	16:17 (AB02) 16:19 (AB02)	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:30
7	07:30 16:46	16:18 (AB02) 16:20 (AB02)	07:10 17:23	06:29 17:58	06:29 19:33	05:51 20:06	05:27 20:35	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	16:19 (AB02) 16:21 (AB02)	07:08 17:25	06:27 17:59	06:27 19:34	05:50 20:07	05:26 20:35	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:17 16:30
9	07:30 16:48	16:19 (AB02) 16:21 (AB02)	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	16:20 (AB02) 16:23 (AB02)	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:46	07:18 16:30
11	07:30 16:50	16:21 (AB02) 16:24 (AB02)	07:05 17:28	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:45	07:19 16:30
12	07:29 16:51	16:22 (AB02) 16:25 (AB02)	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	07:20 16:30
13	07:29 16:52	16:24 (AB02) 16:26 (AB02)	07:02 17:31	06:19 18:05	06:26 19:40	05:44 20:13	05:26 20:38	06:06 20:07	06:39 19:17	07:11 18:25	06:48 16:43	07:21 16:30
14	07:29 16:53	16:24 (AB02) 16:27 (AB02)	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	06:08 20:05	06:40 19:15	07:12 18:23	06:50 16:43	07:22 16:31
15	07:28 16:54	16:26 (AB02) 16:29 (AB02)	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:25 20:39	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	16:28 (AB02) 16:29 (AB02)	06:58 17:35	06:14 18:09	06:21 19:43	05:41 20:16	05:25 20:39	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	16:29 (AB02) 17:36	06:57 18:10	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:31
18	07:27 16:58	17:37	06:55 18:11	06:10 19:45	06:18 20:18	05:39 20:18	05:26 20:40	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54	06:09 18:12	06:17 19:47	06:17 20:19	05:38 20:19	05:26 20:40	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	07:26 17:00	06:52	06:07 18:13	06:15 19:48	06:15 20:20	05:38 20:20	05:26 20:41	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:37	07:26 16:32
21	07:25 17:02	06:51	06:05 18:14	06:14 19:49	06:14 20:21	05:37 20:21	05:26 20:41	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49	06:04 18:15	06:12 19:50	06:12 20:22	05:36 20:22	05:26 20:41	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:33
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27	07:20 17:09	06:42	05:55 18:21	06:05 19:55	06:05 20:26	05:32 20:26	05:28 20:42	06:21 19:45	06:53 18:52	06:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40	05:53 18:22	06:03 19:56	06:03 20:27	05:31 20:27	05:28 20:42	06:22 19:44	06:55 18:50	06:29 17:02	07:06 16:33	07:29 16:37
29	07:19 17:12	06:52	06:02 19:23	06:02 19:58	06:02 20:28	05:31 20:28	05:28 20:42	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	07:30 16:38
30	07:18 17:13	06:50	06:01 19:24	06:01 19:59	06:01 20:29	05:30 20:29	05:29 20:42	06:24 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:38
31	07:17 17:14	06:48	06:00 19:25	06:00 19:59	06:00 20:30	05:30 20:30	05:29 20:42	06:25 19:39	06:58 18:47	06:32 16:58	07:09 16:33	07:30 16:39
Potential sun hours	294	296	369	400	451	456	462	430	375	344	296	285
Total, worst case	28										12	19

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

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

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering worst case Shadow receptor: R094 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (110)

### 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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:56 20:02	05:28 20:32	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:27 20:33	05:32 20:41	05:58 20:17	06:30 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:30
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:26 20:35	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:17 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
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13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:44 20:13	05:26 20:38	05:37 20:38	06:06 20:07	06:39 19:17	07:11 18:25	06:48 16:43	07:21 16:30
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16	07:28 16:55	06:58 17:35	06:14 18:09	06:21 19:43	05:41 20:16	05:25 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
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22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:32	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:33
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:26 20:41	05:45 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35	07:27 16:34
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27	07:20 17:09	06:42 17:48	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:53 18:52	07:27 17:04	07:05 16:33	07:29 16:36
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29	07:19 17:12		06:52 19:23	06:02 19:58	05:31 20:28	05:28 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:30 17:01	07:07 16:32	07:30 16:38
30	07:18 17:13		06:50 19:24	06:01 19:59	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	07:31 17:00	07:08 16:32	07:30 16:38
31	07:17 17:14		06:48 19:25		05:30 20:30		05:53 20:23	06:25 19:39	06:58 16:58			07:30 16:39
Potential sun hours	294	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flickering worst case Shadow receptor: R095 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (111)

### 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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:56 20:02	05:28 20:32	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	07:13 16:31
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16	07:28 16:55	06:58 17:35	06:14 18:09	06:21 19:43	05:41 20:16	05:25 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
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22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:32	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:33
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25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:33 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	07:29 16:36
27	07:20 17:09	06:42 17:48	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:53 18:52	07:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:31 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:29 17:02	07:06 16:33	07:29 16:37
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31	07:17 17:14		06:48 19:25		05:30 20:30		05:53 20:23	06:25 19:39	06:32 16:58		07:30 16:39	
Potential sun hours	294	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flickering worst case Shadow receptor: R098 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (112)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	06:00 20:00	05:30 20:30	05:30 20:41	05:55 20:22	06:27 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:42	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:56 20:20	06:28 19:36	06:59 18:44	06:35 16:56	07:10 16:32
3	07:30 16:43	07:14 17:19	06:36 17:54	06:43 19:29	05:57 20:02	05:29 20:32	05:31 20:41	05:57 20:19	06:29 19:34	07:00 18:42	06:36 16:55	07:11 16:32
4	07:30 16:44	07:13 17:20	06:34 17:55	06:42 19:30	05:56 20:03	05:28 20:32	05:32 20:41	05:58 20:18	06:30 19:32	07:01 18:40	06:37 16:54	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:59 20:17	06:31 19:31	07:02 18:39	06:38 16:53	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:28 20:34	05:33 20:40	06:00 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:14 16:31
7	07:30 16:46	07:09 17:24	06:29 17:58	06:37 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:01 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 18:00	06:35 19:34	05:51 20:07	05:27 20:35	05:34 20:40	06:02 20:13	06:34 19:25	07:06 18:34	06:42 16:49	07:16 16:31
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	05:49 20:08	05:27 20:36	05:35 20:39	06:03 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:31
10	07:30 16:50	07:06 17:28	06:24 18:02	06:32 19:37	05:48 20:09	05:27 20:36	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:31
11	07:29 16:51	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:29	06:46 16:46	07:19 16:31
12	07:29 16:52	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:37 20:38	06:06 20:08	06:38 19:19	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:53	07:02 17:31	06:19 18:05	06:27 19:40	05:45 20:13	05:26 20:38	05:38 20:37	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:33	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	07:28 16:55	06:59 17:34	06:16 18:08	06:23 19:42	05:43 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:12	07:14 18:21	06:52 16:41	07:23 16:32
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40	05:41 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:59	06:55 17:38	06:11 18:11	06:19 19:45	05:40 20:18	05:26 20:40	05:42 20:34	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:40	07:24 16:32
19	07:26 17:00	06:54 17:39	06:09 18:12	06:17 19:47	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:39	07:25 16:33
20	07:25 17:01	06:52 17:40	06:07 18:13	06:16 19:48	05:38 20:20	05:26 20:40	05:43 20:33	06:14 19:56	06:46 19:05	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:27 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:34
22	07:24 17:03	06:49 17:43	06:04 18:16	06:13 19:50	05:36 20:22	05:27 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:37	07:27 16:34
23	07:23 17:05	06:48 17:44	06:02 18:17	06:11 19:51	05:36 20:22	05:27 20:41	05:46 20:30	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:35
24	07:23 17:06	06:46 17:45	06:00 18:18	06:10 19:52	05:35 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:58	07:24 18:08	07:01 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:59 18:19	06:08 19:53	05:34 20:24	05:28 20:41	05:48 20:29	06:19 19:49	06:52 18:56	07:25 17:07	07:03 16:35	07:28 16:36
26	07:21 17:08	06:43 17:48	05:57 18:20	06:07 19:54	05:33 20:25	05:28 20:41	05:49 20:28	06:20 19:47	06:53 18:54	07:26 17:06	07:04 16:34	07:28 16:36
27	07:20 17:10	06:42 17:49	05:55 18:21	06:05 19:55	05:33 20:26	05:28 20:42	05:50 20:27	06:21 19:45	06:54 18:52	07:27 17:04	07:05 16:34	07:29 16:37
28	07:20 17:11	06:40 17:50	05:53 18:22	06:04 19:56	05:32 20:27	05:29 20:42	05:51 20:26	06:23 19:44	06:55 18:51	07:29 17:03	07:06 16:33	07:29 16:38
29	07:19 17:12		06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:52 20:25	06:24 19:42	06:56 18:49	07:30 17:01	07:07 16:33	07:29 16:38
30	07:18 17:13		06:50 19:24	06:01 19:59	05:31 20:29	05:30 20:41	05:53 20:24	06:25 19:41	06:57 18:47	07:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:15		06:48 19:26		05:30 20:29		05:54 20:23	06:26 19:39		06:32 16:59		07:30 16:40
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flickering worst case Shadow receptor: R114 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (113)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	06:00 20:00	05:30 20:30	05:30 20:41	05:55 20:22	06:27 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:42	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:56 20:20	06:28 19:36	06:59 18:44	06:35 16:56	07:10 16:32
3	07:30 16:43	07:14 17:19	06:36 17:54	06:43 19:29	05:57 20:02	05:29 20:32	05:31 20:41	05:57 20:19	06:29 19:34	07:00 18:42	06:36 16:55	07:11 16:32
4	07:30 16:44	07:13 17:20	06:34 17:55	06:41 19:30	05:56 20:03	05:28 20:32	05:32 20:41	05:58 20:18	06:30 19:32	07:01 18:40	06:37 16:54	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:59 20:17	06:31 19:31	07:02 18:39	06:38 16:53	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:28 20:34	05:33 20:40	06:00 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:14 16:31
7	07:30 16:46	07:09 17:24	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:34	05:33 20:40	06:01 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:51 20:07	05:27 20:35	05:34 20:40	06:02 20:13	06:34 19:25	07:05 18:34	06:42 16:49	07:16 16:31
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	05:49 20:08	05:27 20:36	05:35 20:39	06:03 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:31
10	07:30 16:49	07:06 17:28	06:24 18:02	06:31 19:37	05:48 20:09	05:27 20:36	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:31
11	07:29 16:51	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:29	06:46 16:46	07:19 16:31
12	07:29 16:52	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:37 20:38	06:06 20:08	06:38 19:19	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:53	07:02 17:31	06:19 18:05	06:27 19:40	05:45 20:13	05:26 20:38	05:38 20:37	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:33	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	07:28 16:55	06:59 17:34	06:16 18:08	06:23 19:42	05:43 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:12	07:14 18:21	06:52 16:41	07:23 16:32
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40	05:41 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:38	06:11 18:11	06:19 19:45	05:40 20:18	05:26 20:40	05:42 20:34	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 17:00	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:55 16:39	07:25 16:33
20	07:25 17:01	06:52 17:40	06:07 18:13	06:16 19:48	05:38 20:20	05:26 20:40	05:43 20:33	06:14 19:56	06:46 19:05	07:19 18:14	06:57 16:38	07:25 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:27 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:43	06:04 18:15	06:12 19:50	05:36 20:22	05:27 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:37	07:27 16:34
23	07:23 17:05	06:48 17:44	06:02 18:17	06:11 19:51	05:36 20:22	05:27 20:41	05:46 20:30	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	07:23 17:06	06:46 17:45	06:00 18:18	06:09 19:52	05:35 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:58	07:24 18:08	07:01 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:59 18:19	06:08 19:53	05:34 20:24	05:28 20:41	05:48 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:35	07:28 16:36
26	07:21 17:08	06:43 17:48	05:57 18:20	06:07 19:54	05:33 20:25	05:28 20:41	05:49 20:28	06:20 19:47	06:53 18:54	07:26 17:06	07:04 16:34	07:28 16:36
27	07:20 17:10	06:42 17:49	05:55 18:21	06:05 19:55	05:33 20:26	05:28 20:41	05:50 20:27	06:21 19:45	06:54 18:52	07:27 17:04	07:05 16:34	07:29 16:37
28	07:19 17:11	06:40 17:50	05:53 18:22	06:04 19:56	05:32 20:27	05:29 20:41	05:51 20:26	06:22 19:44	06:55 18:51	07:29 17:03	07:06 16:33	07:29 16:38
29	07:19 17:12		06:52 19:23	06:02 19:57	05:31 20:28	05:29 20:41	05:52 20:25	06:23 19:42	06:56 18:49	07:30 17:01	07:07 16:33	07:29 16:38
30	07:18 17:13		06:50 19:24	06:01 19:59	05:31 20:29	05:29 20:41	05:53 20:24	06:25 19:41	06:57 18:47	07:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:15		06:48 19:25		05:30 20:29		05:54 20:23	06:26 19:39		06:32 16:59		07:30 16:40
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flikering worst case Shadow receptor: R117 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (114)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	07:20 (AB08) 17:51	06:47 19:27	07:29 (AB09) 06:00	05:30 20:30
2	07:30 16:42	07:15 17:17	06:37 17:52	07:21 (AB08) 19:28	06:45 19:28	07:29 (AB09) 05:58	05:29 20:31
3	07:30 16:43	07:14 17:19	06:36 17:54	07:24 (AB08) 19:29	06:43 19:29	07:27 (AB09) 05:57	05:29 20:32
4	07:30 16:44	07:13 17:20	06:34 17:55	07:27 (AB08) 19:30	06:42 19:30	07:25 (AB09) 05:56	05:28 20:33
5	07:30 16:45	07:12 17:21	06:32 17:56	07:33 (AB08) 19:31	06:40 19:31	07:24 (AB09) 05:54	05:28 20:33
6	07:30 16:45	07:11 17:22	06:31 17:57		06:38 19:32	07:22 (AB09) 05:53	05:28 20:34
7	07:30 16:46	07:09 17:24	06:29 17:58		06:37 19:33	07:20 (AB09) 05:52	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 18:00		06:35 19:34	07:19 (AB09) 05:51	05:27 20:35
9	07:30 16:48	07:07 17:26	06:26 18:01		06:33 19:36	07:17 (AB09) 05:49	05:27 20:36
10	07:30 16:50	07:06 17:28	06:24 18:02		06:32 19:37	07:15 (AB09) 05:48	05:27 20:36
11	07:29 16:51	07:05 17:29	06:23 18:03		06:30 19:38	07:14 (AB09) 05:47	05:26 20:37
12	07:29 16:52	07:03 17:30	06:21 18:04		06:28 19:39	07:14 (AB09) 05:46	05:26 20:37
13	07:29 16:53	07:02 17:31	06:19 18:05	07:38 (AB08)	06:19 19:40	07:13 (AB09) 05:45	05:26 20:38
14	07:28 16:54	07:01 17:33	06:17 18:06	07:42 (AB08) 07:43 (AB08)	06:17 18:06	07:14 (AB09) 05:44	05:26 20:38
15	07:28 16:55	06:59 17:34	06:16 18:08	07:34 (AB08) 07:45 (AB08)	06:16 18:08	07:14 (AB09) 05:43	05:26 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	07:33 (AB08) 07:46 (AB08)	06:14 18:09	07:15 (AB09) 05:42	05:26 20:39
17	07:27 16:57	06:57 17:36	06:12 18:10	07:30 (AB08) 07:46 (AB08)	06:12 18:10	07:16 (AB09) 05:41	05:26 20:40
18	07:27 16:59	06:55 17:38	06:11 18:11	07:28 (AB08) 07:47 (AB08)	06:11 18:11	07:17 (AB09) 05:40	05:26 20:40
19	07:26 17:00	06:54 17:39	06:09 18:12	07:26 (AB08) 07:47 (AB08)	06:09 18:12	07:18 (AB09) 05:39	05:26 20:40
20	07:25 17:01	06:52 17:40	06:07 18:13	07:25 (AB08) 07:48 (AB08)	06:07 18:13	07:19 (AB09) 05:38	05:26 20:41
21	07:25 17:02	06:51 17:41	06:06 18:14	07:24 (AB08) 07:47 (AB08)	06:06 18:14	07:20 (AB09) 05:37	05:27 20:41
22	07:24 17:03	06:49 17:43	06:04 18:16	07:24 (AB08) 07:48 (AB08)	06:04 18:16	07:23 (AB09) 05:36	05:27 20:41
23	07:24 17:05	06:48 17:44	06:02 18:17	07:22 (AB08) 07:47 (AB08)	06:02 18:17	07:25 (AB09) 05:36	05:27 20:41
24	07:23 17:06	06:46 17:45	06:00 18:18	07:21 (AB08) 07:47 (AB08)	06:00 18:18	07:24 (AB09) 05:35	05:27 20:41
25	07:22 17:07	06:45 17:46	05:59 18:19	07:19 (AB08) 07:46 (AB08)	05:59 18:19	07:30 (AB09) 05:34	05:28 20:41
26	07:21 17:08	06:43 17:48	05:57 18:20	07:18 (AB08) 07:46 (AB08)	05:57 18:20	07:31 (AB09) 05:33	05:28 20:42
27	07:20 17:10	06:42 17:49	05:55 18:21	07:18 (AB08) 07:45 (AB08)	05:55 18:21	07:32 (AB09) 05:33	05:28 20:42
28	07:20 17:11	06:40 17:50	05:53 18:22	07:19 (AB08) 07:44 (AB08)	05:53 18:22	07:33 (AB09) 05:32	05:29 20:42
29	07:19 17:12		05:52 19:23	07:19 (AB08)	05:52 19:23	07:34 (AB09) 05:31	05:29 20:42
30	07:18 17:13		05:50 19:24	07:18 (AB08)	05:50 19:24	07:35 (AB09) 05:31	05:30 20:42
31	07:17 17:15		05:48 19:26	07:17 (AB08)	05:48 19:26	07:36 (AB09) 05:30	05:30 20:42
Potential sun hours	295	296	369	400	451	455	
Total, worst case		319	243	872			

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: WF Abruzzo shadow flikering worst case Shadow receptor: R117 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (114)  
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	05:30 20:41	05:55 20:22	06:27 19:37	07:13 (AB09) 08:00 (AB09)	06:58 18:45	06:33 16:58	07:09 16:32
2	05:30 20:41	05:56 20:21	06:28 19:36	07:14 (AB09) 08:00 (AB09)	06:59 18:44	06:35 16:56	07:10 16:32
3	05:31 20:41	05:57 20:19	06:29 19:34	07:15 (AB09) 08:00 (AB09)	07:00 18:42	06:36 16:55	07:11 16:32
4	05:32 20:41	05:58 20:18	06:30 19:32	07:16 (AB09) 07:59 (AB09)	07:01 18:40	06:37 16:54	07:13 16:31
5	05:32 20:41	05:59 20:17	06:31 19:31	07:17 (AB09) 07:59 (AB09)	07:02 18:39	06:38 16:53	07:14 16:31
6	05:33 20:40	06:00 20:16	06:32 19:29	07:18 (AB09) 07:59 (AB09)	07:03 18:37	06:40 16:51	07:14 16:31
7	05:33 20:40	06:01 20:15	06:33 19:27	07:19 (AB09) 07:58 (AB09)	07:04 18:35	06:41 16:50	07:15 16:31
8	05:34 20:40	06:02 20:13	06:34 19:26	07:20 (AB09) 07:58 (AB09)	07:06 18:34	06:42 16:49	07:16 16:31
9	05:35 20:39	06:03 20:12	06:35 19:24	07:21 (AB09) 07:57 (AB09)	07:07 18:32	06:43 16:48	07:17 16:31
10	05:35 20:39	06:04 20:11	06:36 19:22	07:22 (AB09) 07:56 (AB09)	07:08 18:30	06:45 16:47	07:18 16:31
11	05:36 20:39	06:05 20:09	06:37 19:20	07:22 (AB09) 07:55 (AB09)	07:09 18:29	06:46 16:46	07:19 16:31
12	05:37 20:38	06:06 20:08	06:38 19:19	07:23 (AB09) 07:54 (AB09)	07:10 18:27	06:47 16:45	07:20 16:31
13	05:38 20:38	06:07 20:07	06:39 19:17	07:24 (AB09) 07:53 (AB09)	07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 20:05	06:40 19:15	07:25 (AB09) 07:52 (AB09)	07:12 18:24	06:49 16:43	07:21 16:31
15	05:39 20:36	06:09 20:04	06:41 19:13	07:25 (AB09) 07:50 (AB09)	07:13 18:22	06:51 16:42	07:22 16:31
16	05:40 20:36	06:10 20:02	06:42 19:12	07:26 (AB09) 07:48 (AB09)	07:15 18:21	06:52 16:41	07:23 16:32
17	05:41 20:35	06:11 20:01	06:43 19:10	07:27 (AB09) 07:46 (AB09)	07:16 18:19	06:53 16:40	07:24 16:32
18	05:42 20:34	06:12 19:59	06:44 19:08	07:27 (AB09) 07:44 (AB09)	07:17 18:17	06:54 16:40	07:24 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	07:28 (AB09) 07:40 (AB09)	07:18 18:16	06:56 16:39	07:25 16:33
20	05:43 20:33	06:14 19:56	06:46 19:05	07:29 (AB09) 07:36 (AB09)	07:19 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	06:15 19:55	06:47 19:03	07:30 (AB09) 07:27 (AB09)	07:20 18:13	06:58 16:37	07:26 16:34
22	05:45 20:31	06:16 19:53	06:48 19:01	07:31 (AB09) 07:23 (AB09)	07:21 18:11	06:59 16:37	07:27 16:34
23	05:46 20:31	06:17 19:52	06:49 18:59	07:32 (AB09) 07:21 (AB09)	07:23 18:10	07:00 16:36	07:27 16:35
24	05:47 20:30	06:18 19:50	06:51 18:58	07:33 (AB09) 07:17 (AB09)	07:24 18:08	07:02 16:35	07:28 16:35
25	05:48 20:29	06:19 19:49	06:52 18:56	07:34 (AB09) 07:15 (AB09)	07:25 18:06	07:03 16:34	07:28 16:36
26	05:49 20:28	06:20 19:47	06:53 18:54	07:35 (AB09) 07:13 (AB09)	07:26 18:04	07:04 16:33	07:28 16:37
27	05:50 20:27	06:21 19:46	06:54 18:52	07:36 (AB09) 07:11 (AB09)	07:27 18:02	07:05 16:32	07:29 16:37
28	05:51 20:26	06:23 19:44	06:55 18:51	07:37 (AB09) 07:09 (AB09)	07:28 18:00	07:06 16:31	07:29 16:38
29	05:52 20:25	06:24 19:42	06:56 18:49	07:38 (AB09) 07:07 (AB09)	07:29 17:58	07:07 16:30	07:29 16:38
30	05:53 20:24	06:25 19:41	06:57 18:47	07:39 (AB09) 07:05 (AB09)	07:30 17:56	07:08 16:29	07:30 16:38
31	05:54 20:23	06:26 19:39	06:58 18:45	07:40 (AB09) 07:03 (AB09)	07:31 17:54	07:09 16:28	07:30 16:39
Potential sun hours	462	430	375	344	296	285	
Total, worst case		434	633	385			

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: WF Abruzzo shadow flikering worst case Shadow receptor: R120 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (115)  
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	07:30 16:41	08:27 (AB09) 17:16	08:58 (AB09) 17:16	06:39 17:51	06:47 19:27	06:00 20:00	05:30 20:41	05:55 20:22	06:27 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:42	08:27 (AB09) 17:15	09:04 (AB09) 17:15	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:56 20:41	06:28 19:36	06:59 18:44	06:35 16:56	07:10 16:32
3	07:30 16:43	08:28 (AB09) 17:19	08:28 (AB09) 17:19	06:36 17:54	06:43 19:29	05:57 20:02	05:29 20:32	05:57 20:41	06:29 19:34	07:00 18:42	06:36 16:55	07:11 16:32
4	07:30 16:44	08:28 (AB09) 17:20	08:28 (AB09) 17:20	06:34 17:55	06:42 19:30	05:56 20:03	05:28 20:33	05:58 20:41	06:30 19:32	07:01 18:40	06:37 16:54	07:13 16:31
5	07:30 16:44	08:29 (AB09) 17:21	08:29 (AB09) 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:59 20:41	06:31 19:31	07:02 18:39	06:38 16:53	07:14 16:31
6	07:30 16:45	08:29 (AB09) 17:22	08:29 (AB09) 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:28 20:34	05:33 20:40	06:00 20:16	06:32 19:29	07:03 16:51	07:15 16:31
7	07:30 16:46	08:30 (AB09) 17:24	08:30 (AB09) 17:24	06:29 17:58	06:37 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:01 20:15	06:33 19:27	07:04 16:50	07:15 16:31
8	07:30 16:47	08:30 (AB09) 17:25	08:30 (AB09) 17:25	06:27 18:00	06:35 19:34	05:51 20:07	05:27 20:35	05:34 20:40	06:02 20:13	06:34 19:25	07:06 16:49	07:16 16:31
9	07:30 16:48	08:31 (AB09) 17:26	08:31 (AB09) 17:26	06:26 18:01	06:33 19:36	05:49 20:08	05:27 20:36	05:35 20:39	06:03 20:12	06:35 19:24	07:07 16:48	07:17 16:31
10	07:30 16:49	08:31 (AB09) 17:28	08:31 (AB09) 17:28	06:24 18:02	06:32 19:37	05:48 20:10	05:27 20:36	05:35 20:39	06:04 20:11	06:36 19:22	07:08 16:47	07:18 16:31
11	07:29 16:51	08:31 (AB09) 17:29	08:31 (AB09) 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:05 20:09	06:37 19:20	07:09 16:46	07:19 16:31
12	07:29 16:52	08:32 (AB09) 17:30	08:32 (AB09) 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:27 20:37	05:37 20:38	06:06 20:08	06:38 19:19	07:10 16:45	07:20 16:31
13	07:29 16:53	08:33 (AB09) 17:31	08:33 (AB09) 17:31	06:19 18:05	06:27 19:40	05:45 20:13	05:26 20:38	05:38 20:38	06:07 20:07	06:39 19:17	07:11 16:44	07:21 16:31
14	07:28 16:54	08:33 (AB09) 17:33	08:33 (AB09) 17:33	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 16:43	07:22 16:31
15	07:28 16:55	08:34 (AB09) 17:34	08:34 (AB09) 17:34	06:16 18:08	06:23 19:42	05:43 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 16:42	07:22 16:31
16	07:28 16:56	08:34 (AB09) 17:35	08:34 (AB09) 17:35	06:14 18:09	06:22 19:43	05:42 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:12	07:15 16:41	07:23 16:31
17	07:27 16:57	08:35 (AB09) 17:36	08:35 (AB09) 17:36	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40	05:41 20:35	06:11 20:01	06:43 19:10	07:16 16:40	07:24 16:31
18	07:27 16:59	08:36 (AB09) 17:38	08:36 (AB09) 17:38	06:11 18:11	06:19 19:45	05:40 20:18	05:26 20:40	05:42 20:34	06:12 20:08	06:44 19:08	07:17 16:40	07:24 16:31
19	07:26 17:00	08:36 (AB09) 17:39	08:36 (AB09) 17:39	06:09 18:12	06:17 19:47	05:39 20:19	05:26 20:40	05:42 20:34	06:13 20:06	06:45 19:06	07:18 16:39	07:25 16:31
20	07:25 17:01	08:37 (AB09) 17:40	08:37 (AB09) 17:40	06:07 18:13	06:16 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 20:05	06:46 19:05	07:19 16:38	07:26 16:31
21	07:25 17:02	08:38 (AB09) 17:41	08:38 (AB09) 17:41	06:06 18:14	06:14 19:49	05:37 20:21	05:27 20:41	05:44 20:32	06:15 20:03	06:47 19:03	07:20 16:37	07:26 16:31
22	07:24 17:03	08:39 (AB09) 17:43	08:39 (AB09) 17:43	06:04 18:16	06:13 19:50	05:36 20:22	05:27 20:41	05:45 20:31	06:16 20:01	06:48 19:01	07:21 16:37	07:27 16:31
23	07:24 17:05	08:40 (AB09) 17:44	08:40 (AB09) 17:44	06:02 18:17	06:11 19:51	05:36 20:23	05:27 20:41	05:46 20:31	06:17 20:02	06:49 19:08	07:23 16:36	07:27 16:31
24	07:23 17:06	08:41 (AB09) 17:45	08:41 (AB09) 17:45	06:00 18:18	06:10 19:52	05:35 20:23	05:27 20:41	05:47 20:30	06:18 20:01	06:51 19:08	07:24 16:35	07:28 16:31
25	07:22 17:07	08:42 (AB09) 17:46	08:42 (AB09) 17:46	05:59 18:19	06:08 19:53	05:34 20:24	05:28 20:41	05:48 20:29	06:19 20:09	06:52 19:06	06:25 16:35	07:28 16:31
26	07:21 17:08	08:43 (AB09) 17:48	08:43 (AB09) 17:48	05:57 18:20	06:07 19:54	05:33 20:25	05:28 20:42	05:49 20:28	06:20 20:06	06:53 19:06	06:26 16:34	07:28 16:31
27	07:20 17:10	08:45 (AB09) 17:49	08:45 (AB09) 17:49	05:55 18:21	06:05 19:55	05:33 20:26	05:28 20:42	05:50 20:27	06:21 20:06	06:54 19:06	06:27 16:34	07:29 16:31
28	07:20 17:11	08:46 (AB09) 17:50	08:46 (AB09) 17:50	05:53 18:22	06:04 19:56	05:32 20:27	05:29 20:42	05:51 20:26	06:23 20:06	06:55 19:06	06:29 16:33	07:29 16:31
29	07:19 17:12	08:48 (AB09) 17:51	08:48 (AB09) 17:51	06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:52 20:25	06:24 20:06	06:56 19:06	06:30 16:33	07:29 16:31
30	07:18 17:13	08:50 (AB09) 17:52	08:50 (AB09) 17:52	06:50 19:24	06:01 19:59	05:31 20:29	05:29 20:42	05:53 20:24	06:25 20:06	06:57 19:01	07:01 16:33	07:30 16:31
31	07:17 17:15	08:53 (AB09) 17:53	08:53 (AB09) 17:53	06:48 19:26	06:01 19:59	05:30 20:30	05:29 20:42	05:54 20:23	06:26 20:06	06:57 19:01	07:02 16:32	07:30 16:31
Potential sun hours	295	296	296	369	400	451	455	462	430	375	344	285
Total, worst case	1353	6	6	369	400	451	455	462	430	375	344	1590

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: WF Abruzzo shadow flickering worst case Shadow receptor: R126 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (116)  
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	07:30 16:41	09:13 (AB06) 09:35 (AB06)	07:16 17:16	06:39 17:51	08:14 (AB05) 08:51 (AB05)	06:47 19:27	05:59 20:00	05:29 20:30
2	07:30 16:41	09:14 (AB06) 09:36 (AB06)	07:15 17:17	06:37 17:52	08:14 (AB05) 08:50 (AB05)	06:45 19:28	05:58 20:01	05:29 20:31
3	07:30 16:42	09:14 (AB06) 09:37 (AB06)	07:14 17:18	06:36 17:53	08:14 (AB05) 08:50 (AB05)	06:43 19:29	05:57 20:02	05:28 20:32
4	07:30 16:43	09:14 (AB06) 09:38 (AB06)	07:13 17:20	06:34 17:55	08:14 (AB05) 08:49 (AB05)	06:41 19:30	05:55 20:03	05:28 20:33
5	07:30 16:44	09:14 (AB06) 09:39 (AB06)	07:12 17:21	06:32 17:56	08:15 (AB05) 08:47 (AB05)	06:40 19:31	05:54 20:04	05:28 20:33
6	07:30 16:45	09:14 (AB06) 09:40 (AB06)	07:11 17:22	06:31 17:57	08:16 (AB05) 08:46 (AB05)	06:38 19:32	05:53 20:05	05:27 20:34
7	07:30 16:46	09:14 (AB06) 09:41 (AB06)	07:09 17:24	06:29 17:58	08:16 (AB05) 08:44 (AB05)	06:36 19:33	05:52 20:06	05:27 20:35
8	07:30 16:47	09:14 (AB06) 09:40 (AB06)	07:08 17:25	06:27 17:59	08:17 (AB05) 08:42 (AB05)	06:35 19:34	05:50 20:07	05:27 20:35
9	07:30 16:48	09:14 (AB06) 09:41 (AB06)	07:07 17:26	06:26 18:01	08:20 (AB05) 08:40 (AB05)	06:33 19:35	05:49 20:08	05:27 20:36
10	07:30 16:49	09:14 (AB06) 09:42 (AB06)	07:06 17:27	06:24 18:02	08:22 (AB05) 08:37 (AB05)	06:31 19:37	05:48 20:10	05:26 20:36
11	07:29 16:50	09:15 (AB06) 09:43 (AB06)	07:05 17:29	06:22 18:03	08:27 (AB05) 08:30 (AB05)	06:30 19:38	05:47 20:11	05:26 20:37
12	07:29 16:51	09:14 (AB06) 09:43 (AB06)	07:03 17:30	06:21 18:04		06:28 19:39	05:46 20:12	05:26 20:38
13	07:29 16:52	09:15 (AB06) 09:44 (AB06)	07:02 17:31	06:19 18:05		06:26 19:40	05:45 20:13	05:26 20:38
14	07:29 16:54	09:15 (AB06) 09:44 (AB06)	07:01 17:32	06:17 18:06		06:25 19:41	05:44 20:14	05:26 20:39
15	07:28 16:55	09:15 (AB06) 09:45 (AB06)	06:59 17:34	08:27 (AB05) 08:42 (AB05)	06:16 18:08	06:23 19:42	05:43 20:15	05:26 20:39
16	07:28 16:56	09:15 (AB06) 09:45 (AB06)	06:58 17:35	08:25 (AB05) 08:45 (AB05)	06:14 18:09	06:22 19:43	05:42 20:16	05:26 20:39
17	07:27 16:57	09:16 (AB06) 09:46 (AB06)	06:57 17:36	08:22 (AB05) 08:46 (AB05)	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40
18	07:27 16:58	09:16 (AB06) 09:46 (AB06)	06:55 17:38	08:21 (AB05) 08:48 (AB05)	06:11 18:11	06:18 19:45	05:40 20:18	05:26 20:40
19	07:26 16:59	09:17 (AB06) 09:47 (AB06)	06:54 17:39	08:19 (AB05) 08:49 (AB05)	06:09 18:12	06:17 19:47	05:39 20:19	05:26 20:40
20	07:26 17:01	09:17 (AB06) 09:47 (AB06)	06:52 17:40	08:18 (AB05) 08:50 (AB05)	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41
21	07:25 17:02	09:17 (AB06) 09:47 (AB06)	06:51 17:41	08:17 (AB05) 08:51 (AB05)	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41
22	07:24 17:03	09:17 (AB06) 09:46 (AB06)	06:49 17:43	08:17 (AB05) 08:52 (AB05)	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41
23	07:24 17:04	09:18 (AB06) 09:47 (AB06)	06:48 17:44	08:15 (AB05) 08:52 (AB05)	06:02 18:17	06:11 19:51	05:35 20:23	05:27 20:41
24	07:23 17:06	09:19 (AB06) 09:47 (AB06)	06:46 17:45	08:15 (AB05) 08:52 (AB05)	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:41
25	07:22 17:07	09:19 (AB06) 09:46 (AB06)	06:45 17:46	08:14 (AB05) 08:52 (AB05)	05:59 18:19	06:08 19:53	05:34 20:24	05:27 20:42
26	07:21 17:08	09:20 (AB06) 09:46 (AB06)	06:43 17:47	08:15 (AB05) 08:52 (AB05)	05:57 18:20	06:06 19:54	05:33 20:25	05:28 20:42
27	07:20 17:09	09:21 (AB06) 09:45 (AB06)	06:42 17:49	08:14 (AB05) 08:52 (AB05)	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42
28	07:20 17:11	09:22 (AB06) 09:44 (AB06)	06:40 17:50	08:14 (AB05) 08:52 (AB05)	05:53 18:22	06:04 19:56	05:32 20:27	05:28 20:42
29	07:19 17:12	09:23 (AB06) 09:43 (AB06)		06:52 19:23		06:02 19:58	05:31 20:28	05:29 20:42
30	07:18 17:13	09:25 (AB06) 09:41 (AB06)		06:50 19:24		06:01 19:59	05:30 20:29	05:29 20:42
31	07:17 17:14	09:27 (AB06) 09:39 (AB06)		06:48 19:25			05:30 20:30	
Potential sun hours	295	296	369	400	451	455		
Total, worst case	808	442	297					

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: WF Abruzzo shadow flikering worst case Shadow receptor: R126 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (116)  
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	05:30 20:42	05:54 20:22	06:27 19:37	06:58 18:45		06:33 16:57		07:09 16:32
2	05:30 20:41	05:55 20:21	06:28 19:36	06:59 18:44		06:35 16:56		07:11 16:32
3	05:31 20:41	05:56 20:19	06:29 19:34	07:00 18:42	12	09:01 (AB05) 09:13 (AB05)	06:36 16:55	07:12 16:31
4	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	19	08:58 (AB05) 09:17 (AB05)	06:37 16:54	07:13 16:31
5	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:39	23	08:56 (AB05) 09:19 (AB05)	06:38 16:52	07:14 16:31
6	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	26	08:54 (AB05) 09:20 (AB05)	06:40 16:51	07:15 16:31
7	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	29	08:52 (AB05) 09:21 (AB05)	06:41 16:50	07:16 16:31
8	05:34 20:40	06:02 20:13	06:34 19:25	07:06 18:33	31	08:51 (AB05) 09:22 (AB05)	06:42 16:49	07:16 16:31
9	05:34 20:40	06:03 20:12	06:35 19:24	07:07 18:32	34	08:49 (AB05) 09:23 (AB05)	06:43 16:48	07:17 16:30
10	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	35	08:48 (AB05) 09:23 (AB05)	06:45 16:47	07:18 16:30
11	05:36 20:39	06:05 20:09	06:37 19:20	07:09 18:29	36	08:48 (AB05) 09:24 (AB05)	06:46 16:46	07:19 16:31
12	05:37 20:38	06:06 20:08	06:38 19:19	07:10 18:27	37	08:48 (AB05) 09:25 (AB05)	06:47 16:45	07:20 16:31
13	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	38	08:47 (AB05) 09:25 (AB05)	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	38	08:47 (AB05) 09:25 (AB05)	06:50 16:43	07:22 16:31
15	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	38	08:46 (AB05) 09:24 (AB05)	06:51 16:42	07:22 16:31
16	05:40 20:36	06:10 20:02	06:42 19:12	07:14 18:20	38	08:46 (AB05) 09:24 (AB05)	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	37	08:47 (AB05) 09:24 (AB05)	06:53 16:40	07:24 16:32
18	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	37	08:47 (AB05) 09:24 (AB05)	06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	36	08:47 (AB05) 09:23 (AB05)	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	06:46 19:05	07:19 18:14	35	08:47 (AB05) 09:22 (AB05)	06:57 16:38	07:26 16:33
21	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	33	08:48 (AB05) 09:21 (AB05)	06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	32	08:49 (AB05) 09:21 (AB05)	06:59 16:36	07:27 16:34
23	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	29	08:50 (AB05) 09:19 (AB05)	07:00 16:36	07:27 16:34
24	05:47 20:30	06:18 19:50	06:50 18:58	07:24 18:08	26	08:51 (AB05) 09:17 (AB05)	07:02 16:35	07:28 16:35
25	05:48 20:29	06:19 19:49	06:51 18:56	06:25 17:07	23	07:52 (AB05) 08:15 (AB05)	07:03 16:34	07:28 16:35
26	05:49 20:28	06:20 19:47	06:53 18:54	06:26 17:05	19	07:55 (AB05) 08:14 (AB05)	07:04 16:34	07:29 16:36
27	05:49 20:27	06:21 19:45	06:54 18:52	06:27 17:04	13	07:58 (AB05) 08:11 (AB05)	07:05 16:33	07:29 16:37
28	05:50 20:26	06:22 19:44	06:55 18:51	06:29 17:03			07:06 16:33	07:29 16:37
29	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01			07:07 16:33	07:29 16:38
30	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00			07:08 16:32	07:30 16:39
31	05:53 20:23	06:25 19:39		06:32 16:59				07:30 16:40
Potential sun hours	462	430	375	344	754	296	533	285
Total, worst case								656

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: WF Abruzzo shadow flikering worst case Shadow receptor: R129 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (117)

### 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	07:30 16:40	07:16 17:16	06:39 17:51	06:58 (AB04) 17:24 (AB04)	06:46 19:27	07:05 (AB03) 20:00	05:29 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	06:56 (AB04) 07:22 (AB04)	06:45 19:28	07:07 (AB03) 07:15 (AB03)	05:29 20:31
3	07:30 16:42	07:14 17:18	06:36 17:53	06:55 (AB04) 07:22 (AB04)	06:43 19:29		05:28 20:32
4	07:30 16:43	07:13 17:20	06:34 17:55	06:54 (AB04) 07:19 (AB04)	06:41 19:30		05:28 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56	06:56 (AB04) 07:17 (AB04)	06:40 19:31		05:28 20:33
6	07:30 16:45	07:11 17:22	06:31 17:57	06:59 (AB04) 07:14 (AB04)	06:38 19:32	19:08 (AB11) 19:11 (AB11)	05:27 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	07:05 (AB04) 07:07 (AB04)	06:36 19:33	19:06 (AB11) 19:11 (AB11)	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59		06:35 19:34	19:04 (AB11) 19:12 (AB11)	05:27 20:35
9	07:30 16:48	07:07 17:26	06:26 18:01		06:33 19:35	19:04 (AB11) 19:14 (AB11)	05:26 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02		06:31 19:37	19:03 (AB11) 19:15 (AB11)	05:26 20:37
11	07:30 16:50	07:05 17:29	06:22 18:03		06:30 19:38	19:02 (AB11) 19:15 (AB11)	05:26 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04		06:28 19:39	19:02 (AB11) 19:17 (AB11)	05:26 20:38
13	07:29 16:52	07:02 17:31	06:19 18:05	07:22 (AB04) 07:23 (AB04)	06:19 19:40	19:01 (AB11) 19:18 (AB11)	05:26 20:38
14	07:29 16:53	07:01 17:32	06:17 18:06	07:20 (AB04) 07:24 (AB04)	06:17 19:41	19:02 (AB11) 19:19 (AB11)	05:26 20:39
15	07:28 16:55	06:59 17:34	06:16 18:07	07:19 (AB04) 07:25 (AB04)	06:16 19:42	19:02 (AB11) 19:20 (AB11)	05:26 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	07:18 (AB04) 07:26 (AB04)	06:14 19:43	19:01 (AB11) 19:20 (AB11)	05:26 20:39
17	07:27 16:57	06:57 17:36	06:12 18:10	07:16 (AB04) 07:27 (AB04)	06:12 19:44	19:03 (AB11) 19:22 (AB11)	05:26 20:40
18	07:27 16:58	06:55 17:37	06:11 18:11	07:15 (AB04) 07:27 (AB04)	06:11 19:45	19:03 (AB11) 19:21 (AB11)	05:26 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	07:13 (AB04) 07:27 (AB04)	06:09 19:47	19:05 (AB11) 19:20 (AB11)	05:26 20:40
20	07:26 17:00	06:52 17:40	06:07 18:13	07:12 (AB04) 07:28 (AB04)	06:07 19:48	19:07 (AB11) 19:17 (AB11)	05:26 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	07:10 (AB04) 07:28 (AB04)	06:05 19:49		05:26 20:41
22	07:24 17:03	06:49 17:42	06:04 18:15	07:09 (AB04) 07:28 (AB04)	06:04 19:50		05:26 20:41
23	07:24 17:04	06:48 17:44	06:02 18:17	07:07 (AB04) 07:27 (AB04)	06:02 19:51	06:21 (AB03) 06:23 (AB03)	05:35 20:41
24	07:23 17:05	06:46 17:45	06:00 18:18	07:06 (AB04) 07:28 (AB04)	06:09 19:52	06:19 (AB03) 06:24 (AB03)	05:27 20:42
25	07:22 17:07	06:45 17:46	05:58 18:19	07:04 (AB04) 07:27 (AB04)	06:08 19:53	06:17 (AB03) 06:24 (AB03)	05:27 20:42
26	07:21 17:08	06:43 17:47	05:57 18:20	07:03 (AB04) 07:27 (AB04)	06:06 19:54	06:16 (AB03) 06:24 (AB03)	05:27 20:42
27	07:21 17:09	06:42 17:49	05:55 18:21	07:01 (AB04) 07:26 (AB04)	06:05 19:55	06:14 (AB03) 06:24 (AB03)	05:28 20:42
28	07:20 17:10	06:40 17:50	05:53 18:22	07:00 (AB04) 07:25 (AB04)	06:03 19:57	06:12 (AB03) 06:23 (AB03)	05:28 20:42
29	07:19 17:12		05:52 19:23		06:02 19:58	07:10 (AB03) 07:22 (AB03)	05:29 20:42
30	07:18 17:13		05:50 19:24		06:01 19:59	07:09 (AB03) 07:22 (AB03)	05:30 20:42
31	07:17 17:14		05:48 19:25			07:07 (AB03) 07:20 (AB03)	05:30 20:42
Potential sun hours	295	296	369	400	451	456	
Total, worst case		248	223	220			

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: WF Abruzzo shadow flikering worst case Shadow receptor: R129 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (117)  
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	05:29 20:42	05:54 20:22	06:26 19:37	19:02 (AB11) 18:45	06:58 18:35	06:34 16:57	07:10 16:32
2	05:30 20:41	05:55 20:21	06:27 19:36	19:02 (AB11) 19:13 (AB11)	06:59 18:44	06:35 16:56	07:11 16:31
3	05:31 20:41	05:56 20:19	06:28 19:34	19:02 (AB11) 19:12 (AB11)	07:00 18:42	06:36 16:55	07:12 16:31
4	05:31 20:41	05:57 20:18	06:30 19:32	19:02 (AB11) 19:10 (AB11)	07:01 18:40	06:37 16:53	07:13 16:31
5	05:32 20:41	05:58 20:17	06:31 19:31	19:03 (AB11) 19:08 (AB11)	07:02 18:38	06:38 16:52	07:14 16:31
6	05:32 20:41	05:59 20:16	06:32 19:29	19:04 (AB11) 19:07 (AB11)	07:03 18:37	06:40 16:51	07:15 16:31
7	05:33 20:40	06:00 20:15	06:33 19:27		07:04 18:35	06:41 16:50	07:16 16:30
8	05:34 20:40	06:01 20:13	06:34 19:25		07:05 18:33	06:42 16:49	07:17 16:30
9	05:34 20:40	06:02 20:12	06:35 19:24		07:07 18:32	06:43 16:48	07:17 16:30
10	05:35 20:39	06:03 20:11	06:36 19:22	07:01 (AB03) 07:08 (AB03)	07:08 18:30	06:45 16:47	07:18 16:30
11	05:36 20:39	06:04 20:09	06:37 19:20	06:58 (AB03) 07:11 (AB03)	07:09 18:28	06:46 16:46	07:19 16:30
12	05:36 20:38	06:06 20:08	06:38 19:18	06:59 (AB03) 07:12 (AB03)	07:10 18:27	06:47 16:45	07:20 16:30
13	05:37 20:38	06:07 20:07	06:39 19:17	07:00 (AB03) 07:13 (AB03)	07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 20:05	06:40 19:15	07:01 (AB03) 07:13 (AB03)	07:12 18:24	06:50 16:43	07:22 16:31
15	05:39 20:37	06:09 20:04	06:41 19:13	07:02 (AB03) 07:13 (AB03)	07:13 18:22	06:51 16:42	07:22 16:31
16	05:39 20:36	06:10 20:02	06:42 19:12	07:03 (AB03) 07:13 (AB03)	07:14 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	06:43 19:10	07:04 (AB03) 07:13 (AB03)	07:16 18:19	06:53 16:40	07:24 16:31
18	05:41 20:35	06:12 19:59	06:44 19:08	07:05 (AB03) 07:12 (AB03)	07:17 18:17	06:54 16:39	07:25 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	07:06 (AB03) 07:11 (AB03)	07:18 18:16	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	06:46 19:04	07:07 (AB03) 07:10 (AB03)	07:19 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	06:15 19:55	06:47 19:03		07:20 18:13	06:58 16:37	07:26 16:33
22	05:45 20:32	06:16 19:53	06:48 19:01		07:21 18:11	06:59 16:36	07:27 16:34
23	05:46 20:31	06:17 19:52	06:49 19:22 (AB11)		07:23 18:10	07:00 16:36	07:27 16:34
24	05:46 20:30	06:18 19:50	06:50 19:24 (AB11)		07:24 18:08	07:02 16:35	07:28 16:35
25	05:47 20:29	06:19 19:49	06:51 19:25 (AB11)		06:25 17:07	07:03 16:34	07:28 16:35
26	05:48 20:28	06:20 19:47	06:52 19:25 (AB11)		06:26 17:05	07:04 16:34	07:29 16:36
27	05:49 20:27	06:21 19:45	06:54 19:04 (AB11)		06:27 17:04	07:05 16:33	07:29 16:36
28	05:50 20:26	06:22 19:44	06:55 19:23 (AB11)		06:29 17:03	07:06 16:33	07:29 16:37
29	05:51 20:25	06:23 19:42	06:56 19:03 (AB11)		06:30 17:01	07:07 16:32	07:30 16:38
30	05:52 20:24	06:24 19:41	06:57 19:02 (AB11)		06:31 17:00	07:08 16:32	07:30 16:39
31	05:53 20:23	06:25 19:39	06:58 19:02 (AB11)		06:32 16:58		07:30 16:39
Potential sun hours	462	430	375	344	296	285	
Total, worst case		150	153	399			

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 Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:49/3.5.587

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flikering worst caseShadow receptor: R130 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (118)  
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	07:30	07:16	06:39	06:46	05:59	05:29	05:29	05:54	06:26	19:09 (AB11)	06:58	06:34	07:10	
	16:40	17:16	17:51	19:27	20:00	20:30	20:42	20:22	19:37	6 19:15 (AB11)	18:45	16:57	16:32	
2	07:30	07:15	06:37	06:45	05:58	05:29	05:30	05:55	06:27	19:10 (AB11)	06:59	06:35	07:11	
	16:41	17:17	17:52	19:28	20:01	20:31	20:41	20:21	19:36	3 19:13 (AB11)	18:44	16:56	16:31	
3	07:30	07:14	06:36	06:43	05:57	05:28	05:31	05:56	06:28		07:00	06:36	07:12	
	16:42	17:18	17:53	19:29	20:02	20:32	20:41	20:19	19:34		18:42	16:55	16:31	
4	07:30	07:13	06:34	06:41	05:55	05:28	05:31	05:57	06:30		07:01	06:37	07:13	
	16:43	17:20	17:55	19:30	20:03	20:33	20:41	20:18	19:32		18:40	16:53	16:31	
5	07:30	07:12	06:32	06:40	05:54	05:28	05:32	05:58	06:31		07:02	06:38	07:14	
	16:44	17:21	17:56	19:31	20:04	20:33	20:41	20:17	19:31		18:38	16:52	16:31	
6	07:30	07:11	06:31	06:38	05:53	05:27	05:32	05:59	06:32		07:03	06:40	07:15	
	16:45	17:22	17:57	19:32	20:05	20:34	20:41	20:16	19:29		18:37	16:51	16:31	
7	07:30	07:09	06:29	06:36	05:51	05:27	05:33	06:00	06:33		07:04	06:41	07:16	
	16:46	17:23	17:58	19:33	20:06	20:35	20:40	20:15	19:27		18:35	16:50	16:30	
8	07:30	07:08	06:27	06:35	05:50	05:27	05:34	06:01	06:34		07:05	06:42	07:17	
	16:47	17:25	17:59	19:34	20:07	20:35	20:40	20:13	19:25		18:33	16:49	16:30	
9	07:30	07:07	06:26	06:33	05:49	05:26	05:34	06:02	06:35		07:07	06:43	07:17	
	16:48	17:26	18:01	19:35	20:09	20:36	20:40	20:12	19:24		18:32	16:48	16:30	
10	07:30	07:06	06:24	06:31	19:11 (AB11)	05:48	05:26	05:35	06:03		07:08	06:45	07:18	
	16:49	17:27	18:02	19:37	4 19:15 (AB11)	20:10	20:37	20:39	20:11		18:30	16:47	16:30	
11	07:30	07:05	06:22	06:30	19:09 (AB11)	05:47	05:26	05:36	06:04		06:37	07:09	06:46	07:19
	16:50	17:29	18:03	19:38	6 19:15 (AB11)	20:11	20:37	20:39	20:09		18:28	16:46	16:30	
12	07:29	07:03	06:21	06:28	19:09 (AB11)	05:46	05:26	05:36	06:06		06:38	07:10	06:47	07:20
	16:51	17:30	18:04	19:39	8 19:17 (AB11)	20:12	20:38	20:38	20:08		19:18	18:27	16:45	16:30
13	07:29	07:02	06:19	06:26	19:07 (AB11)	05:45	05:26	05:37	06:07		06:39	07:11	06:48	07:21
	16:52	17:31	18:05	19:40	11 19:18 (AB11)	20:13	20:38	20:38	20:07		19:17	18:25	16:44	16:31
14	07:29	07:01	06:17	06:25	19:07 (AB11)	05:43	05:26	05:38	06:08		06:40	07:12	06:50	07:22
	16:53	17:32	18:06	19:41	12 19:19 (AB11)	20:14	20:39	20:37	20:05		19:15	18:24	16:43	16:31
15	07:28	06:59	06:16	06:23	19:06 (AB11)	05:42	05:26	05:39	06:09		06:41	07:13	06:51	07:22
	16:55	17:34	18:07	19:42	14 19:20 (AB11)	20:15	20:39	20:37	20:04		19:13	18:22	16:42	16:31
16	07:28	06:58	06:14	06:22	19:06 (AB11)	05:41	05:26	05:39	06:10		06:42	07:14	06:52	07:23
	16:56	17:35	18:09	19:43	14 19:20 (AB11)	20:16	20:39	20:36	20:02		19:12	18:20	16:41	16:31
17	07:27	06:57	06:12	06:20	19:06 (AB11)	05:40	05:26	05:40	06:11		06:43	07:16	06:53	07:24
	16:57	17:36	18:10	19:44	16 19:22 (AB11)	20:17	20:40	20:35	20:01		19:10	18:19	16:40	16:31
18	07:27	06:55	06:11	06:18	19:06 (AB11)	05:39	05:26	05:41	06:12	19:21 (AB11)	06:44	07:17	06:54	07:24
	16:58	17:37	18:11	19:45	17 19:23 (AB11)	20:18	20:40	20:35	19:59	5 19:26 (AB11)	19:08	18:17	16:39	16:32
19	07:26	06:54	06:09	06:17	19:06 (AB11)	05:39	05:26	05:42	06:13	19:17 (AB11)	06:45	07:18	06:56	07:25
	16:59	17:39	18:12	19:47	18 19:24 (AB11)	20:19	20:40	20:34	19:58	12 19:29 (AB11)	19:06	18:16	16:38	16:32
20	07:26	06:52	06:07	06:15	19:06 (AB11)	05:38	05:26	05:43	06:14	19:15 (AB11)	06:46	07:19	06:57	07:26
	17:00	17:40	18:13	19:48	19 19:25 (AB11)	20:20	20:41	20:33	19:56	16 19:31 (AB11)	19:04	18:14	16:38	16:33
21	07:25	06:51	06:05	06:14	19:07 (AB11)	05:37	05:26	05:44	06:15	19:13 (AB11)	06:47	07:20	06:58	07:26
	17:02	17:41	18:14	19:49	19 19:26 (AB11)	20:21	20:41	20:32	19:55	19 19:32 (AB11)	19:03	18:13	16:37	16:33
22	07:24	06:49	06:04	06:12	19:08 (AB11)	05:36	05:26	05:45	06:16	19:12 (AB11)	06:48	07:21	06:59	07:27
	17:03	17:42	18:15	19:50	18 19:26 (AB11)	20:22	20:41	20:32	19:53	19 19:31 (AB11)	19:01	18:11	16:36	16:34
23	07:24	06:48	06:02	06:11	19:09 (AB11)	05:35	05:27	05:46	06:17	19:11 (AB11)	06:49	07:23	07:00	07:27
	17:04	17:44	18:17	19:51	16 19:25 (AB11)	20:23	20:41	20:31	19:52	18 19:29 (AB11)	18:59	18:10	16:36	16:34
24	07:23	06:46	06:00	06:09	19:11 (AB11)	05:34	05:27	05:46	06:18	19:10 (AB11)	06:50	07:24	07:02	07:28
	17:05	17:45	18:18	19:52	11 19:22 (AB11)	20:24	20:42	20:30	19:50	18 19:28 (AB11)	18:57	18:08	16:35	16:35
25	07:22	06:45	05:58	06:08	05:34	05:27	05:47	06:19	19:09 (AB11)	06:51	06:51	06:25	07:03	07:28
	17:07	17:46	18:19	19:53	20:25	20:42	20:29	19:49	17 19:26 (AB11)	18:56	17:07	17:07	16:34	16:35
26	07:21	06:43	05:57	06:06	05:33	05:27	05:48	06:20	19:09 (AB11)	06:52	06:26	06:26	07:04	07:29
	17:08	17:47	18:20	19:54	20:25	20:42	20:28	19:47	16 19:25 (AB11)	18:54	17:05	16:34	16:34	16:36
27	07:21	06:42	05:55	06:05	05:32	05:28	05:49	06:21	19:08 (AB11)	06:54	06:27	06:27	07:05	07:29
	17:09	17:49	18:21	19:55	20:26	20:42	20:27	19:45	15 19:23 (AB11)	18:52	17:04	16:33	16:33	16:36
28	07:20	06:40	05:53	06:03	05:32	05:28	05:50	06:22	19:08 (AB11)	06:55	06:29	06:29	07:06	07:29
	17:10	17:50	18:22	19:57	20:27	20:42	20:26	19:44	14 19:22 (AB11)	18:50	17:03	16:33	16:37	16:37
29	07:19		06:52	06:02	05:31	05:29	05:51	06:23	19:08 (AB11)	06:56	06:30	07:07	07:30	07:30
	17:12		19:23	19:58	20:28	20:42	20:25	19:42	12 19:20 (AB11)	18:49	17:01	16:32	16:38	16:38
30	07:18		06:50	06:01	05:30	05:29	05:52	06:24	19:08 (AB11)	06:57	06:31	07:08	07:30	07:30
	17:13		19:24	19:59	20:29	20:42	20:24	19:41	10 19:18 (AB11)	18:47	17:00	16:32	16:39	16:39
31	07:17		06:48		05:30		05:53	06:25	19:09 (AB11)		06:32		07:30	07:30
	17:14		19:25		20:30		20:23	19:39	8 19:17 (AB11)		16:58		16:39	16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	9	344	296	285	
Total, worst case				203				199						

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: WF Abruzzo shadow flickering worst case Shadow receptor: R145 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (119)

### 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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:36	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:30
11	07:29 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:50 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:27 20:41	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	07:29 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	07:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:29 17:02	07:06 16:33	07:29 16:37
29	07:19 17:12		06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:30 17:01	07:07 16:32	07:29 16:38
30	07:18 17:13		06:50 19:24	06:01 19:59	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	07:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14		06:48 19:25		05:30 20:30		05:53 20:23	06:25 19:39	06:58 16:58			07:30 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flickering worst case Shadow receptor: R146 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (120)

### 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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
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11	07:29 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:50 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:31
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:47	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:27 20:41	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:41	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	07:29 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	07:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:29 17:02	07:06 16:33	07:29 16:37
29	07:19 17:12		06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:30 17:01	07:07 16:32	07:29 16:38
30	07:18 17:13		06:50 19:24	06:01 19:59	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	07:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14		06:48 19:25		05:30 20:30		05:53 20:23	06:25 19:39		06:32 16:58		07:30 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flickering worst case Shadow receptor: R148 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (121)

### 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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
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Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flickering worst case Shadow receptor: R149 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (122)

### 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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
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Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flickering worst case Shadow receptor: R150 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (123)

### 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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:30 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
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25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	07:29 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	07:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:29 17:03	07:06 16:33	07:29 16:37
29	07:19 17:12		06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:30 17:01	07:07 16:32	07:29 16:38
30	07:18 17:13		06:50 19:24	06:01 19:59	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	07:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14		06:48 19:25		05:30 20:30		05:53 20:23	06:25 19:39		06:32 16:58		07:30 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flikering worst case Shadow receptor: R155 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (124)

### 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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27		05:59 20:00	30	06:19 (AB03) 06:49 (AB04) 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28		05:58 20:01	29	06:18 (AB03) 06:47 (AB04) 20:31
3	07:30 16:42	07:14 17:18	06:36 17:53	06:43 19:29		05:57 20:02	28	06:16 (AB03) 06:44 (AB04) 20:32
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30		05:55 20:03	27	06:17 (AB03) 19:40 (AB11) 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31		05:54 20:04	13	06:28 (AB04) 19:41 (AB11) 20:33
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	2	06:57 (AB04) 06:59 (AB04) 20:05	4	05:53 19:37 (AB11) 05:27 19:42 (AB11) 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	5	06:55 (AB04) 07:00 (AB04) 20:06	5	05:51 19:42 (AB11) 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	7	06:53 (AB04) 07:00 (AB04) 20:07	6	05:50 19:37 (AB11) 20:35
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	9	06:52 (AB04) 07:01 (AB04) 20:09	7	05:49 19:37 (AB11) 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	11	06:50 (AB04) 07:01 (AB04) 20:10	9	05:48 19:37 (AB11) 20:37
11	07:30 16:50	07:05 17:29	06:22 18:03	06:30 19:38	13	06:48 (AB04) 07:01 (AB04) 20:11	10	05:47 19:37 (AB11) 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	15	06:47 (AB04) 07:02 (AB04) 20:12	10	05:46 19:38 (AB11) 20:38
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	17	06:45 (AB04) 07:02 (AB04) 20:13	11	05:45 19:38 (AB11) 20:38
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	18	06:44 (AB04) 07:02 (AB04) 20:14	11	05:44 19:39 (AB11) 20:39
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	20	06:42 (AB04) 07:02 (AB04) 20:15	11	05:42 19:40 (AB11) 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	21	06:40 (AB04) 07:01 (AB04) 20:16	10	05:41 19:41 (AB11) 20:39
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	22	06:39 (AB04) 07:01 (AB04) 20:17	10	05:40 19:42 (AB11) 20:40
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	23	06:37 (AB04) 07:00 (AB04) 20:18	6	05:39 19:44 (AB11) 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:47	25	06:36 (AB04) 07:01 (AB04) 20:19		05:39 20:40
20	07:26 17:00	06:52 17:40	06:07 18:13	06:15 19:48	26	06:34 (AB04) 07:00 (AB04) 20:20		05:38 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	26	06:33 (AB03) 06:59 (AB04) 20:21		05:37 20:41
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	27	06:31 (AB03) 06:58 (AB04) 20:22		05:36 20:41
23	07:24 17:04	06:48 17:44	06:02 18:17	06:11 19:51	28	06:30 (AB03) 06:58 (AB04) 20:23		05:35 20:41
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	29	06:28 (AB03) 06:57 (AB04) 20:24		05:34 20:42
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	29	06:27 (AB03) 06:56 (AB04) 20:24		05:34 20:42
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	30	06:26 (AB03) 06:56 (AB04) 20:25		05:33 20:42
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	30	06:24 (AB03) 06:54 (AB04) 20:26		05:32 20:42
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	30	06:23 (AB03) 06:53 (AB04) 20:27		05:32 20:42
29	07:19 17:12		06:52 19:23	06:02 19:58	30	06:21 (AB03) 06:51 (AB04) 20:28		05:31 20:42
30	07:18 17:13		06:50 19:24	06:01 19:59	30	06:20 (AB03) 06:50 (AB04) 20:29		05:30 20:42
31	07:17 17:14		06:48 19:25			05:30 20:30		
Potential sun hours	295	296	369	400		451		456
Total, worst case				523		237		

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: WF Abruzzo shadow flickering worst case Shadow receptor: R155 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (124)

### 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	05:29 20:42	05:54 20:22	19:48 (AB11) 19:37	06:48 (AB04) 18:45	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:21	19:48 (AB11) 19:36	06:49 (AB04) 18:44	06:35 16:56	07:11 16:31
3	05:31 20:41	05:56 20:19	19:48 (AB11) 19:34	06:50 (AB04) 18:42	06:36 16:55	07:12 16:31
4	05:31 20:41	05:57 20:18	19:47 (AB11) 19:32	06:51 (AB04) 18:40	06:37 16:53	07:13 16:31
5	05:32 20:41	05:58 20:17	19:47 (AB11) 19:31	06:52 (AB04) 18:38	06:38 16:52	07:14 16:31
6	05:32 20:41	05:59 20:16	19:47 (AB11) 19:29	06:53 (AB04) 18:37	06:40 16:51	07:15 16:31
7	05:33 20:40	06:00 20:15	19:47 (AB11) 19:27	06:54 (AB04) 18:35	06:41 16:50	07:16 16:30
8	05:34 20:40	06:01 20:13	06:36 (AB04) 19:25	07:05 18:33	06:42 16:49	07:17 16:30
9	05:34 20:40	06:02 20:12	06:26 (AB03) 19:24	06:35 18:32	06:43 16:48	07:17 16:30
10	05:35 20:39	06:03 20:11	06:26 (AB03) 19:22	06:36 18:30	06:45 16:47	07:18 16:30
11	05:36 20:39	06:04 20:09	06:27 (AB03) 19:20	06:37 18:28	06:46 16:46	07:19 16:30
12	05:36 20:38	06:06 20:08	06:28 (AB03) 19:18	06:38 18:27	06:47 16:45	07:20 16:30
13	05:37 20:38	06:07 20:07	06:29 (AB03) 19:17	06:39 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 20:05	06:30 (AB03) 19:15	06:40 18:24	06:50 16:43	07:22 16:31
15	05:39 20:37	06:09 20:04	06:31 (AB03) 19:13	06:41 18:22	06:51 16:42	07:22 16:31
16	05:39 20:36	06:10 20:02	06:32 (AB03) 19:11	06:42 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	06:33 (AB03) 19:10	06:43 18:19	06:53 16:40	07:24 16:32
18	05:41 20:35	06:12 19:59	06:34 (AB03) 19:08	06:44 18:17	06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58	06:35 (AB03) 19:06	06:45 18:16	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	06:36 (AB03) 19:04	06:46 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	06:15 19:55	06:37 (AB03) 19:03	06:47 18:13	06:58 16:37	07:26 16:33
22	05:45 20:32	06:16 19:53	06:38 (AB04) 19:01	06:48 18:11	06:59 16:36	07:27 16:34
23	05:46 20:31	06:17 19:52	06:39 (AB04) 18:59	06:49 18:10	07:00 16:36	07:27 16:34
24	05:46 20:30	06:18 19:50	06:40 (AB04) 18:57	06:50 18:08	07:02 16:35	07:28 16:35
25	05:47 20:29	06:19 19:49	06:41 (AB04) 18:56	06:51 17:07	07:03 16:34	07:28 16:35
26	05:48 20:28	19:54 (AB11) 20:02 (AB11)	06:20 19:47	06:42 (AB04) 18:54	06:26 17:05	07:04 16:34
27	05:49 20:27	19:52 (AB11) 20:02 (AB11)	06:21 19:45	06:43 (AB04) 18:52	06:27 17:04	07:05 16:36
28	05:50 20:26	19:51 (AB11) 20:02 (AB11)	06:22 19:44	06:44 (AB04) 18:50	06:29 17:03	07:06 16:33
29	05:51 20:25	19:50 (AB11) 20:01 (AB11)	06:23 19:42	06:45 (AB04) 18:49	06:30 17:01	07:07 16:38
30	05:52 20:24	19:49 (AB11) 20:00 (AB11)	06:24 19:41	06:46 (AB04) 18:47	06:31 17:00	07:08 16:39
31	05:53 20:23	19:49 (AB11) 19:59 (AB11)	06:25 19:39	06:47 (AB04) 18:45	06:32 16:58	07:30 16:39
Potential sun hours	462	430	375	344	296	285
Total, worst case	61	655	48			

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: WF Abruzzo shadow flikering worst case Shadow receptor: R159 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (125)  
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	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:51 (AB03) 20:42	05:29 24 06:17 (AB03)	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:51 (AB03) 20:41	05:29 24 06:17 (AB03)	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:50 (AB03) 20:41	05:28 21 06:11 (AB03)	05:54 (AB03) 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:50 (AB03) 20:41	05:28 21 06:11 (AB03)	05:57 (AB03) 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:50 (AB03) 20:41	05:28 22 06:12 (AB03)	05:58 (AB03) 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:49 (AB03) 20:41	05:27 22 06:11 (AB03)	05:59 (AB03) 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:49 (AB03) 20:40	05:27 22 06:11 (AB03)	06:00 (AB03) 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:49 (AB03) 20:40	05:27 23 06:12 (AB03)	06:01 (AB03) 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:17 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:49 (AB03) 20:40	05:26 23 06:12 (AB03)	06:02 (AB03) 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37	05:49 (AB03) 20:39	05:26 23 06:12 (AB03)	06:03 (AB03) 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:30
11	07:29 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:48 (AB03) 20:39	05:26 24 06:12 (AB03)	06:04 (AB03) 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:48 (AB03) 20:38	05:26 24 06:12 (AB03)	06:06 (AB03) 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:48 (AB03) 20:38	05:26 24 06:12 (AB03)	06:07 (AB03) 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:48 (AB03) 20:37	05:26 24 06:12 (AB03)	06:08 (AB03) 20:05	06:40 19:15	07:12 18:24	06:50 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:48 (AB03) 20:37	05:26 25 06:13 (AB03)	06:09 (AB03) 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:23 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	05:48 (AB03) 20:36	05:26 25 06:13 (AB03)	06:10 (AB03) 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:24 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:48 (AB03) 20:35	05:26 25 06:13 (AB03)	06:11 (AB03) 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:25 16:31
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:49 (AB03) 20:35	05:26 25 06:14 (AB03)	06:12 (AB03) 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:26 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:47	05:39 20:19	05:26 20:40	05:49 (AB03) 20:34	05:26 25 06:14 (AB03)	06:13 (AB03) 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:27 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:49 (AB03) 20:33	05:26 25 06:14 (AB03)	06:14 (AB03) 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:28 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:49 (AB03) 20:32	05:26 25 06:14 (AB03)	06:15 (AB03) 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:29 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:49 (AB03) 20:31	05:26 25 06:14 (AB03)	06:16 (AB03) 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:30 16:34
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:27 20:41	05:49 (AB03) 20:31	05:27 25 06:15 (AB03)	06:17 (AB03) 19:52	06:49 18:59	07:23 18:10	07:00 16:36	07:31 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:41	05:50 (AB03) 20:30	05:27 25 06:15 (AB03)	06:18 (AB03) 19:50	06:50 18:57	07:24 18:08	07:01 16:35	07:32 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:42	05:50 (AB03) 20:29	05:27 25 06:15 (AB03)	06:19 (AB03) 19:49	06:51 18:56	07:25 18:07	07:02 16:34	07:33 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:50 (AB03) 20:28	05:27 25 06:15 (AB03)	06:20 (AB03) 19:47	06:52 18:54	07:26 18:06	07:03 16:34	07:34 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:51 (AB03) 20:27	05:28 25 06:16 (AB03)	06:21 (AB03) 19:45	06:53 18:52	07:27 18:05	07:04 16:33	07:35 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:51 (AB03) 20:26	05:28 24 06:15 (AB03)	06:22 (AB03) 19:44	06:54 18:50	07:28 18:04	07:05 16:33	07:36 16:37
29	07:19 17:12	06:39 17:52	05:52 18:23	06:02 19:57	05:31 20:28	05:29 20:42	05:52 (AB03) 20:25	05:29 24 06:16 (AB03)	06:23 (AB03) 19:42	06:55 18:49	07:29 18:03	07:06 16:32	07:37 16:38
30	07:18 17:13	06:38 17:53	05:51 18:24	06:01 19:58	05:30 20:29	05:29 20:42	05:52 (AB03) 20:24	05:29 24 06:16 (AB03)	06:24 (AB03) 19:41	06:56 18:47	07:30 18:02	07:07 16:32	07:38 16:39
31	07:17 17:14	06:37 17:54	05:50 18:25	06:00 19:59	05:30 20:30	05:29 20:42	05:53 (AB03) 20:23	05:29 24 06:16 (AB03)	06:25 (AB03) 19:39	06:57 18:46	07:31 18:01	07:08 16:32	07:39 16:40
Potential sun hours	295	296	369	400	451	456	417	430	375	344	296	285	
Total, worst case					163	709	417						

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)

Project:

WF Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:49/3.5.587

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering worst case Shadow receptor: R170 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (126)  
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	07:30	07:16	06:39	06:47	05:59	06:19 (AB11)	05:29	05:30	05:54	06:17 (AB11)	06:27	06:58	06:34	07:10
	16:41	17:16	17:51	19:27	20:00	06:47 (AB11)	20:31	20:42	20:22	06:55 (AB11)	19:37	18:45	16:57	16:32
2	07:30	07:15	06:37	06:45	05:58	06:18 (AB11)	05:29	05:30	05:55	06:18 (AB11)	06:28	06:59	06:35	07:11
	16:41	17:17	17:52	19:28	20:01	06:48 (AB11)	20:31	20:42	20:21	06:55 (AB11)	19:36	18:44	16:56	16:31
3	07:31	07:14	06:36	06:43	05:57	06:16 (AB11)	05:28	05:31	05:56	06:19 (AB11)	06:29	07:00	06:36	07:12
	16:42	17:18	17:54	19:29	20:02	06:47 (AB11)	20:32	20:41	20:20	06:56 (AB11)	19:34	18:42	16:55	16:31
4	07:31	07:13	06:34	06:41	05:55	06:15 (AB11)	05:28	05:31	05:57	06:20 (AB11)	06:30	07:01	06:37	07:13
	16:43	17:20	17:55	19:30	20:03	06:47 (AB11)	20:33	20:41	20:18	06:56 (AB11)	19:32	18:40	16:54	16:31
5	07:31	07:12	06:32	06:40	05:54	06:14 (AB11)	05:28	05:32	05:58	06:21 (AB11)	06:31	07:02	06:39	07:14
	16:44	17:21	17:56	19:31	20:04	06:47 (AB11)	20:34	20:41	20:17	06:56 (AB11)	19:31	18:39	16:52	16:31
6	07:30	07:11	06:31	06:38	05:53	06:13 (AB11)	05:27	05:32	05:59	06:22 (AB11)	06:32	07:03	06:40	07:15
	16:45	17:22	17:57	19:32	20:05	06:47 (AB11)	20:34	20:41	20:16	06:56 (AB11)	19:29	18:37	16:51	16:31
7	07:30	07:10	06:29	06:36	05:52	06:12 (AB11)	05:27	05:33	06:00	06:23 (AB11)	06:33	07:04	06:41	07:16
	16:46	17:24	17:58	19:33	20:06	06:47 (AB11)	20:35	20:40	20:15	06:56 (AB11)	19:27	18:35	16:50	16:31
8	07:30	07:08	06:27	06:35	05:50	06:10 (AB11)	05:27	05:34	06:01	06:24 (AB11)	06:34	07:06	06:42	07:17
	16:47	17:25	17:59	19:34	20:08	06:45 (AB11)	20:35	20:40	20:13	06:57 (AB11)	19:26	18:34	16:49	16:30
9	07:30	07:07	06:26	06:33	05:49	06:09 (AB11)	05:26	05:34	06:03	06:25 (AB11)	06:35	07:07	06:43	07:18
	16:48	17:26	18:01	19:36	20:09	06:45 (AB11)	20:36	20:40	20:12	06:56 (AB11)	19:24	18:32	16:48	16:30
10	07:30	07:06	06:24	06:31	05:48	06:08 (AB11)	05:26	05:35	06:04	06:26 (AB11)	06:36	07:08	06:45	07:18
	16:49	17:27	18:02	19:37	20:10	06:45 (AB11)	20:37	20:39	20:11	06:56 (AB11)	19:22	18:30	16:47	16:30
11	07:30	07:05	06:23	06:30	05:47	06:07 (AB11)	05:26	05:36	06:05	06:27 (AB11)	06:37	07:09	06:46	07:19
	16:50	17:29	18:03	19:38	20:11	06:44 (AB11)	20:37	20:39	20:10	06:56 (AB11)	19:20	18:29	16:46	16:30
12	07:29	07:03	06:21	06:28	05:46	06:06 (AB11)	05:26	05:36	06:06	06:28 (AB11)	06:38	07:10	06:47	07:20
	16:51	17:30	18:04	19:39	20:12	06:44 (AB11)	20:38	20:38	20:08	06:56 (AB11)	19:19	18:27	16:45	16:31
13	07:29	07:02	06:19	06:26	05:45	06:05 (AB11)	05:26	05:37	06:07	06:29 (AB11)	06:39	07:11	06:48	07:21
	16:52	17:31	18:05	19:40	20:13	06:43 (AB11)	20:38	20:38	20:07	06:56 (AB11)	19:17	18:25	16:44	16:31
14	07:29	07:01	06:17	06:25	05:44	06:04 (AB11)	05:26	05:38	06:08	06:30 (AB11)	06:40	07:12	06:50	07:22
	16:54	17:33	18:06	19:41	20:14	06:43 (AB11)	20:39	20:37	20:05	06:55 (AB11)	19:15	18:24	16:43	16:31
15	07:28	06:59	06:16	06:23	05:43	06:04 (AB11)	05:26	05:39	06:09	06:31 (AB11)	06:41	07:13	06:51	07:23
	16:55	17:34	18:08	19:42	20:15	06:42 (AB11)	20:39	20:37	20:04	06:55 (AB11)	19:13	18:22	16:42	16:31
16	07:28	06:58	06:14	06:22	05:42	06:05 (AB11)	05:26	05:40	06:10	06:32 (AB11)	06:42	07:15	06:52	07:23
	16:56	17:35	18:09	19:43	20:16	06:41 (AB11)	20:40	20:36	20:02	06:54 (AB11)	19:12	18:20	16:41	16:31
17	07:27	06:57	06:12	06:20	05:41	06:05 (AB11)	05:26	05:40	06:11	06:33 (AB11)	06:43	07:16	06:53	07:24
	16:57	17:36	18:10	19:44	20:17	06:40 (AB11)	20:40	20:35	7 06:29 (AB11)	06:36 (AB11)	06:46	07:19	16:40	16:32
18	07:27	06:55	06:11	06:18	05:40	06:06 (AB11)	05:26	05:41	06:26 (AB11)	06:36 (AB11)	06:44	07:17	06:55	07:25
	16:58	17:38	18:11	19:46	20:18	06:40 (AB11)	20:40	20:35	14 06:40 (AB11)	06:52 (AB11)	07:00	18:17	16:39	16:32
19	07:26	06:54	06:09	06:17	05:39	06:08 (AB11)	05:26	05:42	06:24 (AB11)	06:34 (AB11)	06:45	07:18	06:56	07:25
	16:59	17:39	18:12	19:47	4 06:40 (AB11)	20:19	32 06:40 (AB11)	20:41	18 06:42 (AB11)	06:51 (AB11)	07:06	18:16	16:38	16:32
20	07:26	06:52	06:07	06:15	05:38	06:34 (AB11)	05:38	05:43	06:23 (AB11)	06:34 (AB11)	06:46	07:19	06:57	07:26
	17:01	17:40	18:13	19:48	7 06:41 (AB11)	20:20	29 06:38 (AB11)	20:41	21 06:44 (AB11)	06:54 (AB11)	07:05	18:14	16:38	16:33
21	07:25	06:51	06:05	06:14	05:37	06:33 (AB11)	05:37	05:44	06:22 (AB11)	06:35 (AB11)	06:47	07:20	06:58	07:26
	17:02	17:41	18:14	19:49	10 06:43 (AB11)	20:21	27 06:37 (AB11)	20:41	23 06:45 (AB11)	06:55 (AB11)	07:03	18:13	16:37	16:33
22	07:24	06:50	06:04	06:12	05:36	06:31 (AB11)	05:36	05:45	06:21 (AB11)	06:36 (AB11)	06:48	07:22	06:59	07:27
	17:03	17:43	18:16	19:50	12 06:43 (AB11)	20:22	25 06:36 (AB11)	20:41	26 06:47 (AB11)	06:54 (AB11)	9 06:47 (AB11)	18:11	16:36	16:34
23	07:24	06:48	06:02	06:11	05:35	06:30 (AB11)	05:35	05:46	06:20 (AB11)	06:37 (AB11)	06:49	07:23	07:01	07:27
	17:04	17:44	18:17	19:51	15 06:45 (AB11)	20:23	22 06:34 (AB11)	20:41	28 06:48 (AB11)	06:57 (AB11)	18:59	18:10	16:36	16:34
24	07:23	06:47	06:00	06:09	05:34	06:29 (AB11)	05:34	05:47	06:18 (AB11)	06:38 (AB11)	06:50	07:24	07:02	07:28
	17:06	17:45	18:18	19:52	17 06:46 (AB11)	20:24	19 06:33 (AB11)	20:42	30 06:48 (AB11)	06:50 (AB11)	4 06:44 (AB11)	18:08	16:35	16:35
25	07:22	06:45	05:59	06:08	05:34	06:27 (AB11)	05:34	05:48	06:17 (AB11)	06:38 (AB11)	06:50	07:25	07:03	07:28
	17:07	17:46	18:19	19:53	19 06:46 (AB11)	20:25	15 06:31 (AB11)	20:42	33 06:50 (AB11)	06:51 (AB11)	19:49	18:56	17:07	16:34
26	07:21	06:44	05:57	06:06	05:33	06:26 (AB11)	05:33	05:48	06:16 (AB11)	06:39 (AB11)	06:50	07:26	07:04	07:29
	17:08	17:47	18:20	19:54	21 06:47 (AB11)	20:26	11 06:29 (AB11)	20:42	35 06:51 (AB11)	06:52 (AB11)	19:47	18:54	17:05	16:34
27	07:21	06:42	05:55	06:05	05:32	06:24 (AB11)	05:32	05:49	06:15 (AB11)	06:39 (AB11)	06:51	07:25	07:05	07:29
	17:09	17:49	18:21	19:56	22 06:46 (AB11)	20:26	20 06:35 (AB11)	20:42	36 06:51 (AB11)	06:53 (AB11)	19:46	18:52	17:04	16:33
28	07:20	06:40	05:53	06:04	05:32	06:23 (AB11)	05:32	05:50	06:14 (AB11)	06:40 (AB11)	06:52	07:24	07:06	07:29
	17:11	17:50	18:22	19:57	24 06:47 (AB11)	20:27	18 06:36 (AB11)	20:42	37 06:52 (AB11)	06:54 (AB11)	19:44	18:51	17:03	16:33
29	07:19		06:52	06:02	05:31	06:22 (AB11)	05:31	05:49	06:14 (AB11)	06:41 (AB11)	06:53	07:23	07:07	07:30
	17:12		19:23	19:58	25 06:47 (AB11)	20:28	17 06:35 (AB11)	20:42	39 06:53 (AB11)	06:54 (AB11)	19:42	18:49	17:01	16:33
30	07:18		06:50	06:01	05:30	06:20 (AB11)	05:30	05:52	06:15 (AB11)	06:42 (AB11)	06:53	07:23	07:09	07:30
	17:13		19:24	19:59	27 06:47 (AB11)	20:29	16 06:34 (AB11)	20:42	39 06:54 (AB11)	06:54 (AB11)	19:41	18:47	17:00	16:32
31	07:17		06:48		05:30			05:53	06:16 (AB11)	06:45 (AB11)	06:54	07:23	07:09	07:30
	17:14		19:26		20:30			20:23	38 06:54 (AB11)	06:55 (AB11)	19:39	18:46	16:59	16:40
Potential sun hours	295	296	369	400	451	462	456	462	430	375	344	296	285	
Total, worst case				203	806			424	599					

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: WF Abruzzo shadow flickering worst case Shadow receptor: R171 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (127)  
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	07:30 16:41 16:43	07:16 17:16 17:15	06:39 17:51 17:52	06:47 19:27 19:28	05:59 20:00 20:01							
2	07:30 16:41 16:42	07:15 17:17 17:18	06:37 17:52 17:54	06:45 19:28 19:29	05:58 20:01 20:02							
3	07:30 16:42 16:43	07:14 17:18 17:19	06:36 17:54 17:55	06:43 19:29 19:30	05:57 20:02 20:03							
4	07:31 16:43 16:44	07:13 17:20 17:21	06:34 17:55 17:56	06:41 19:30 19:31	05:55 20:03 20:04							
5	07:31 16:44 16:45	07:12 17:21 17:22	06:32 17:56 17:57	06:40 19:31 19:32	05:54 20:04 20:05							
6	07:30 16:45 16:46	07:11 17:22 17:23	06:31 17:57 17:58	06:38 19:32 19:33	05:53 20:05 20:06							
7	07:30 16:46 16:47	07:10 17:23 17:24	06:29 17:58 17:59	06:36 19:33 19:34	05:52 20:06 20:08							
8	07:30 16:47 16:48	07:08 17:25 17:26	06:27 17:59 18:00	06:35 19:34 19:35	05:50 20:08 20:09							
9	07:30 16:48 16:49	07:07 17:26 17:27	06:26 18:01 18:02	06:33 19:35 19:37	05:49 20:09 20:10	2 06:09 (AB11)						
10	07:30 16:49 16:50	07:06 17:27 17:28	06:24 18:02 18:03	06:31 19:37 19:38	05:48 20:10 20:11	06:08 (AB11)						
11	07:30 16:50 16:51	07:05 17:29 17:30	06:22 18:03 18:04	06:30 19:38 19:39	05:47 20:11 20:12	06:07 (AB11)						
12	07:29 16:51 16:52	07:03 17:30 17:31	06:21 18:04 18:05	06:28 19:39 19:40	05:46 20:12 20:13	06:06 (AB11)						
13	07:29 16:52 16:53	07:02 17:31 17:32	06:19 18:05 18:06	06:26 19:40 19:41	05:45 20:13 20:14	06:05 (AB11)						
14	07:29 16:54 16:55	07:01 17:32 17:33	06:17 18:06 18:07	06:25 19:41 19:42	05:44 20:14 20:15	06:04 (AB11)						
15	07:28 16:55 16:56	06:59 17:34 17:35	06:16 18:08 18:09	06:23 19:42 19:43	05:43 20:15 20:16	06:03 (AB11)						
16	07:28 16:56 16:57	06:58 17:35 17:36	06:14 18:09 18:10	06:22 19:42 19:43	05:42 20:16 20:17	06:02 (AB11)						
17	07:27 16:57 16:58	06:57 17:36 17:37	06:12 18:10 18:11	06:20 19:43 19:44	05:41 20:17 20:18	06:01 (AB11)						
18	07:27 16:58 16:59	06:55 17:38 17:39	06:11 18:11 18:12	06:18 19:46 19:47	05:40 20:18 20:19	06:00 (AB11)						
19	07:26 16:59 17:00	06:54 17:39 17:40	06:09 18:12 18:13	06:17 19:47 19:48	05:39 20:19 20:20	06:00 (AB11)						
20	07:26 17:01 17:02	06:52 17:40 17:41	06:07 18:13 18:14	06:15 19:48 19:49	05:38 20:20 20:21	05:59 (AB11)						
21	07:25 17:02 17:03	06:51 17:41 17:42	06:05 18:14 18:15	06:14 19:49 19:50	05:37 20:21 20:22	05:58 (AB11)						
22	07:24 17:03 17:04	06:50 17:43 17:44	06:04 18:15 18:16	06:12 19:50 19:51	05:36 20:22 20:23	05:57 (AB11)						
23	07:24 17:04 17:05	06:48 17:44 17:45	06:02 18:17 18:18	06:11 19:51 19:52	05:35 20:23 20:24	05:56 (AB11)						
24	07:23 17:06 17:07	06:47 17:45 17:46	06:00 18:18 18:19	06:09 19:52 19:53	05:34 20:24 20:25	05:55 (AB11)						
25	07:22 17:07 17:08	06:45 17:46 17:47	05:59 18:19 18:20	06:08 19:53 19:54	05:34 20:25 20:26	05:54 (AB11)						
26	07:21 17:08 17:09	06:43 17:47 17:48	05:57 18:20 18:21	06:06 19:54 19:55	05:33 20:26 20:27	05:54 (AB11)						
27	07:21 17:09 17:10	06:42 17:49 17:50	05:55 18:21 18:22	06:05 19:56 19:57	05:32 20:27 20:28	05:54 (AB11)						
28	07:20 17:11 17:12	06:40 17:50 17:51	05:53 18:22 18:23	06:04 19:57 19:58	05:32 20:28 20:29	05:53 (AB11)						
29	07:19 17:12 17:13	06:39 17:51 17:52	05:52 18:23 18:24	06:03 19:58 19:59	05:31 20:29 20:30	05:53 (AB11)						
30	07:18 17:13 17:14	06:38 17:52 17:53	05:51 18:24 18:25	06:02 19:59 20:00	05:30 20:30 20:31	05:52 (AB11)						
31	07:17 17:14 17:15	06:37 17:53 17:54	05:50 18:25 18:26	06:01 20:00 20:01	05:29 20:31 20:32	05:52 (AB11)						
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case					598	1423	1103	25				

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: WF Abruzzo shadow flickering worst case Shadow receptor: R172 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (128)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	05:59 20:00	05:29 20:31	05:30 20:42	05:54 20:22	06:27 19:37	06:58 18:45	06:34 16:57	07:10 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:42	05:55 20:21	06:28 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:36 17:54	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:20	06:29 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:31 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:54	07:13 16:31
5	07:31 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:39	06:39 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:10 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:08	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:26	07:06 18:33	06:42 16:49	07:17 16:30
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Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flickering worst case Shadow receptor: R173 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (129)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	05:59 20:00	05:29 20:31	05:30 20:42	05:54 20:22	06:27 19:37	06:58 18:45	06:34 16:57	07:10 16:32
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3	07:30 16:42	07:14 17:18	06:36 17:54	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:20	06:29 19:34	07:00 18:42	06:36 16:55	07:12 16:31
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31	07:17 17:14		06:48 19:26		05:30 20:30		05:53 20:23	06:25 19:39	06:32 16:59		07:30 16:39	
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flickering worst case Shadow receptor: R178 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (130)  
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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
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Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flickering worst case Shadow receptor: R185 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (131)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	18:34 (AB07) 19:26	05:59 20:00
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	18:33 (AB07) 19:28	05:58 20:01
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	18:34 (AB07) 19:29	05:57 20:02
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	18:33 (AB07) 19:30	05:55 20:03
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	18:33 (AB07) 19:31	05:54 20:04
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	18:34 (AB07) 19:32	05:53 20:05
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	18:35 (AB07) 19:33	05:52 20:06
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	18:36 (AB07) 18:49 (AB07)	05:50 20:07
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	18:39 (AB07) 18:47 (AB07)	05:49 20:08
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	20:09
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	18:46 (AB06) 19:19 (AB06)
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	18:46 (AB06) 19:19 (AB06)
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	18:46 (AB06) 19:19 (AB06)
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	18:46 (AB06) 19:19 (AB06)
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:43 20:15	18:47 (AB06) 19:19 (AB06)
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16	18:47 (AB06) 19:18 (AB06)
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17	18:47 (AB06) 19:18 (AB06)
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:40 20:18	18:48 (AB06) 19:17 (AB06)
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	18:48 (AB06) 19:17 (AB06)
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	18:50 (AB06) 19:17 (AB06)
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	18:50 (AB06) 19:16 (AB06)
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	18:51 (AB06) 19:15 (AB06)
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	18:51 (AB06) 19:14 (AB06)
24	07:23 17:06	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	18:53 (AB06) 19:14 (AB06)
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:25	18:54 (AB06) 19:13 (AB06)
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 17:44 (AB07) 17:49 (AB07)	05:33 20:26	18:54 (AB06) 19:12 (AB06)
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 17:41 (AB07) 17:53 (AB07)	05:32 20:27	18:56 (AB06) 19:11 (AB06)
28	07:20 17:11	06:40 17:50	05:53 18:22	06:03 17:38 (AB07) 17:54 (AB07)	05:32 20:28	18:58 (AB06) 19:09 (AB06)
29	07:19 17:12	06:39 19:23	05:52 19:23	06:02 18:36 (AB07) 18:55 (AB07)	05:31 20:29	19:01 (AB06) 19:08 (AB06)
30	07:18 17:13	06:38 19:24	05:51 19:24	06:01 18:36 (AB07) 18:56 (AB07)	05:30 20:30	19:02 (AB06) 19:09 (AB06)
31	07:17 17:14	06:37 19:25	05:50 19:25	06:00 18:35 (AB07) 18:56 (AB07)	05:30 20:31	19:03 (AB06) 19:10 (AB06)
Potential sun hours	295	296	369	400	451	455
Total, worst case			93	226	778	

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: WF Abruzzo shadow flickering worst case Shadow receptor: R185 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (131)

### 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	05:30 20:41	05:54 20:22	18:57 (AB06) 19:30 (AB06)	06:26 19:37	06:58 18:45	06:33 16:57
2	05:30 20:41	05:55 20:20	18:57 (AB06) 19:30 (AB06)	06:27 19:36	06:59 18:44	06:35 16:56
3	05:31 20:41	05:56 20:19	18:57 (AB06) 19:30 (AB06)	06:29 19:34	18:37 (AB07) 18:45 (AB07)	06:36 16:55
4	05:31 20:41	05:57 20:18	18:57 (AB06) 19:30 (AB06)	06:30 19:32	18:34 (AB07) 18:47 (AB07)	06:37 16:53
5	05:32 20:41	05:58 20:17	18:57 (AB06) 19:29 (AB06)	06:31 19:30	18:32 (AB07) 18:48 (AB07)	06:38 16:52
6	05:32 20:40	05:59 20:16	18:57 (AB06) 19:29 (AB06)	06:32 19:29	18:31 (AB07) 18:49 (AB07)	06:40 16:51
7	05:33 20:40	06:00 20:14	18:57 (AB06) 19:29 (AB06)	06:33 19:27	18:29 (AB07) 18:50 (AB07)	06:41 16:50
8	05:34 20:40	06:01 20:13	18:57 (AB06) 19:28 (AB06)	06:34 19:25	18:28 (AB07) 18:50 (AB07)	06:42 16:49
9	05:34 20:39	06:02 20:12	18:58 (AB06) 19:27 (AB06)	06:35 19:24	18:28 (AB07) 18:50 (AB07)	06:43 16:48
10	05:35 20:39	06:04 20:11	18:58 (AB06) 19:26 (AB06)	06:36 19:22	18:27 (AB07) 18:50 (AB07)	06:44 16:47
11	05:36 20:39	06:05 20:09	18:59 (AB06) 19:25 (AB06)	06:37 19:20	18:27 (AB07) 18:49 (AB07)	06:46 16:46
12	05:36 20:38	06:06 20:08	19:00 (AB06) 19:24 (AB06)	06:38 19:18	18:27 (AB07) 18:49 (AB07)	06:47 16:45
13	05:37 20:38	06:07 20:07	19:01 (AB06) 19:23 (AB06)	06:39 19:17	18:27 (AB07) 18:47 (AB07)	06:48 16:44
14	05:38 20:37	19:11 (AB06) 19:14 (AB06)	06:08 20:05	19:03 (AB06) 19:15	18:27 (AB07) 18:46 (AB07)	06:49 16:43
15	05:39 20:36	19:08 (AB06) 19:18 (AB06)	06:09 20:04	19:05 (AB06) 19:18 (AB06)	18:28 (AB07) 18:45 (AB07)	06:51 16:42
16	05:40 20:36	19:07 (AB06) 19:20 (AB06)	06:10 20:02	06:42 19:11	18:29 (AB07) 18:43 (AB07)	06:52 16:41
17	05:40 20:35	19:04 (AB06) 19:21 (AB06)	06:11 20:01	06:43 19:10	18:32 (AB07) 18:40 (AB07)	06:53 16:40
18	05:41 20:34	19:04 (AB06) 19:22 (AB06)	06:12 19:59	06:44 19:08	18:31 (AB07) 18:17	06:54 16:39
19	05:42 20:34	19:03 (AB06) 19:23 (AB06)	06:13 19:58	06:45 19:06	18:30 (AB07) 18:16	06:56 16:38
20	05:43 20:33	19:02 (AB06) 19:24 (AB06)	06:14 19:56	06:46 19:04	18:29 (AB07) 18:14	06:57 16:38
21	05:44 20:32	19:01 (AB06) 19:25 (AB06)	06:15 19:55	06:47 19:03	18:28 (AB07) 18:13	06:58 16:37
22	05:45 20:31	19:01 (AB06) 19:26 (AB06)	06:16 19:53	06:48 19:01	18:27 (AB07) 18:11	06:59 16:36
23	05:46 20:31	18:59 (AB06) 19:26 (AB06)	06:17 19:52	06:49 18:59	18:26 (AB07) 18:10	07:00 16:36
24	05:47 20:30	18:59 (AB06) 19:27 (AB06)	06:18 19:50	06:50 18:57	18:25 (AB07) 18:08	07:01 16:35
25	05:48 20:29	18:58 (AB06) 19:28 (AB06)	06:19 19:49	06:51 18:56	18:24 (AB07) 17:07	07:02 16:34
26	05:48 20:28	18:58 (AB06) 19:28 (AB06)	06:20 19:47	06:52 18:54	18:23 (AB07) 17:05	07:03 16:34
27	05:49 20:27	18:58 (AB06) 19:29 (AB06)	06:21 19:45	06:53 18:52	18:22 (AB07) 17:04	07:04 16:33
28	05:50 20:26	18:57 (AB06) 19:29 (AB06)	06:22 19:44	06:55 18:50	18:21 (AB07) 17:03	07:05 16:33
29	05:51 20:25	18:57 (AB06) 19:29 (AB06)	06:23 19:42	06:56 18:49	18:20 (AB07) 17:01	07:06 16:33
30	05:52 20:24	18:57 (AB06) 19:30 (AB06)	06:24 19:41	06:57 18:47	18:19 (AB07) 17:00	07:07 16:32
31	05:53 20:23	18:57 (AB06) 19:30 (AB06)	06:25 19:39		18:18 (AB07) 16:59	07:08 16:31
Potential sun hours	462	430	375	344	296	285
Total, worst case	428	419	265			

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: WF Abruzzo shadow flickering worst case Shadow receptor: R186 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (132)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	18:28 (AB07) 20:00	05:59 18:27 (AB06) 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	18:34 (AB07) 20:01	31 18:28 (AB06) 20:29
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	20:02	30 18:58 (AB06) 20:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	20:03	28 18:56 (AB06) 20:32
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	20:04	26 18:29 (AB06) 20:33
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	20:05	25 18:55 (AB06) 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	20:06	22 18:32 (AB06) 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	20:07	19 18:54 (AB06) 20:36
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	20:08	16 18:33 (AB06) 20:37
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	20:09	10 18:50 (AB06) 20:38
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	20:10	10 18:47 (AB06) 20:39
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	20:12	16 18:52 (AB06) 20:40
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	20:13	16 18:50 (AB06) 20:41
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	20:14	16 18:50 (AB06) 20:42
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	18:39 (AB06) 20:15	13 18:52 (AB06) 20:43
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	18:35 (AB06) 20:16	19 18:54 (AB06) 20:44
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	18:34 (AB06) 20:17	22 18:56 (AB06) 20:45
18	07:27 16:58	06:55 17:37	06:10 18:11	17:33 (AB07) 19:45	06:18 20:18	25 18:32 (AB06) 20:46
19	07:26 16:59	06:54 17:39	06:09 18:12	17:37 (AB07) 19:46	06:17 20:19	27 18:57 (AB06) 20:47
20	07:25 17:01	06:52 17:40	06:07 18:13	17:27 (AB07) 19:48	06:15 20:20	30 18:29 (AB06) 20:48
21	07:25 17:02	06:51 17:41	06:05 18:14	17:39 (AB07) 19:49	06:14 20:21	31 18:59 (AB06) 20:49
22	07:24 17:03	06:49 17:42	06:04 18:15	17:23 (AB07) 19:50	06:12 20:22	31 18:28 (AB06) 20:50
23	07:23 17:04	06:48 17:44	06:02 18:16	17:41 (AB07) 19:51	06:11 20:23	32 18:59 (AB06) 20:51
24	07:23 17:06	06:46 17:45	06:00 18:18	17:22 (AB07) 19:52	06:09 20:24	33 18:27 (AB06) 20:52
25	07:22 17:07	06:45 17:46	05:58 18:19	17:43 (AB07) 19:53	06:08 20:25	33 19:00 (AB06) 20:53
26	07:21 17:08	06:43 17:47	05:57 18:20	17:21 (AB07) 19:54	06:06 20:26	33 18:27 (AB06) 20:54
27	07:20 17:09	06:42 17:49	05:55 18:21	17:43 (AB07) 19:55	06:05 20:27	33 19:00 (AB06) 20:55
28	07:20 17:11	06:40 17:50	05:53 18:22	17:44 (AB07) 19:56	06:03 20:28	33 18:59 (AB06) 20:56
29	07:19 17:12	06:40 17:50	05:53 18:22	17:22 (AB07) 19:56	06:03 20:28	33 18:27 (AB06) 20:56
30	07:18 17:13	06:40 17:50	05:53 18:22	17:42 (AB07) 19:56	06:03 20:28	33 19:00 (AB06) 20:56
31	07:17 17:14	06:40 17:50	05:53 18:22	18:22 (AB07) 19:56	06:02 20:28	33 18:27 (AB06) 20:56
Potential sun hours	295	296	369	400	451	455
Total, worst case			233	464	207	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: WF Abruzzo shadow flikering worst case Shadow receptor: R186 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (132)

### 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	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32		
2	05:30 20:41	05:55 20:20	06:27 19:36	06:59 18:44	06:35 16:56	07:10 16:31		
3	05:31 20:41	05:56 20:19	18:50 (AB06) 18:55 (AB06)	06:28 19:34	07:00 18:42	06:36 16:55	07:11 16:31	
4	05:31 20:41	05:57 20:18	18:46 (AB06) 18:59 (AB06)	06:30 19:32	07:01 18:40	06:37 16:53	07:12 16:31	
5	05:32 20:41	05:58 20:17	18:44 (AB06) 19:01 (AB06)	06:31 19:30	07:02 18:38	06:38 16:52	07:13 16:31	
6	05:32 20:40	05:59 20:16	18:42 (AB06) 19:02 (AB06)	06:32 19:29	07:03 18:37	06:40 16:51	07:14 16:31	
7	05:33 20:40	06:00 20:14	18:41 (AB06) 19:04 (AB06)	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:31	
8	05:34 20:40	06:01 20:13	18:40 (AB06) 19:05 (AB06)	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30	
9	05:34 20:39	06:02 20:12	18:38 (AB06) 19:05 (AB06)	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30	
10	05:35 20:39	06:04 20:11	18:38 (AB06) 19:06 (AB06)	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30	
11	05:36 20:39	06:05 20:09	18:37 (AB06) 19:07 (AB06)	06:37 19:20	18:22 (AB07) 18:26 (AB07)	07:09 18:28	06:46 16:46	07:19 16:30
12	05:36 20:38	06:06 20:08	18:36 (AB06) 19:07 (AB06)	06:38 19:18	18:18 (AB07) 18:29 (AB07)	07:10 18:27	06:47 16:45	07:20 16:31
13	05:37 20:38	06:07 20:07	18:35 (AB06) 19:07 (AB06)	06:39 19:17	18:16 (AB07) 18:31 (AB07)	07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 20:05	18:35 (AB06) 19:07 (AB06)	06:40 19:15	18:14 (AB07) 18:32 (AB07)	07:12 18:24	06:49 16:43	07:21 16:31
15	05:39 20:36	06:09 20:04	18:34 (AB06) 19:07 (AB06)	06:41 19:13	18:12 (AB07) 18:33 (AB07)	07:13 18:22	06:51 16:42	07:22 16:31
16	05:40 20:36	06:10 20:02	18:34 (AB06) 19:07 (AB06)	06:42 19:11	18:11 (AB07) 18:33 (AB07)	07:14 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	18:34 (AB06) 19:07 (AB06)	06:43 19:10	18:11 (AB07) 18:33 (AB07)	07:16 18:19	06:53 16:40	07:24 16:32
18	05:41 20:34	06:12 19:59	18:33 (AB06) 19:07 (AB06)	06:44 19:08	18:10 (AB07) 18:32 (AB07)	07:17 18:17	06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58	18:33 (AB06) 19:06 (AB06)	06:45 19:06	18:10 (AB07) 18:31 (AB07)	07:18 18:16	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	18:33 (AB06) 19:06 (AB06)	06:46 19:04	18:10 (AB07) 18:29 (AB07)	07:19 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	06:15 19:55	18:34 (AB06) 19:05 (AB06)	06:47 19:03	18:10 (AB07) 18:27 (AB07)	07:20 18:13	06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 19:53	18:34 (AB06) 19:04 (AB06)	06:48 19:01	18:10 (AB07) 18:26 (AB07)	07:21 18:11	06:59 16:36	07:27 16:34
23	05:46 20:31	06:17 19:52	18:34 (AB06) 19:03 (AB06)	06:49 18:59	18:11 (AB07) 18:24 (AB07)	07:23 18:10	07:00 16:36	07:27 16:34
24	05:47 20:30	06:18 19:50	18:35 (AB06) 19:02 (AB06)	06:50 18:57	18:12 (AB07) 18:23 (AB07)	07:24 18:08	07:01 16:35	07:28 16:35
25	05:48 20:29	06:19 19:49	18:36 (AB06) 19:01 (AB06)	06:51 18:56	18:14 (AB07) 18:21 (AB07)	06:25 17:07	07:03 16:34	07:28 16:35
26	05:48 20:28	06:20 19:47	18:37 (AB06) 18:59 (AB06)	06:52 18:54		06:26 17:05	07:04 16:34	07:28 16:36
27	05:49 20:27	06:21 19:45	18:38 (AB06) 18:57 (AB06)	06:53 18:52		06:27 17:04	07:05 16:33	07:29 16:37
28	05:50 20:26	06:22 19:44	18:41 (AB06) 18:54 (AB06)	06:55 18:50		06:29 17:03	07:06 16:33	07:29 16:37
29	05:51 20:25	06:23 19:42		06:56 18:49		06:30 17:01	07:07 16:33	07:29 16:38
30	05:52 20:24	06:24 19:41		06:57 18:47		06:31 17:00	07:08 16:32	07:30 16:39
31	05:53 20:23	06:25 19:39				06:32 16:59		07:30 16:39
Potential sun hours	462	430	375	239	344	296	285	
Total, worst case		678		239				

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 Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:

15/11/2023 18:49/3.5.587

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flikering worst case Shadow receptor: R189 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (133)  
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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32		
2	07:30 16:41	07:15 17:52	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:20	06:27 19:36	06:59 18:44	06:35 16:56	07:10 16:31		
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:11 16:31		
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:12 16:31		
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:30	07:02 18:38	06:38 16:52	07:13 16:31		
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:14 16:31		
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:30		
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30		
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:39	06:02 20:12	06:35 19:24	07:06 18:32	06:43 16:48	07:17 16:30		
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	05:26 20:36	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30		
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30		
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:31		
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:37	06:07 20:06	19:05 (AB06) 19:07 (AB06)	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31	
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:37	05:38 20:37	06:08 20:05	19:02 (AB06) 19:06 (AB06)	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31	
15	07:28 16:55	06:59 15:20 (AB10)	06:16 15:22 (AB10)	06:23 17:34	05:42 18:07	05:26 19:42	05:39 20:36	06:09 20:04	19:01 (AB06) 19:04 (AB06)	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31	
16	07:28 16:56	2 15:22 (AB10)	06:58 15:21 (AB10)	06:14 17:35	06:22 18:09	06:14 19:43	05:41 20:16	05:26 20:39	18:59 (AB06) 19:03 (AB06)	06:42 19:11	07:14 18:20	06:52 16:41	12 15:10 (AB10)	07:23 16:31
17	07:27 16:57	3 15:24 (AB10)	06:56 15:22 (AB10)	06:12 17:36	06:20 18:10	06:20 19:44	05:40 20:17	05:40 20:35	18:58 (AB06) 19:02 (AB06)	06:43 19:10	07:16 18:19	06:53 16:40	18 15:25 (AB10)	07:24 16:32
18	07:27 16:58	6 15:28 (AB10)	06:55 15:23 (AB10)	06:10 17:37	06:18 18:11	06:18 19:45	05:40 20:18	05:41 20:34	18:57 (AB06) 19:01 (AB06)	06:44 19:08	07:17 18:17	06:54 16:39	19 15:06 (AB10)	07:24 16:32
19	07:26 16:59	8 15:31 (AB10)	06:54 15:24 (AB10)	06:09 17:39	06:17 18:12	06:17 19:46	05:39 20:19	05:42 20:40	18:56 (AB06) 19:00 (AB06)	06:45 19:06	07:18 18:16	06:55 16:38	18 15:22 (AB10)	07:25 16:32
20	07:25 17:01	10 15:34 (AB10)	06:52 15:26 (AB10)	06:15 17:40	06:16 18:13	06:15 19:48	05:38 20:20	05:43 20:33	18:56 (AB06) 18:58 (AB06)	06:46 19:04	07:19 18:14	06:57 16:38	15 15:18 (AB10)	07:26 16:33
21	07:25 17:02	11 15:37 (AB10)	06:51 15:27 (AB10)	06:14 17:41	06:14 18:14	06:14 19:49	05:37 20:21	05:44 20:41	18:56 (AB06) 18:57 (AB06)	06:47 19:03	07:20 18:13	06:58 16:37	15 15:03 (AB10)	07:26 16:33
22	07:24 17:03	13 15:40 (AB10)	06:49 15:28 (AB10)	06:12 17:42	06:12 18:15	06:12 19:50	05:36 20:22	05:45 20:41	18:55 (AB06) 18:56 (AB06)	06:48 19:01	07:21 18:11	06:59 16:36	12 15:02 (AB10)	07:27 16:34
23	07:23 17:04	15 15:43 (AB10)	06:48 15:29 (AB10)	06:11 17:43	06:11 18:16	06:11 19:51	05:35 20:22	05:46 20:41	18:55 (AB06) 18:56 (AB06)	06:49 19:02	07:22 18:10	07:00 16:36	10 15:01 (AB10)	07:27 16:34
24	07:23 17:05	18 15:47 (AB10)	06:48 15:32 (AB10)	06:10 17:44	06:09 18:17	06:09 19:52	05:34 20:22	05:47 20:41	18:54 (AB06) 18:55 (AB06)	06:49 19:03	07:23 18:09	07:01 16:36	10 15:11 (AB10)	07:28 16:34
25	07:22 17:07	19 15:51 (AB10)	06:45 15:34 (AB10)	06:08 17:45	06:08 18:18	06:08 19:52	05:33 20:23	05:48 20:41	18:53 (AB06) 18:54 (AB06)	06:49 19:04	07:24 18:08	07:02 16:35	8 15:08 (AB10)	07:28 16:35
26	07:21 17:08	18 15:52 (AB10)	06:45 15:34 (AB10)	06:08 17:45	06:08 18:18	06:08 19:52	05:33 20:23	05:48 20:41	18:53 (AB06) 18:54 (AB06)	06:49 19:04	07:24 18:08	07:02 16:35	8 15:08 (AB10)	07:28 16:35
27	07:20 17:09	12 15:49 (AB10)	06:42 15:31 (AB10)	06:05 17:42	06:05 18:15	06:05 19:51	05:32 20:22	05:48 20:40	18:52 (AB06) 18:53 (AB06)	06:49 19:04	07:25 18:07	07:03 16:34	6 15:05 (AB10)	07:28 16:35
28	07:19 17:11	11 15:46 (AB10)	06:41 15:28 (AB10)	06:04 17:41	06:04 18:14	06:04 19:50	05:31 20:21	05:48 20:41	18:51 (AB06) 18:52 (AB06)	06:49 19:04	07:26 18:06	07:04 16:33	4 15:04 (AB10)	07:29 16:36
29	07:19 17:12	10 15:43 (AB10)	06:40 15:25 (AB10)	06:03 17:40	06:03 18:13	06:03 19:49	05:30 20:20	05:48 20:40	18:50 (AB06) 18:51 (AB06)	06:49 19:04	07:27 18:05	07:05 16:32	2 15:01 (AB10)	07:29 16:37
30	07:18 17:13	9 15:40 (AB10)	06:39 15:22 (AB10)	06:02 17:39	06:02 18:12	06:02 19:48	05:29 20:19	05:48 20:40	18:50 (AB06) 18:51 (AB06)	06:49 19:04	07:28 18:04	07:06 16:31	1 15:00 (AB10)	07:30 16:38
31	07:17 17:14	8 15:37 (AB10)	06:38 15:19 (AB10)	06:01 17:38	06:01 18:11	06:01 19:47	05:28 20:18	05:48 20:40	18:49 (AB06) 18:50 (AB06)	06:49 19:04	07:29 18:03	07:07 16:30	0 14:59 (AB10)	07:30 16:39
Potential sun hours	295		296	400		451	455	430		375	344	296	137	285
Total, worst case	135		369	26		451	462	430		29				285

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: WF Abruzzo shadow flikering worst case Shadow receptor: R190 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (134)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26		05:59 20:00	18	19:00 (AB06) 20:30	15	19:50 (AB05) 20:05 (AB05)
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28		05:58 20:01	16	19:01 (AB06) 19:17 (AB06)	15	19:51 (AB05) 20:06 (AB05)
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29		05:57 20:02	14	19:01 (AB06) 19:15 (AB06)	16	19:50 (AB05) 20:06 (AB05)
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30		05:55 20:03	11	19:03 (AB06) 19:14 (AB06)	16	19:51 (AB05) 20:07 (AB05)
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31		05:54 20:04	3	19:07 (AB06) 19:10 (AB06)	17	19:51 (AB05) 20:08 (AB05)
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32		05:53 20:05		05:27 20:34	18	19:50 (AB05) 20:08 (AB05)
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33		05:52 20:06		05:27 20:35	18	19:51 (AB05) 20:09 (AB05)
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34		05:50 20:07		05:27 20:35	18	19:51 (AB05) 20:09 (AB05)
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35		05:49 20:08		05:26 20:36	18	19:52 (AB05) 20:10 (AB05)
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36		05:48 20:09		05:26 20:36	19	19:52 (AB05) 20:11 (AB05)
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38		05:47 20:10		05:26 20:37	20	19:52 (AB05) 20:12 (AB05)
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39		05:46 20:12		05:26 20:37	19	19:52 (AB05) 20:11 (AB05)
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40		05:45 20:13		05:26 20:38	20	19:52 (AB05) 20:12 (AB05)
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41		05:44 20:14		05:26 20:38	20	19:52 (AB05) 20:12 (AB05)
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42		05:42 20:15		05:26 20:39	20	19:53 (AB05) 20:13 (AB05)
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43		05:41 20:16		05:26 20:39	20	19:53 (AB05) 20:13 (AB05)
17	07:27 16:57	06:56 17:36	06:12 18:10	06:20 19:44		05:40 20:17		05:26 20:40	20	19:53 (AB05) 20:13 (AB05)
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45		05:40 20:18		05:26 20:40	20	19:54 (AB05) 20:14 (AB05)
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	1	19:06 (AB06) 19:07 (AB06)	20:19	05:39 20:40	21	19:54 (AB05) 20:15 (AB05)
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	5	19:03 (AB06) 19:08 (AB06)	20:20	05:38 20:41	21	19:54 (AB05) 20:15 (AB05)
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	9	19:02 (AB06) 19:11 (AB06)	20:21	05:37 20:41	21	19:54 (AB05) 20:15 (AB05)
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	12	19:00 (AB06) 19:12 (AB06)	20:22	05:36 19:56 (AB05)	21	19:54 (AB05) 20:15 (AB05)
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	15	19:00 (AB06) 19:15 (AB06)	20:22	05:35 19:54 (AB05)	21	19:55 (AB05) 20:16 (AB05)
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	18	18:58 (AB06) 19:16 (AB06)	20:23	05:34 19:53 (AB05)	20	19:55 (AB05) 20:15 (AB05)
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	20	18:58 (AB06) 19:18 (AB06)	20:24	05:34 19:52 (AB05)	20	19:55 (AB05) 20:15 (AB05)
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	21	18:59 (AB06) 19:20 (AB06)	20:25	05:33 20:00 (AB05)	20	19:56 (AB05) 20:16 (AB05)
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	22	18:58 (AB06) 19:20 (AB06)	20:26	05:32 20:01 (AB05)	20	19:56 (AB05) 20:16 (AB05)
28	07:19 17:11	06:40 17:50	05:53 18:22	06:03 19:56	22	18:58 (AB06) 19:20 (AB06)	20:27	05:32 20:02 (AB05)	20	19:55 (AB05) 20:15 (AB05)
29	07:19 17:12		06:52 19:23	06:02 19:57	21	18:59 (AB06) 19:20 (AB06)	20:28	05:31 20:03 (AB05)	20	19:56 (AB05) 20:16 (AB05)
30	07:18 17:13		06:50 19:24	06:01 19:59	20	18:59 (AB06) 19:19 (AB06)	20:29	05:30 19:50 (AB05)	19	19:56 (AB05) 20:15 (AB05)
31	07:17 17:14		06:48 19:25			05:30 20:29	14	19:51 (AB05) 20:05 (AB05)		
Potential sun hours	295	296	369	400		451		455		
Total, worst case				186		147		573		

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: WF Abruzzo shadow flickering worst case Shadow receptor: R190 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (134)

### 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	05:30 20:41	19:57 (AB05) 20:16 (AB05)	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32	
2	05:30 20:41	19:56 (AB05) 20:15 (AB05)	05:55 20:20	06:27 19:36	06:59 18:44	06:35 16:56	07:10 16:31	
3	05:31 20:41	19:57 (AB05) 20:16 (AB05)	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:11 16:31	
4	05:31 20:41	19:56 (AB05) 20:15 (AB05)	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:12 16:31	
5	05:32 20:41	19:57 (AB05) 20:15 (AB05)	05:58 20:17	06:31 19:30	07:02 18:38	06:38 16:52	07:13 16:31	
6	05:32 20:40	19:57 (AB05) 20:14 (AB05)	05:59 20:16	06:32 19:29	07:03 18:37	06:39 16:51	07:14 16:31	
7	05:33 20:40	19:57 (AB05) 20:14 (AB05)	06:00 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:30	
8	05:34 20:40	19:58 (AB05) 20:14 (AB05)	06:01 20:13	19:15 (AB06) 19:21 (AB06)	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30
9	05:34 20:39	19:57 (AB05) 20:13 (AB05)	06:02 20:12	19:12 (AB06) 19:24 (AB06)	06:35 19:24	07:06 18:32	06:43 16:48	07:17 16:30
10	05:35 20:39	19:58 (AB05) 20:13 (AB05)	06:03 20:11	19:10 (AB06) 19:25 (AB06)	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30
11	05:36 20:38	19:58 (AB05) 20:13 (AB05)	06:05 20:09	19:09 (AB06) 19:26 (AB06)	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	05:36 20:38	19:58 (AB05) 20:12 (AB05)	06:06 20:08	19:08 (AB06) 19:27 (AB06)	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:31
13	05:37 20:37	19:59 (AB05) 20:12 (AB05)	06:07 20:06	19:07 (AB06) 19:28 (AB06)	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	19:59 (AB05) 20:12 (AB05)	06:08 20:05	19:06 (AB06) 19:28 (AB06)	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	05:39 20:36	20:00 (AB05) 20:11 (AB05)	06:09 20:04	19:06 (AB06) 19:28 (AB06)	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	05:40 20:36	20:01 (AB05) 20:11 (AB05)	06:10 20:02	19:06 (AB06) 19:28 (AB06)	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	20:00 (AB05) 20:10 (AB05)	06:11 20:01	19:05 (AB06) 19:27 (AB06)	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	05:41 20:34	20:01 (AB05) 20:09 (AB05)	06:12 19:59	19:05 (AB06) 19:24 (AB06)	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	05:42 20:34	20:02 (AB05) 20:09 (AB05)	06:13 19:58	19:05 (AB06) 19:22 (AB06)	06:45 19:06	07:18 18:16	06:55 16:38	07:25 16:32
20	05:43 20:33	20:04 (AB05) 20:08 (AB05)	06:14 19:56	19:06 (AB06) 19:20 (AB06)	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	20:05 (AB05) 20:08 (AB05)	06:15 19:55	19:06 (AB06) 19:18 (AB06)	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 19:53	06:16 19:53	19:07 (AB06) 19:15 (AB06)	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	05:46 20:30	06:17 19:52	06:17 19:52	19:08 (AB06) 19:13 (AB06)	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	05:47 20:30	06:18 19:50	06:18 19:50	06:50 18:57	07:24 18:08	07:01 16:35	07:28 16:35	
25	05:48 20:29	06:19 19:49	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	07:28 16:35	
26	05:48 20:28	06:20 19:47	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	07:28 16:36	
27	05:49 20:27	06:21 19:45	06:21 19:45	06:53 18:52	07:27 17:04	07:05 16:33	07:29 16:37	
28	05:50 20:26	06:22 19:44	06:22 19:44	06:55 18:50	07:28 17:03	07:06 16:33	07:29 16:37	
29	05:51 20:25	06:23 19:42	06:23 19:42	06:56 18:49	07:29 17:01	07:07 16:32	07:29 16:38	
30	05:52 20:24	06:24 19:40	06:24 19:40	06:57 18:47	07:30 17:00	07:08 16:32	07:30 16:39	
31	05:53 20:23	06:25 19:39	06:25 19:39	06:58 18:47	07:31 17:00	07:09 16:32	07:30 16:39	
Potential sun hours	462	430	430	375	344	296	285	
Total, worst case	283	253	253					

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: WF Abruzzo shadow flikering worst case Shadow receptor: R191 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (135)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	19:00 (AB06) 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	19:02 (AB06) 20:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	19:03 (AB06) 20:32
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	05:26 20:36
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39
17	07:27 16:57	06:56 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	19:05 (AB06) 20:18	05:26 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	19:14 (AB06) 20:19	05:26 20:40
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	19:03 (AB06) 20:20	05:26 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	19:01 (AB06) 20:21	19:54 (AB05) 20:41
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	19:18 (AB06) 20:22	19:52 (AB05) 20:41
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	19:17 (AB06) 20:22	19:50 (AB05) 20:41
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	19:20 (AB06) 20:23	19:50 (AB05) 20:41
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	18:58 (AB06) 20:24	19:49 (AB05) 20:41
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	18:58 (AB06) 20:25	19:48 (AB05) 20:41
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	19:20 (AB06) 20:26	19:49 (AB05) 20:42
28	07:19 17:11	06:40 17:50	05:53 18:22	06:03 19:56	18:59 (AB06) 20:27	19:48 (AB05) 20:42
29	07:19 17:12		06:52 19:23	06:02 19:57	19:19 (AB06) 20:28	19:49 (AB05) 20:42
30	07:18 17:13		06:50 19:24	06:01 19:59	18:59 (AB06) 20:29	20:03 (AB05) 20:41
31	07:17 17:14		06:48 19:25		19:17 (AB06) 20:29	19:49 (AB05) 20:04 (AB05)
Potential sun hours	295	296	369	400	451	455
Total, worst case				244	155	574

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: WF Abruzzo shadow flickering worst case Shadow receptor: R191 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (135)

### 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	05:30 20:41	19:55 (AB05) 20:15 (AB05)	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57
2	05:30 20:41	19:55 (AB05) 20:15 (AB05)	05:55 20:20	06:27 19:35	06:59 18:44	06:35 16:56
3	05:31 20:41	19:56 (AB05) 20:16 (AB05)	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55
4	05:31 20:41	19:55 (AB05) 20:15 (AB05)	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53
5	05:32 20:41	19:56 (AB05) 20:15 (AB05)	05:58 20:17	06:31 19:30	07:02 18:38	06:38 16:52
6	05:32 20:40	19:55 (AB05) 20:14 (AB05)	05:59 20:16	06:32 19:29	07:03 18:37	06:39 16:51
7	05:33 20:40	19:56 (AB05) 20:14 (AB05)	06:00 20:14	06:33 19:27	07:04 18:35	06:41 16:50
8	05:34 20:40	19:56 (AB05) 20:14 (AB05)	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49
9	05:34 20:39	19:55 (AB05) 20:13 (AB05)	06:02 20:12	19:15 (AB06) 19:19 (AB06)	06:35 18:32	07:06 16:48
10	05:35 20:39	19:56 (AB05) 20:13 (AB05)	06:03 20:11	19:12 (AB06) 19:22 (AB06)	06:36 19:22	07:08 18:30
11	05:36 20:38	19:56 (AB05) 20:13 (AB05)	06:05 20:09	19:10 (AB06) 19:24 (AB06)	06:37 19:20	07:09 18:28
12	05:36 20:38	19:56 (AB05) 20:12 (AB05)	06:06 20:08	19:08 (AB06) 19:25 (AB06)	06:38 19:18	07:10 18:27
13	05:37 20:37	19:56 (AB05) 20:12 (AB05)	06:07 20:06	19:07 (AB06) 19:26 (AB06)	06:39 19:17	07:11 18:25
14	05:38 20:37	19:57 (AB05) 20:11 (AB05)	06:08 20:05	19:06 (AB06) 19:26 (AB06)	06:40 19:15	07:12 18:24
15	05:39 20:36	19:57 (AB05) 20:11 (AB05)	06:09 20:04	19:06 (AB06) 19:27 (AB06)	06:41 19:13	07:13 18:22
16	05:40 20:36	19:58 (AB05) 20:11 (AB05)	06:10 20:02	19:05 (AB06) 19:27 (AB06)	06:42 19:11	07:14 18:20
17	05:40 20:35	19:58 (AB05) 20:09 (AB05)	06:11 20:01	19:05 (AB06) 19:27 (AB06)	06:43 19:10	07:16 18:19
18	05:41 20:34	19:58 (AB05) 20:09 (AB05)	06:12 19:59	19:05 (AB06) 19:26 (AB06)	06:44 19:08	07:17 18:17
19	05:42 20:34	19:59 (AB05) 20:08 (AB05)	06:13 19:58	19:04 (AB06) 19:26 (AB06)	06:45 19:06	07:18 18:16
20	05:43 20:33	20:00 (AB05) 20:08 (AB05)	06:14 19:56	19:05 (AB06) 19:25 (AB06)	06:46 19:04	07:19 18:14
21	05:44 20:32	20:01 (AB05) 20:07 (AB05)	06:15 19:55	19:05 (AB06) 19:25 (AB06)	06:47 19:03	07:20 18:13
22	05:45 20:31	20:02 (AB05) 20:07 (AB05)	06:16 19:53	19:05 (AB06) 19:24 (AB06)	06:48 19:01	07:21 18:11
23	05:46 20:30	20:02 (AB05) 20:05 (AB05)	06:17 19:52	19:06 (AB06) 19:22 (AB06)	06:49 18:59	07:22 18:10
24	05:47 20:30	20:08 (AB05) 19:50	06:18 19:50	19:07 (AB06) 19:21 (AB06)	06:50 18:57	07:24 18:08
25	05:48 20:29	20:08 (AB05) 19:49	06:19 19:49	19:10 (AB06) 19:18 (AB06)	06:51 18:56	07:25 17:07
26	05:48 20:28	20:08 (AB05) 19:47	06:20 19:47	19:18 (AB06) 18:54	06:52 17:05	07:26 16:58
27	05:49 20:27	20:08 (AB05) 19:45	06:21 19:45	19:18 (AB06) 18:52	06:53 17:04	07:27 16:57
28	05:50 20:26	20:08 (AB05) 19:44	06:22 19:44	19:18 (AB06) 18:50	06:55 17:03	07:28 16:56
29	05:51 20:25	20:08 (AB05) 19:42	06:23 19:42	19:18 (AB06) 18:49	06:56 17:01	07:29 16:55
30	05:52 20:24	20:08 (AB05) 19:40	06:24 19:40	19:18 (AB06) 18:47	06:57 17:00	07:30 16:54
31	05:53 20:23	20:08 (AB05) 19:39	06:25 19:39	19:18 (AB06) 18:47	06:58 16:58	07:31 16:53
Potential sun hours	462	430	430	375	344	296
Total, worst case	332	289	289	375	344	285

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: WF Abruzzo shadow flikering worst case Shadow receptor: R192 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (136)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	17 19:01 (AB06) 20:30	19:50 (AB05) 20:05 (AB05)
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	16 19:02 (AB06) 20:31	19:50 (AB05) 20:06 (AB05)
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	12 19:03 (AB06) 20:32	19:50 (AB05) 20:06 (AB05)
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	8 19:05 (AB06) 20:32	19:50 (AB05) 20:07 (AB05)
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:27 20:33	19:51 (AB05) 20:08 (AB05)
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	19:50 (AB05) 20:08 (AB05)
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	19:51 (AB05) 20:09 (AB05)
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	19:51 (AB05) 20:09 (AB05)
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	19:51 (AB05) 20:10 (AB05)
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	05:26 20:36	19:52 (AB05) 20:11 (AB05)
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37	19:52 (AB05) 20:12 (AB05)
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	19:52 (AB05) 20:11 (AB05)
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	19:52 (AB05) 20:12 (AB05)
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	19:52 (AB05) 20:12 (AB05)
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	19:53 (AB05) 20:12 (AB05)
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	19:53 (AB05) 20:12 (AB05)
17	07:27 16:57	06:56 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	19:53 (AB05) 20:12 (AB05)
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:40 20:18	05:26 20:40	19:54 (AB05) 20:13 (AB05)
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:39 19:07 (AB06) 20:19	05:26 20:40	19:54 (AB05) 20:13 (AB05)
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	05:38 19:04 (AB06) 20:20	05:26 20:41	19:55 (AB05) 20:13 (AB05)
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 19:03 (AB06) 20:21	05:26 19:54 (AB05) 20:41	19:55 (AB05) 20:13 (AB05)
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 19:01 (AB06) 20:22	05:26 19:53 (AB05) 20:41	19:55 (AB05) 20:13 (AB05)
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 19:00 (AB06) 20:22	05:27 19:52 (AB05) 20:41	19:55 (AB05) 20:14 (AB05)
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 19:21 (AB06) 20:23	05:27 19:52 (AB05) 20:41	19:55 (AB05) 20:14 (AB05)
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 19:00 (AB06) 20:24	05:27 19:51 (AB05) 20:41	19:55 (AB05) 20:14 (AB05)
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 19:00 (AB06) 20:25	05:28 19:50 (AB05) 20:41	19:56 (AB05) 20:15 (AB05)
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 18:59 (AB06) 20:26	05:28 19:50 (AB05) 20:42	19:56 (AB05) 20:15 (AB05)
28	07:19 17:11	06:40 17:50	05:53 18:22	06:03 19:56	05:32 19:00 (AB06) 20:27	05:28 19:50 (AB05) 20:42	19:56 (AB05) 20:15 (AB05)
29	07:19 17:12		06:52 19:23	06:02 19:57	05:31 19:21 (AB06) 20:28	05:29 19:50 (AB05) 20:42	19:56 (AB05) 20:16 (AB05)
30	07:18 17:13		06:50 19:24	06:01 19:59	05:30 19:00 (AB06) 20:29	05:29 19:50 (AB05) 20:41	19:56 (AB05) 20:15 (AB05)
31	07:17 17:14		06:48 19:25		05:30 19:19 (AB06) 20:29	05:30 19:50 (AB05) 20:41	
Potential sun hours	295	296	369	400	451	455	
Total, worst case				227	153	554	

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: WF Abruzzo shadow flickering worst case Shadow receptor: R192 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (136)

### 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	05:30 20:41	19:57 (AB05) 20:16 (AB05)	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57
2	05:30 20:41	19:56 (AB05) 20:15 (AB05)	05:55 20:20	06:27 19:35	06:59 18:44	06:35 16:56
3	05:31 20:41	19:57 (AB05) 20:16 (AB05)	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55
4	05:31 20:41	19:56 (AB05) 20:15 (AB05)	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53
5	05:32 20:41	19:57 (AB05) 20:15 (AB05)	05:58 20:17	06:31 19:30	07:02 18:38	06:38 16:52
6	05:32 20:40	19:56 (AB05) 20:14 (AB05)	05:59 20:16	06:32 19:29	07:03 18:37	06:39 16:51
7	05:33 20:40	19:57 (AB05) 20:14 (AB05)	06:00 20:14	06:33 19:27	07:04 18:35	06:41 16:50
8	05:34 20:40	19:57 (AB05) 20:14 (AB05)	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49
9	05:34 20:39	19:57 (AB05) 20:13 (AB05)	06:02 20:12	19:14 (AB06) 19:24 (AB06)	06:35 18:32	07:06 16:48
10	05:35 20:39	19:57 (AB05) 20:13 (AB05)	06:03 20:11	19:12 (AB06) 19:25 (AB06)	06:36 19:22	07:08 18:30
11	05:36 20:38	19:58 (AB05) 20:13 (AB05)	06:05 20:09	19:11 (AB06) 19:27 (AB06)	06:37 19:20	07:09 18:28
12	05:36 20:38	19:57 (AB05) 20:12 (AB05)	06:06 20:08	19:10 (AB06) 19:27 (AB06)	06:38 19:18	07:10 18:27
13	05:37 20:37	19:58 (AB05) 20:12 (AB05)	06:07 20:06	19:09 (AB06) 19:28 (AB06)	06:39 19:17	07:11 18:25
14	05:38 20:37	19:58 (AB05) 20:12 (AB05)	06:08 20:05	19:08 (AB06) 19:28 (AB06)	06:40 19:15	07:12 18:24
15	05:39 20:36	19:59 (AB05) 20:11 (AB05)	06:09 20:04	19:07 (AB06) 19:29 (AB06)	06:41 19:13	07:13 18:22
16	05:40 20:36	19:59 (AB05) 20:11 (AB05)	06:10 20:02	19:07 (AB06) 19:29 (AB06)	06:42 19:11	07:14 18:20
17	05:40 20:35	19:59 (AB05) 20:10 (AB05)	06:11 20:01	19:07 (AB06) 19:28 (AB06)	06:43 19:10	07:16 18:19
18	05:41 20:34	20:00 (AB05) 20:09 (AB05)	06:12 19:59	19:07 (AB06) 19:28 (AB06)	06:44 19:08	07:17 18:17
19	05:42 20:34	20:01 (AB05) 20:09 (AB05)	06:13 19:58	19:07 (AB06) 19:28 (AB06)	06:45 19:06	07:18 18:16
20	05:43 20:33	20:02 (AB05) 20:08 (AB05)	06:14 19:56	19:07 (AB06) 19:27 (AB06)	06:46 19:04	07:19 18:14
21	05:44 20:32	20:03 (AB05) 20:08 (AB05)	06:15 19:55	19:07 (AB06) 19:26 (AB06)	06:47 19:03	07:20 18:13
22	05:45 20:31	20:04 (AB05) 20:07 (AB05)	06:16 19:53	19:08 (AB06) 19:25 (AB06)	06:48 19:01	07:21 18:11
23	05:46 20:30	19:53 (AB05) 19:52	06:17 19:52	19:09 (AB06) 19:23 (AB06)	06:49 18:59	07:22 18:10
24	05:47 20:30	06:18 19:50	06:18 19:50	19:11 (AB06) 19:20 (AB06)	06:50 18:57	07:24 18:08
25	05:48 20:29	06:19 19:49	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34
26	05:48 20:28	06:20 19:47	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34
27	05:49 20:27	06:21 19:45	06:21 19:45	06:53 18:52	06:27 17:04	07:05 16:33
28	05:50 20:26	06:22 19:44	06:22 19:44	06:55 18:50	06:28 17:03	07:06 16:33
29	05:51 20:25	06:23 19:42	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32
30	05:52 20:24	06:24 19:40	06:24 19:40	06:57 18:47	06:31 17:00	07:08 16:32
31	05:53 20:23	06:25 19:39	06:25 19:39	06:58 18:47	06:32 16:58	07:30 16:39
Potential sun hours	462	430	375	344	296	285
Total, worst case	302	281				

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: WF Abruzzo shadow flickering worst case Shadow receptor: R193 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (137)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:20	06:27 19:35	06:59 18:44	06:35 16:56	07:10 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:11 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:30	07:02 18:38	06:38 16:52	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	06:39 16:51	07:14 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:39	06:02 20:12	06:35 19:24	07:06 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	05:26 20:36	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:37	06:07 20:06	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:56 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:15 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:40 20:18	05:26 20:40	05:41 20:34	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:55 16:38	07:25 16:32
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:40	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:25 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:22	05:27 20:41	05:46 20:30	06:17 19:52	06:49 18:59	07:22 18:10	07:00 16:36	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:01 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:41	05:48 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:28 20:41	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	07:28 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:53 18:52	07:27 17:04	07:05 16:33	07:29 16:37
28	07:19 17:11	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:28 17:03	07:06 16:33	07:29 16:37
29	07:19 17:12		06:52 19:23	06:02 19:57	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:29 17:01	07:07 16:32	07:29 16:38
30	07:18 17:13		06:50 19:24	06:01 19:59	05:30 20:29	05:29 20:41	05:52 20:24	06:24 19:40	06:57 18:47	07:30 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14		06:48 19:25		05:30 20:29		05:53 20:23	06:25 19:39		06:32 16:58		07:30 16:39
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flikering worst case Shadow receptor: R194 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (138)  
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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	17:27 (AB10) 17:31 (AB10)	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:20	06:27 19:35	06:59 18:44	17:27 (AB10) 17:29 (AB10)	06:35 16:56	07:10 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	17:26 (AB10) 17:28 (AB10)	06:36 16:55	07:11 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	17:26 (AB10) 17:27 (AB10)	06:37 16:53	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:30	07:02 18:38	17:26 (AB10) 17:27 (AB10)	06:38 16:52	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	17:27 (AB10)	06:39 16:51	07:14 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:14	06:33 19:27	07:04 18:35	17:27 (AB10)	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:28 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	17:27 (AB10)	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	16:49 (AB10) 16:50 (AB10)	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:12	06:02 19:24	06:35 18:32	17:27 (AB10)	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	16:48 (AB10) 16:50 (AB10)	06:31 19:36	05:48 20:09	05:26 20:36	05:35 20:11	06:03 19:22	06:36 18:30	17:27 (AB10)	06:44 16:47	07:18 16:30
11	07:29 16:50	07:04 17:29	06:22 18:03	16:48 (AB10) 16:51 (AB10)	06:30 19:38	05:47 20:10	05:26 20:37	05:36 20:09	06:05 19:20	06:37 18:28	17:27 (AB10)	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	16:49 (AB10) 16:52 (AB10)	06:28 19:39	05:46 20:11	05:26 20:37	05:36 20:08	06:06 19:18	06:38 18:27	17:27 (AB10)	06:47 16:45	07:20 16:31
13	07:29 16:52	07:02 17:31	06:19 18:05	16:48 (AB10) 16:52 (AB10)	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:06	06:07 19:17	06:39 18:25	17:27 (AB10)	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:32	06:17 18:06	16:48 (AB10) 16:52 (AB10)	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:05	06:08 19:15	06:40 18:24	17:27 (AB10)	06:49 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	16:48 (AB10) 16:52 (AB10)	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:04	06:09 19:13	06:41 18:22	17:27 (AB10)	06:51 16:42	07:23 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	16:50 (AB10) 16:53 (AB10)	06:22 19:43	05:41 20:16	05:26 20:39	06:10 20:02	06:42 19:11	06:42 18:20	17:27 (AB10)	06:52 16:41	07:24 16:31
17	07:27 16:57	06:56 17:36	06:12 18:10	16:50 (AB10) 16:53 (AB10)	06:20 19:44	05:40 20:17	05:26 20:40	06:11 20:01	06:43 19:10	06:43 18:19	17:27 (AB10)	06:53 16:40	07:25 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	16:50 (AB10) 16:53 (AB10)	06:18 19:45	05:40 20:18	05:26 20:40	06:12 19:59	06:44 19:08	06:44 18:17	17:27 (AB10)	06:54 16:39	07:26 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	16:52 (AB10) 16:54 (AB10)	06:17 19:46	05:40 20:19	05:26 20:40	06:13 19:58	06:45 19:06	06:45 18:16	17:27 (AB10)	06:55 16:38	07:27 16:32
20	07:25 17:01	06:52 17:40	06:07 18:13	16:53 (AB10) 16:54 (AB10)	06:15 19:48	05:38 20:20	05:26 20:40	06:14 19:56	06:46 19:04	06:46 18:14	17:27 (AB10)	06:57 16:38	07:28 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	06:47 18:13	17:27 (AB10)	06:58 16:37	07:29 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	06:48 18:11	17:27 (AB10)	06:59 16:36	07:30 16:34
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:22	05:27 20:41	05:46 20:30	06:17 19:52	06:49 18:59	06:49 18:10	17:38 (AB10) 17:39 (AB10)	07:00 16:36	07:31 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	06:50 18:08	17:38 (AB10) 17:34 (AB10)	07:01 16:35	07:32 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:41	05:48 20:29	06:19 19:49	06:51 18:56	06:51 18:07	17:34 (AB10) 17:37 (AB10)	07:02 16:34	07:33 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:28 20:41	05:48 20:28	06:20 19:47	06:52 18:54	06:52 18:08	17:33 (AB10) 17:36 (AB10)	07:03 16:34	07:34 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:53 18:52	06:53 18:09	17:31 (AB10) 17:35 (AB10)	07:04 16:33	07:35 16:37
28	07:19 17:11	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	06:55 18:10	17:30 (AB10) 17:34 (AB10)	07:05 16:33	07:36 16:37
29	07:19 17:12	06:40 17:51	05:52 18:23	06:02 19:57	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	06:56 18:11	17:29 (AB10) 17:33 (AB10)	07:06 16:32	07:37 16:38
30	07:18 17:13	06:40 17:52	05:51 18:24	06:01 19:58	05:30 20:29	05:29 20:41	05:52 20:24	06:24 19:40	06:57 18:47	06:57 18:12	17:28 (AB10) 17:32 (AB10)	07:07 16:32	07:38 16:39
31	07:17 17:14	06:40 17:53	05:50 18:25	06:00 19:59	05:29 20:30	05:28 20:42	05:53 20:23	06:25 19:39	06:58 18:46	06:58 18:13	17:27 (AB10)	07:08 16:32	07:39 16:39
Potential sun hours	295	296	369	400	451	455	462	430	375	25	344	296	285
Total, worst case			33							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: WF Abruzzo shadow flickering worst case Shadow receptor: R196 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (139)

### 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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:20	06:27 19:35	06:59 18:44	06:35 16:56	07:10 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:11 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:30	07:02 18:38	06:38 16:52	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	06:39 16:51	07:14 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:39	06:02 20:12	06:35 19:24	07:06 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	05:26 20:36	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:37	06:07 20:06	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:56 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:15 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:40 20:18	05:26 20:40	05:41 20:34	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:55 16:38	07:25 16:32
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:40	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:25 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:22	05:27 20:41	05:46 20:30	06:17 19:52	06:49 18:59	07:22 18:10	07:00 16:36	07:27 16:34
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31	07:17 17:14		06:48 19:25		05:30 20:29		05:53 20:23	06:25 19:39		06:32 16:58		07:30 16:39
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case												

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: WF Abruzzo shadow flikering worst case Shadow receptor: R197 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (140)  
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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	17:29 (AB10) 17:37 (AB10)	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:20	06:27 19:35	06:59 18:44	17:29 (AB10) 17:36 (AB10)	06:35 16:56	07:10 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	17:36 (AB10) 17:34 (AB10)	16:56 16:55	07:11 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	17:28 (AB10) 17:33 (AB10)	06:37 16:53	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:30	07:02 18:38	17:29 (AB10) 17:33 (AB10)	06:38 16:52	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	16:53 (AB10) 16:54 (AB10)	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	16:59 16:51	07:14 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	16:52 (AB10) 16:54 (AB10)	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:14	06:33 19:27	17:29 (AB10) 17:30 (AB10)	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	16:51 (AB10) 16:54 (AB10)	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	17:28 (AB10) 17:30 (AB10)	06:42 16:50	07:16 16:30
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13	07:29 16:52	07:02 17:31	06:19 18:05	16:50 (AB10) 16:59 (AB10)	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:37	06:07 20:06	06:39 19:17	17:37 (AB10) 17:39 (AB10)	06:48 16:55	07:21 16:31
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18	07:27 16:58	06:55 17:37	06:10 18:11	16:51 (AB10) 17:01 (AB10)	06:18 19:45	05:40 20:18	05:26 20:40	05:41 20:34	06:12 19:59	06:44 19:08	17:47 (AB10) 17:49 (AB10)	06:54 16:59	07:26 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	16:52 (AB10) 17:02 (AB10)	06:17 19:46	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	17:48 (AB10) 17:50 (AB10)	06:55 16:59	07:27 16:32
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22	07:24 17:03	06:49 17:42	06:04 18:15	16:53 (AB10) 17:03 (AB10)	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	17:51 (AB10) 17:53 (AB10)	06:58 16:59	07:30 16:34
23	07:23 17:04	06:48 17:44	06:02 18:16	16:55 (AB10) 17:04 (AB10)	06:11 19:51	05:35 20:22	05:27 20:41	05:46 20:30	06:17 19:52	06:49 18:59	17:54 (AB10) 17:56 (AB10)	06:59 16:59	07:31 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	16:56 (AB10) 17:05 (AB10)	06:09 19:52	05:34 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	17:55 (AB10) 17:57 (AB10)	07:00 16:59	07:32 16:35
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Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285	
Total, worst case			160						131	33			

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: WF Abruzzo shadow flickering worst case Shadow receptor: R198 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (141)  
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	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
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30	07:18 17:13		06:50 19:24	06:01 19:59	05:30 20:29	05:29 20:41	05:52 20:24	06:24 19:40	06:57 18:47	07:28 18:02	07:08 16:32	07:38 16:39
31	07:17 17:14		06:48 19:25		05:30 20:29		05:53 20:23	06:25 19:39		06:32 16:59		07:39 16:39
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case			63						65			

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 Abruzzo Shoadow flickering

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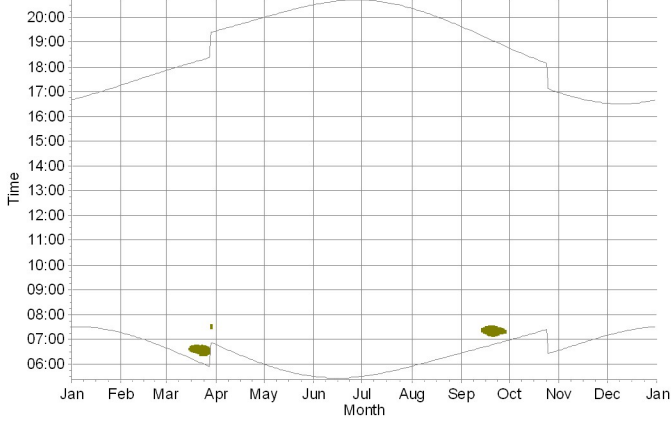
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Calculated:  
15/11/2023 18:49/3.5.587

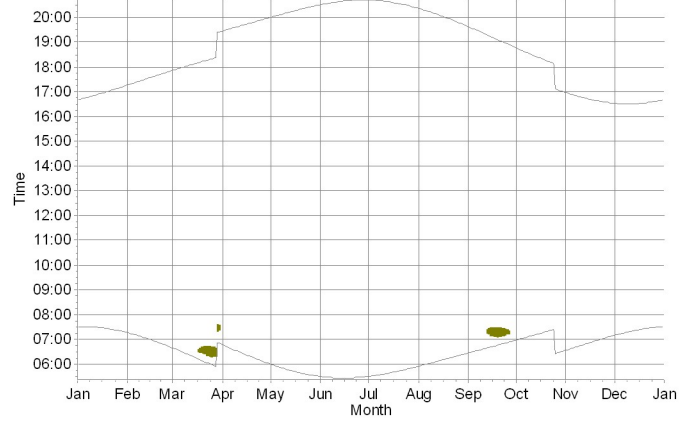
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flickering worst case

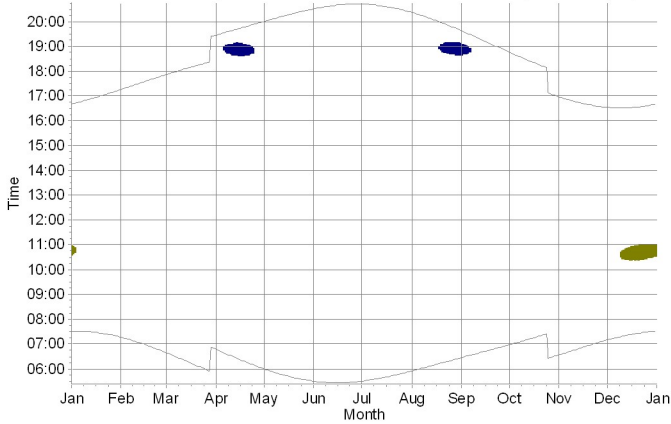
R002: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (72)



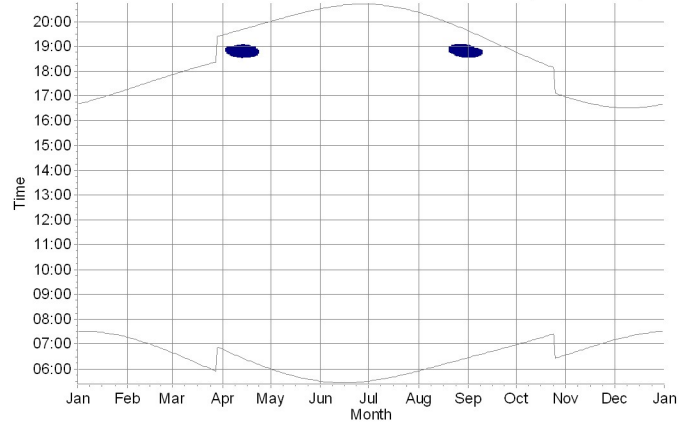
R003: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (73)



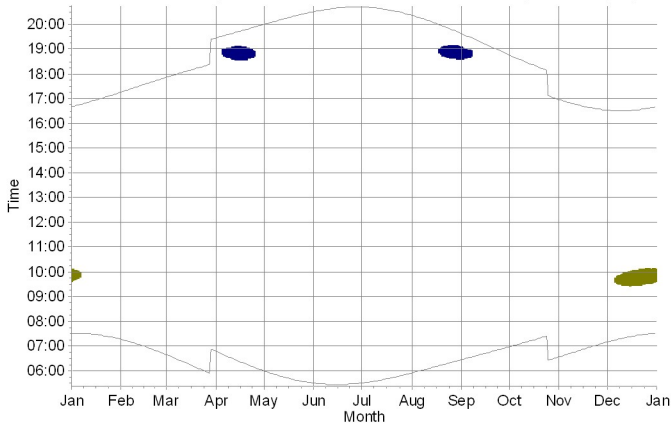
R008: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (74)



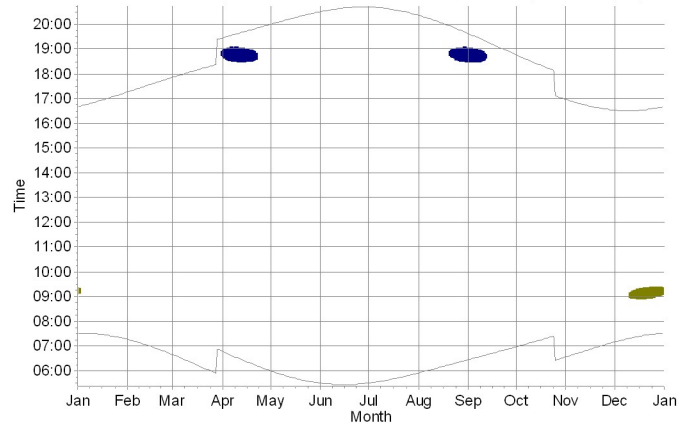
R009: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (75)



R010: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (76)



R011: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (77)



WTGs

AB07: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (7)

AB10: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (10)



Project:

WF Abruzzo Shoadow flikering

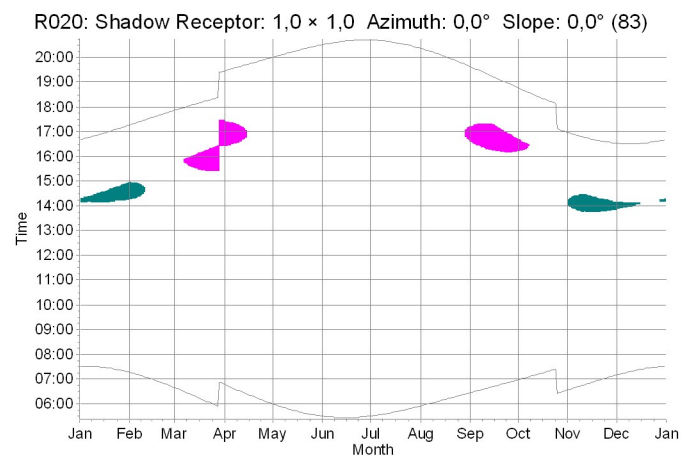
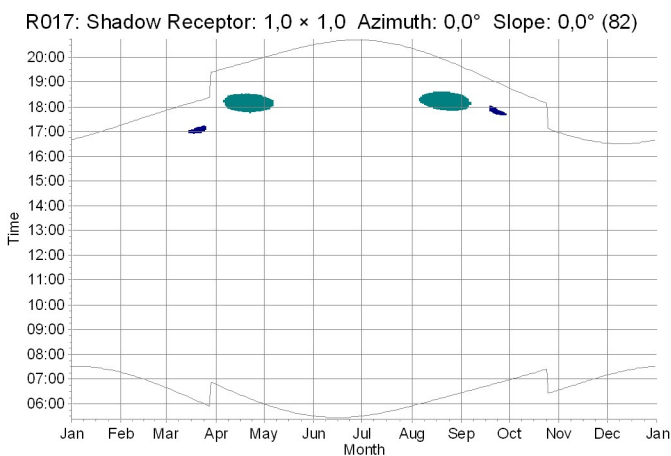
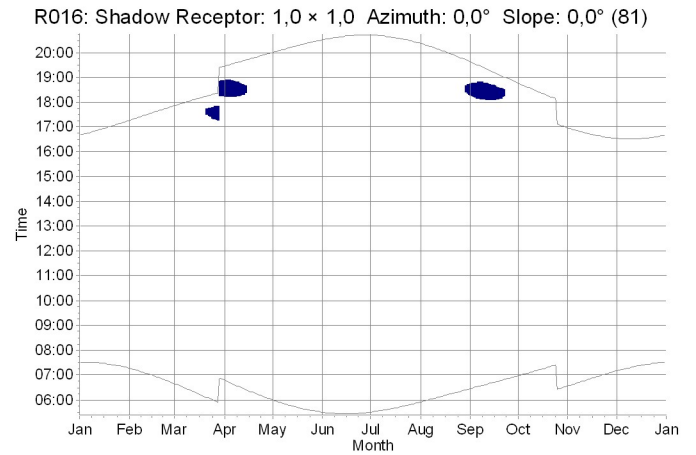
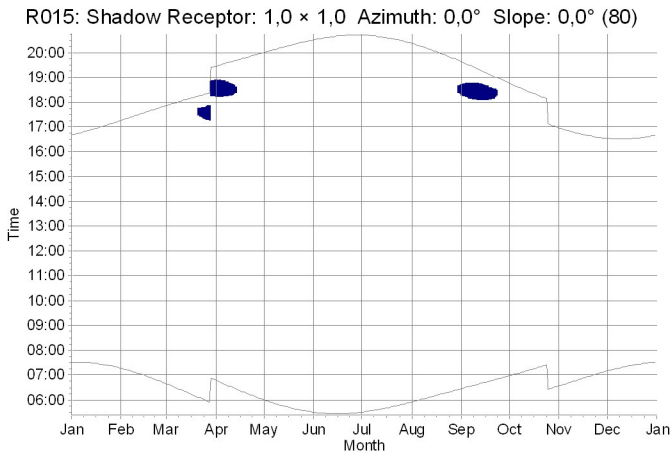
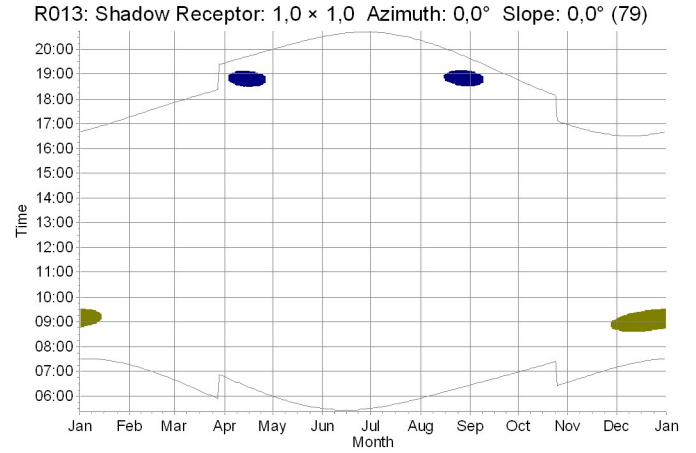
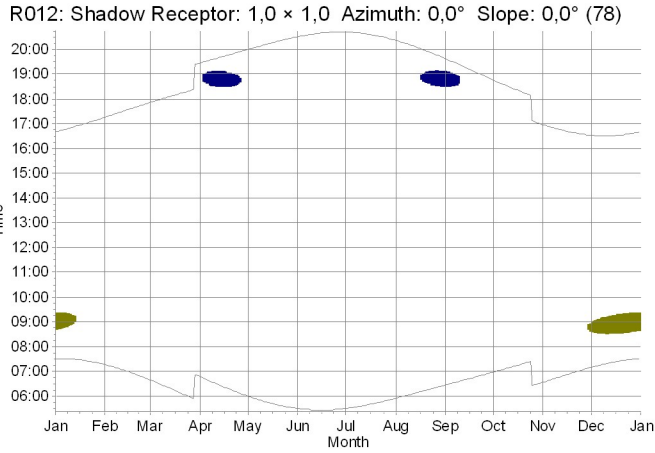
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## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering worst case



WTGs

AB05: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (5)  
 AB06: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (6)

AB07: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (7)  
 AB10: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (10)

Project:

WF Abruzzo Shoadow flikering

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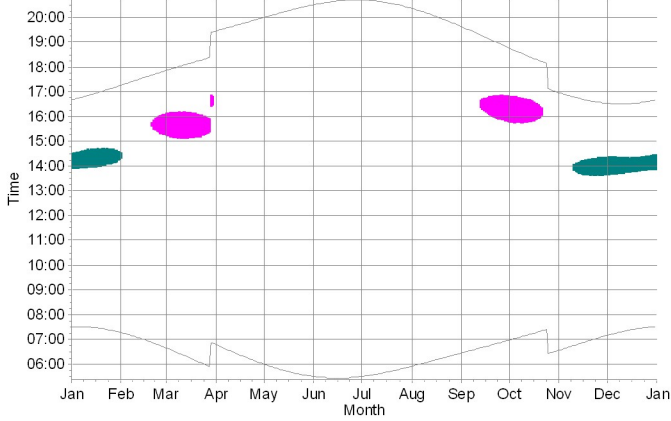
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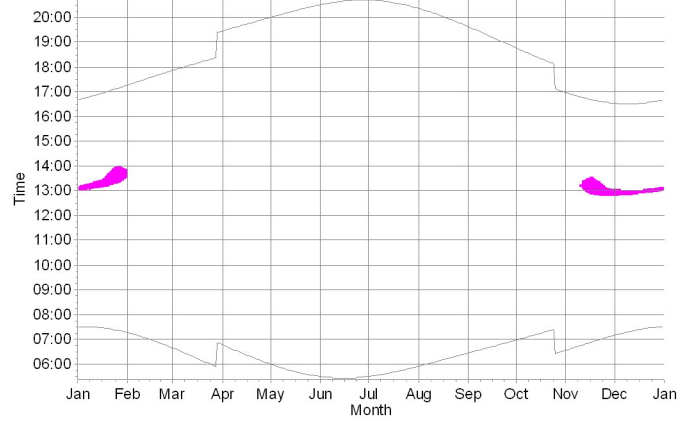
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering worst case

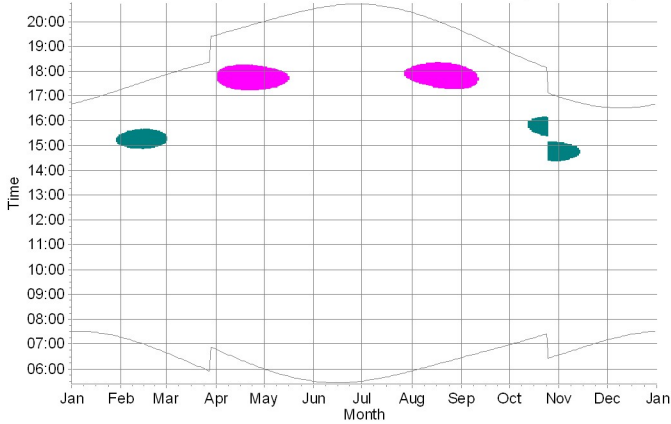
R023: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (84)



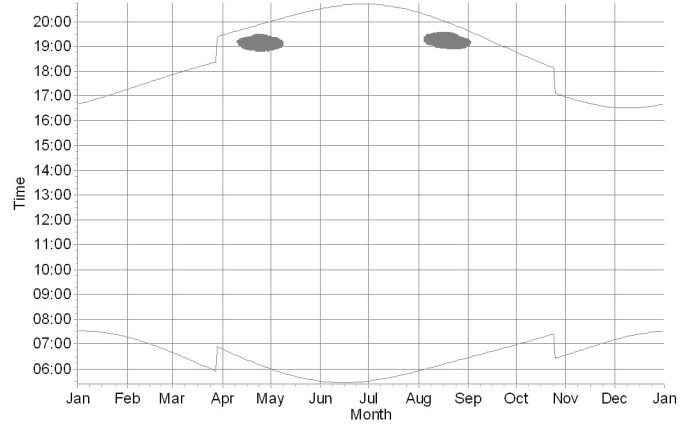
R024: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (85)



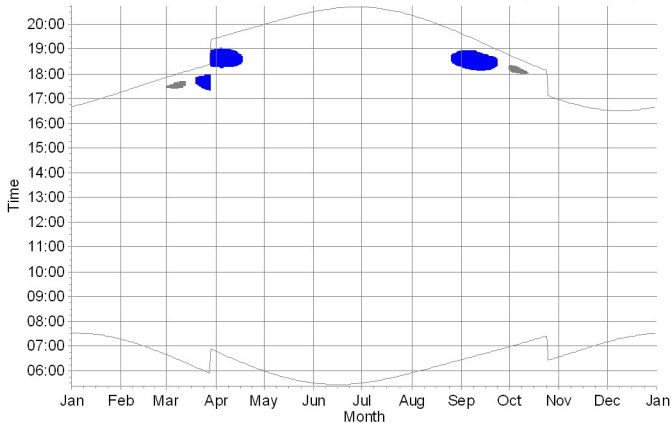
R025: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (86)



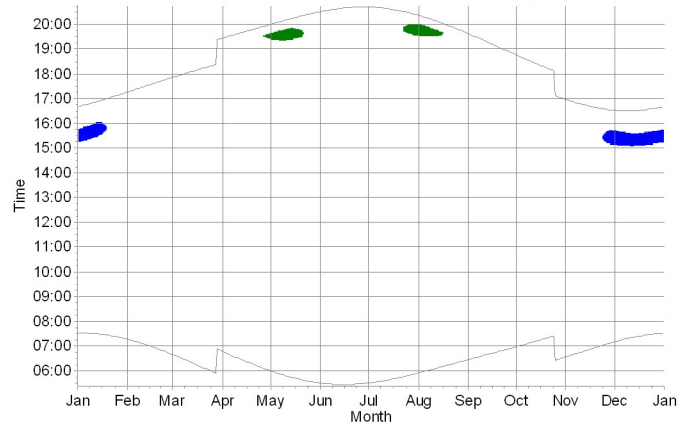
R028: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (87)



R031: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (88)



R039: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (89)



WTGs

- AB01: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (1)
- AB03: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (3)
- AB04: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (4)

- AB05: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (5)
- AB06: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (6)

Project:

WF Abruzzo Shoadow flikering

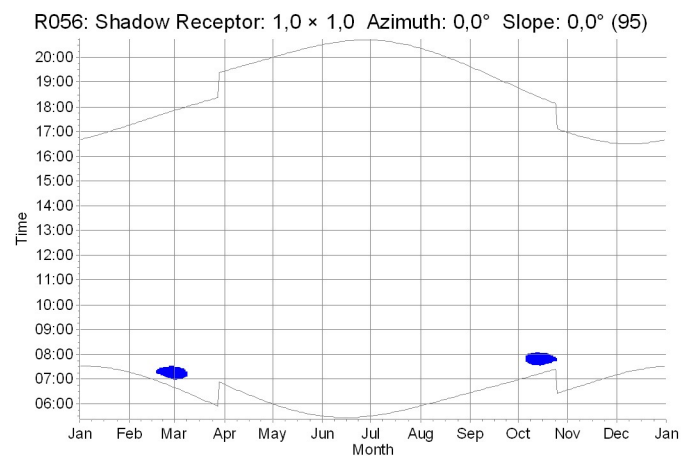
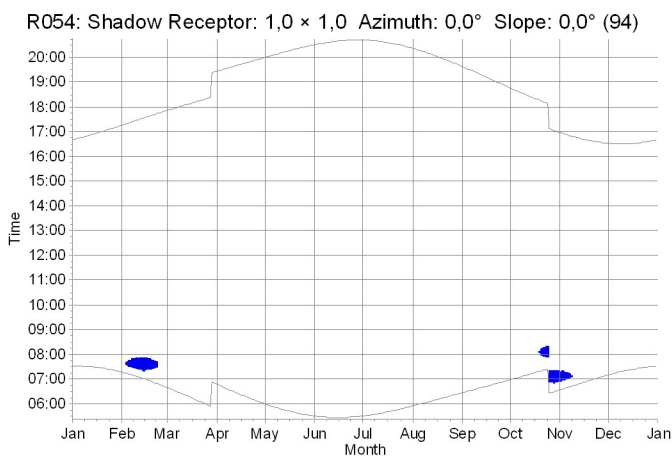
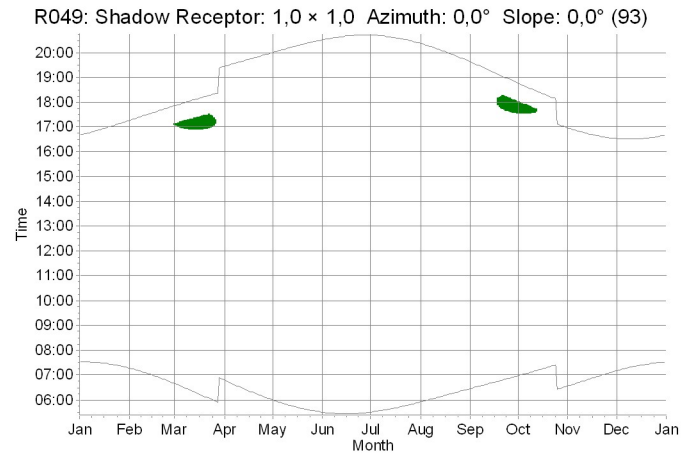
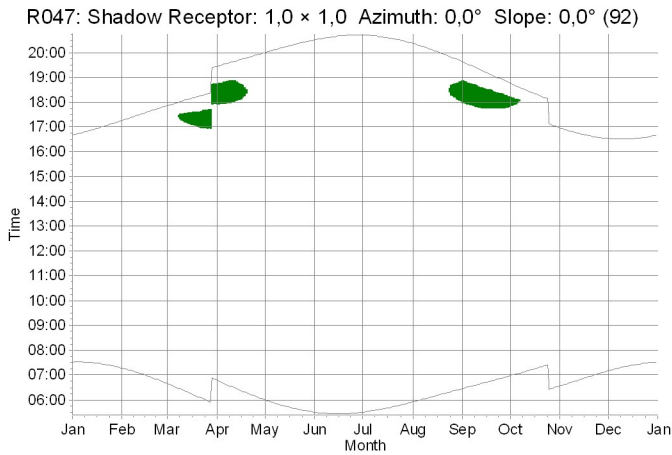
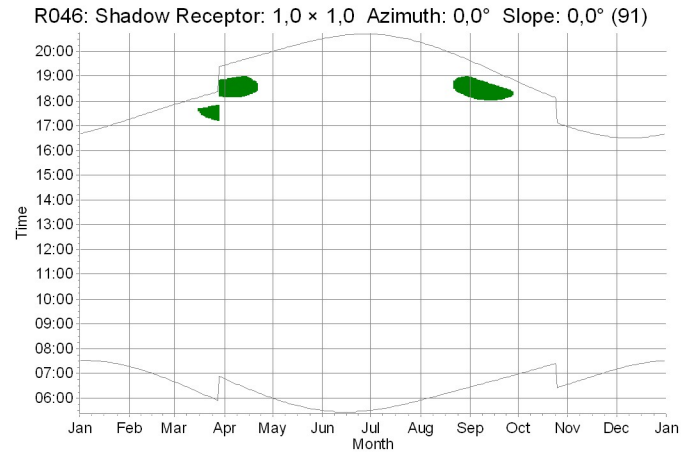
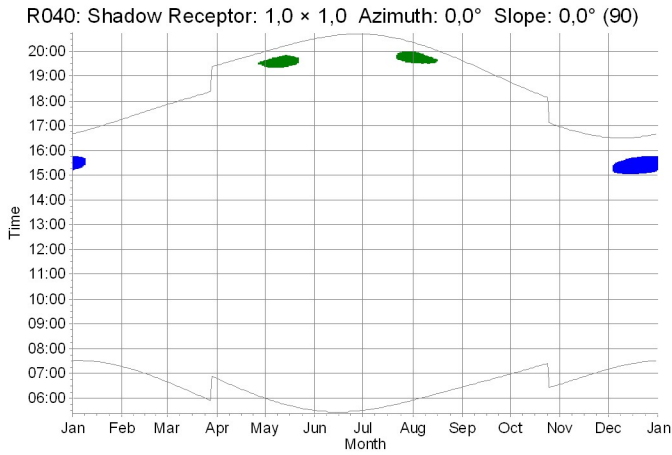
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## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering worst case



WTGs

AB01: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (1)

AB03: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (3)

Project:

WF Abruzzo Shoadow flikering

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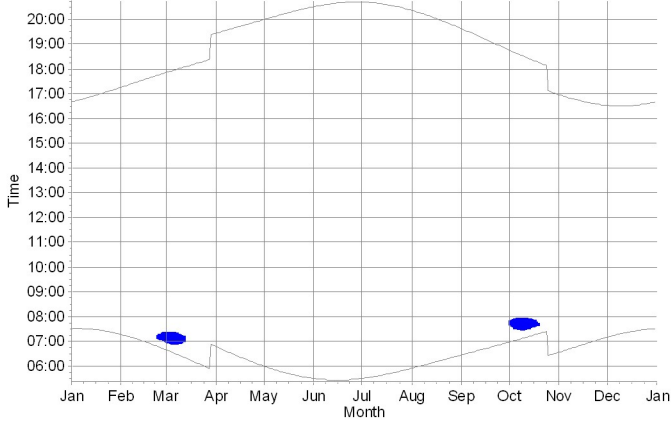
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Calculated:  
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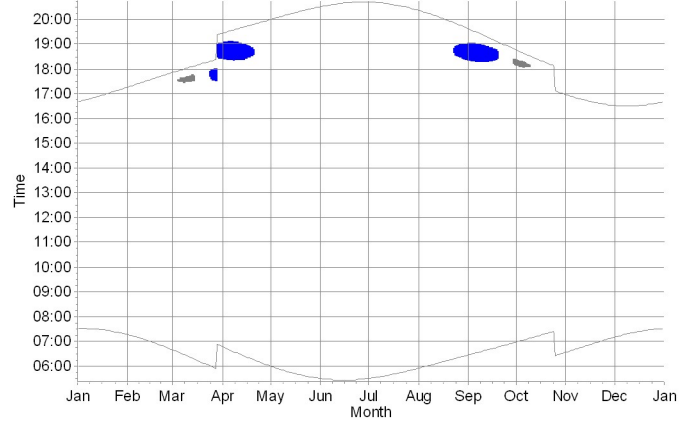
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering worst case

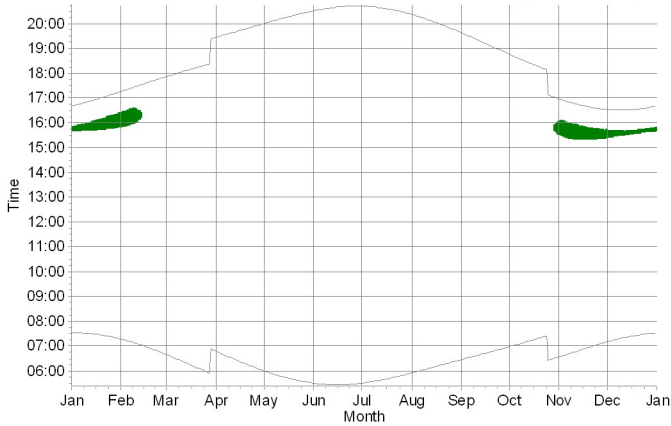
R057: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (96)



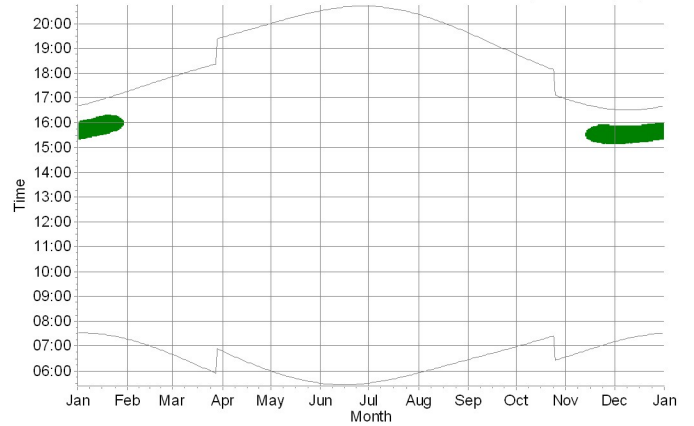
R061: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (97)



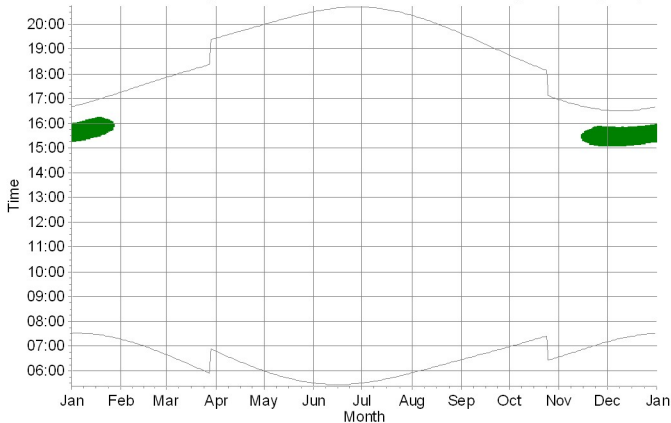
R065: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (98)



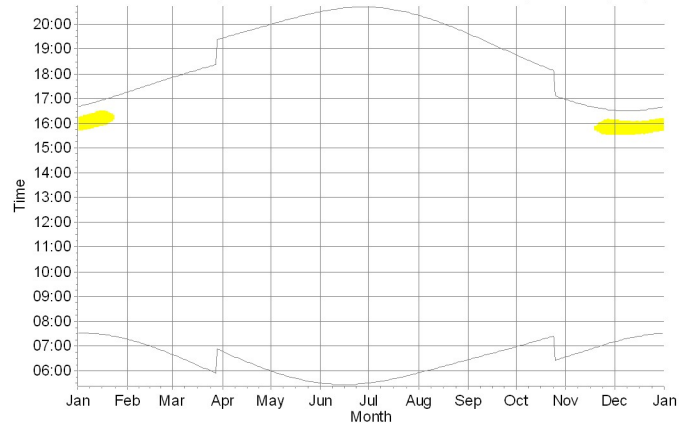
R066: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (99)





R067: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (100)





R079: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (101)



WTGs

 AB01: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (1)  
 AB02: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (2)

 AB03: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (3)  
 AB04: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (4)

Project:

WF Abruzzo Shoadow flikering

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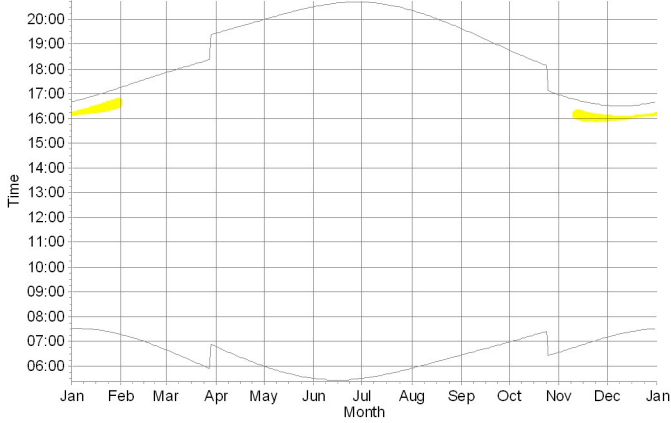
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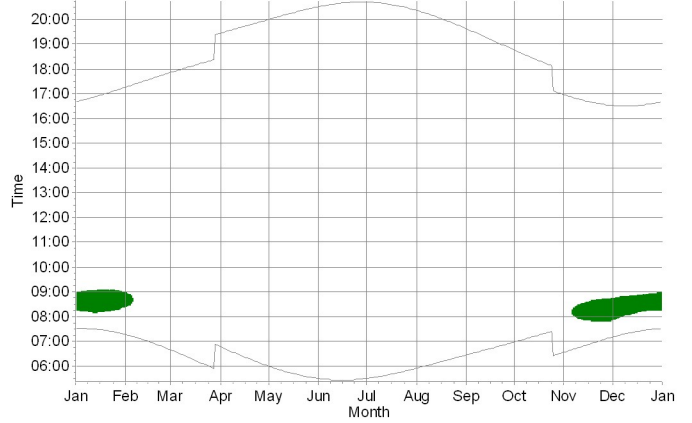
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering worst case

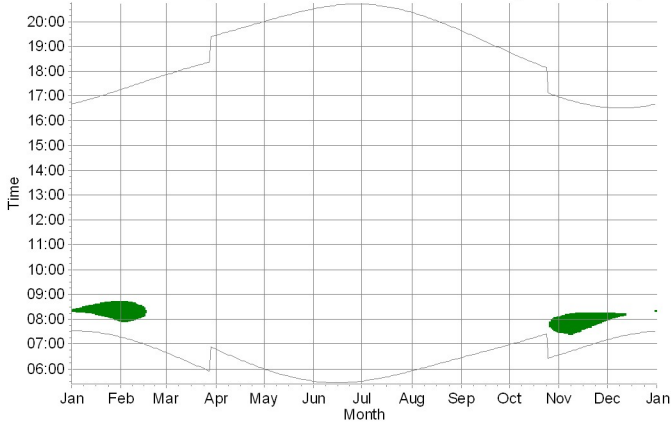
R080: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (102)



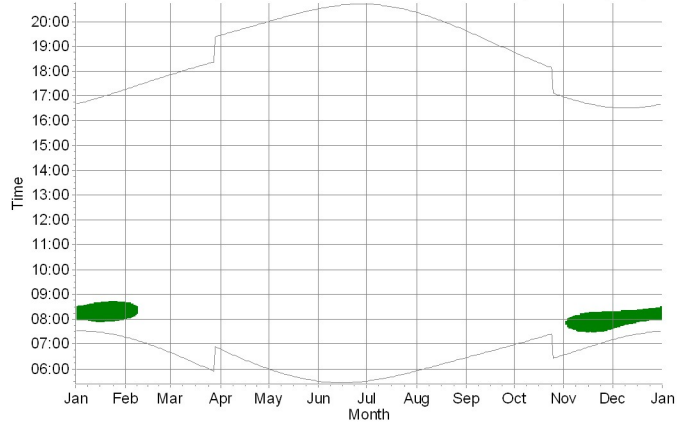
R082: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (103)



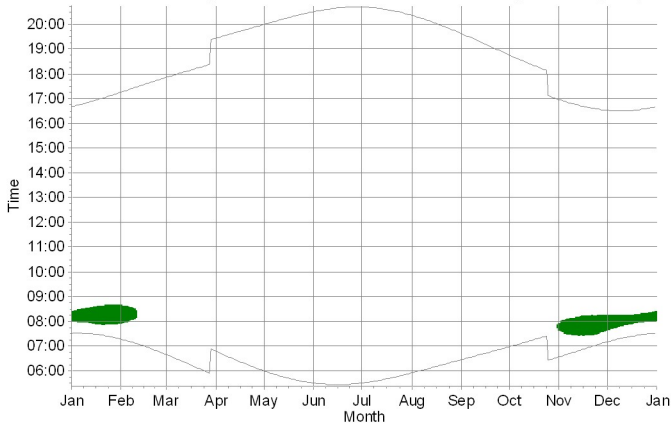
R083: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (104)



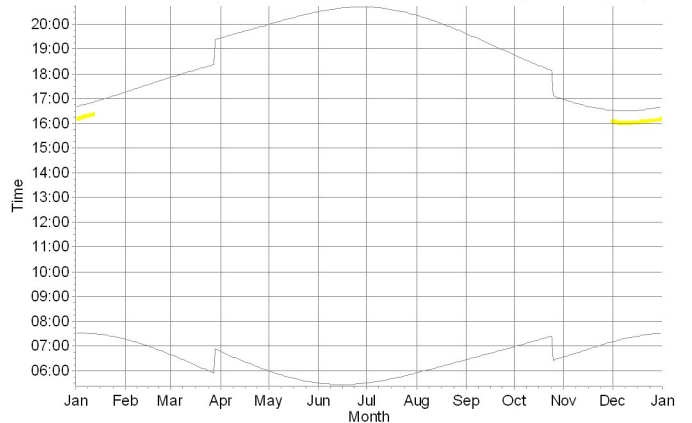
R084: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (105)



R085: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (106)



R088: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (107)



WTGs

AB01: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (1)

AB02: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (2)

Project:

WF Abruzzo Shoadow flikering

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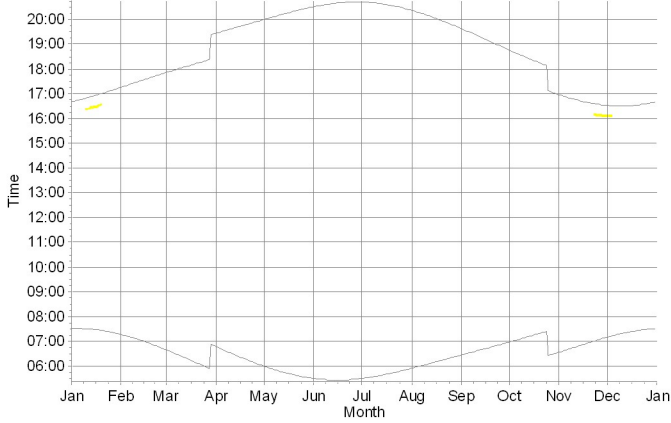
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Calculated:  
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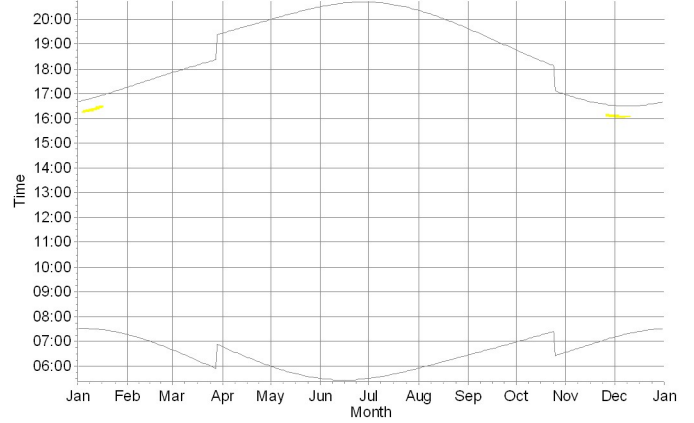
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering worst case

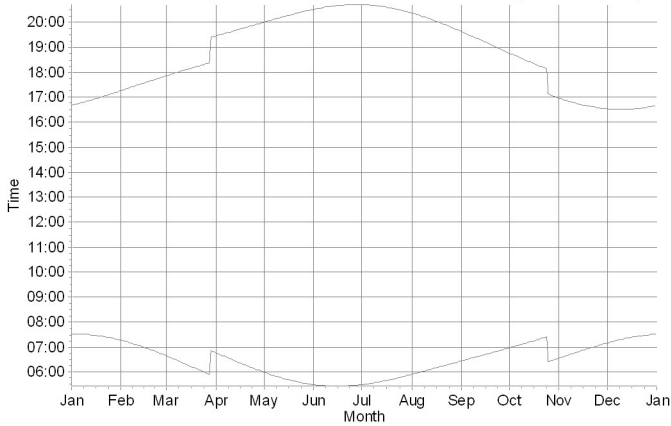
R089: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (108)



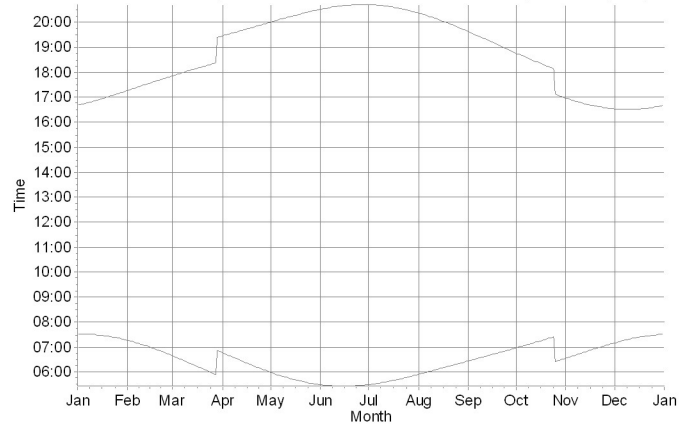
R090: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (109)



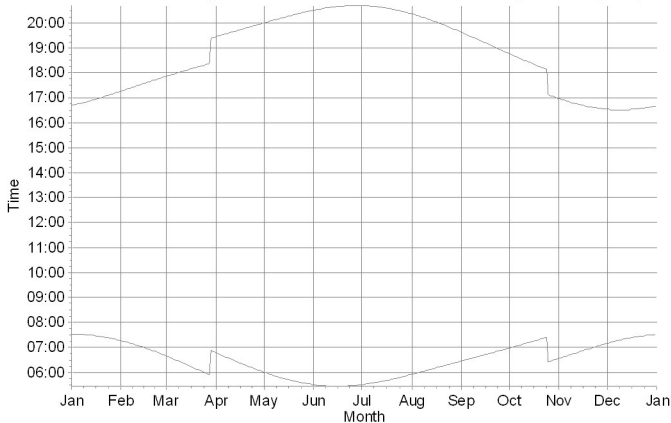
R094: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (110)



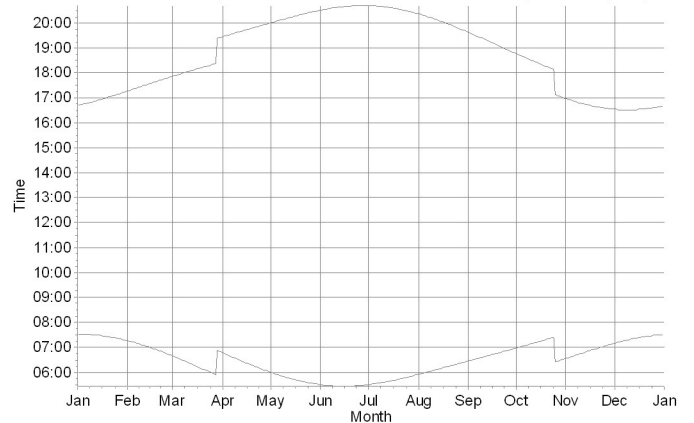
R095: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (111)



R098: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (112)



R114: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (113)



WTGs

AB02: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (2)

Project:

WF Abruzzo Shoadow flikering

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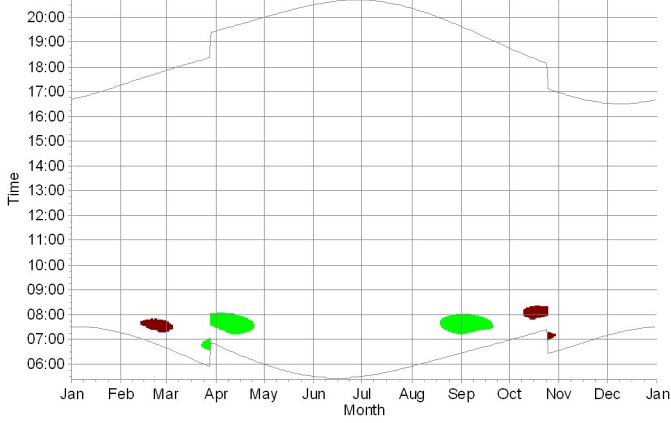
Calculated:

15/11/2023 18:49/3.5.587

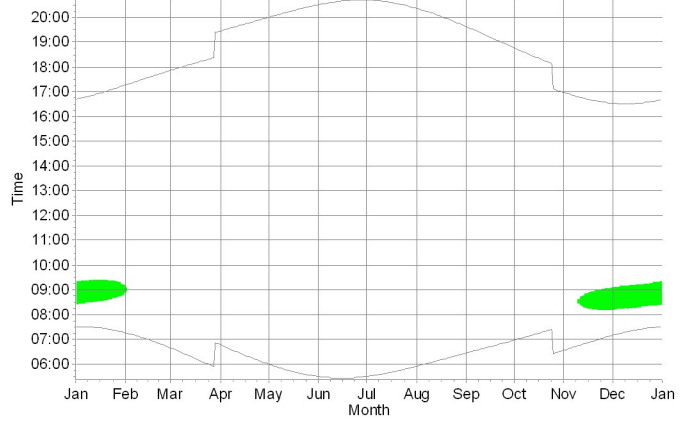
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering worst case

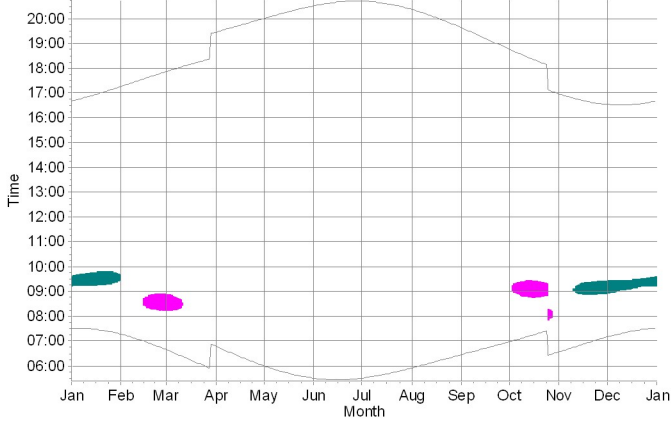
R117: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (114)



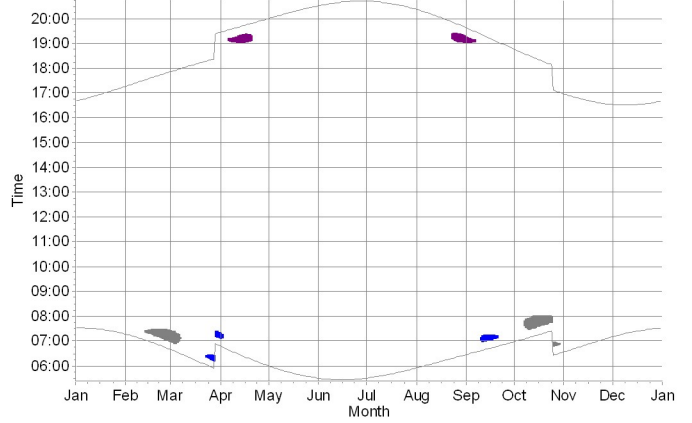
R120: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (115)



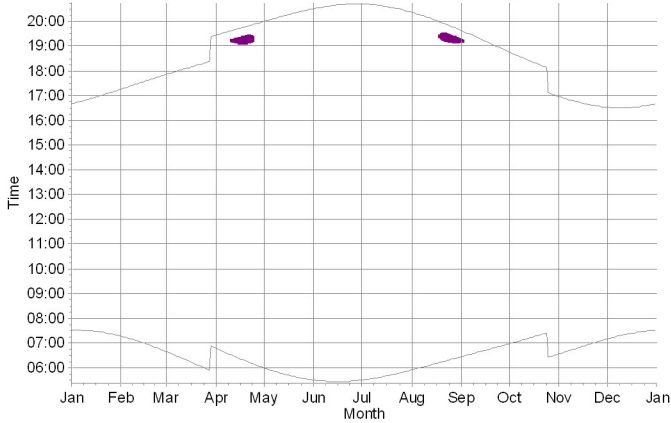
R126: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (116)



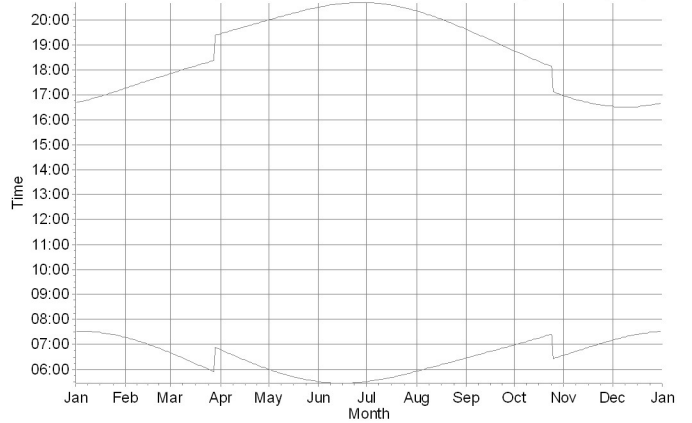
R129: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (117)



R130: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (118)



R145: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (119)



### WTGs

- AB03: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (3)
- AB04: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (4)
- AB05: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (5)
- AB06: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (6)

- AB08: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (8)
- AB09: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (9)
- AB11: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (11)

Project:

WF Abruzzo Shoadow flikering

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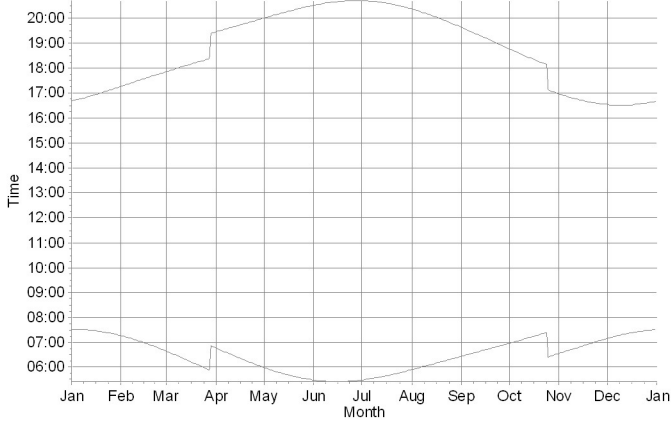
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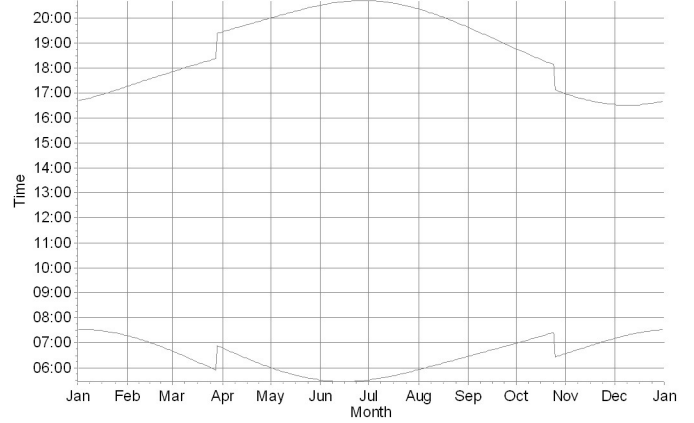
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering worst case

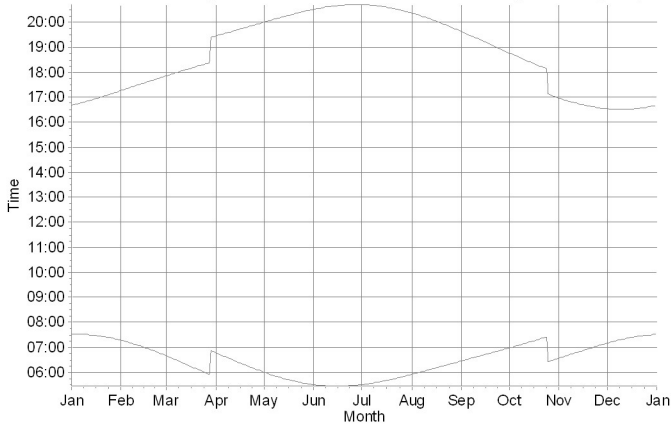
R146: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (120)



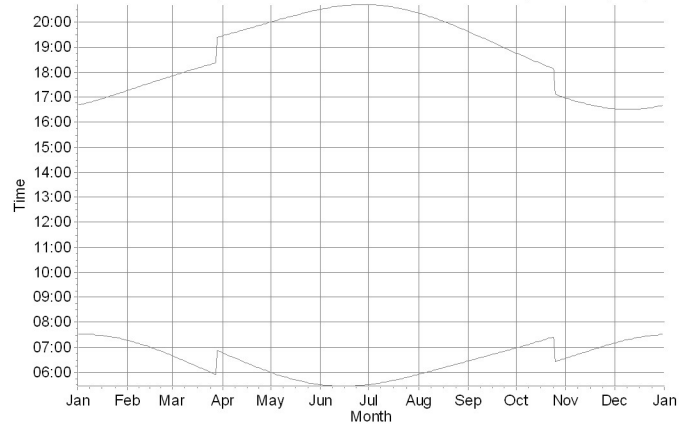
R148: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (121)



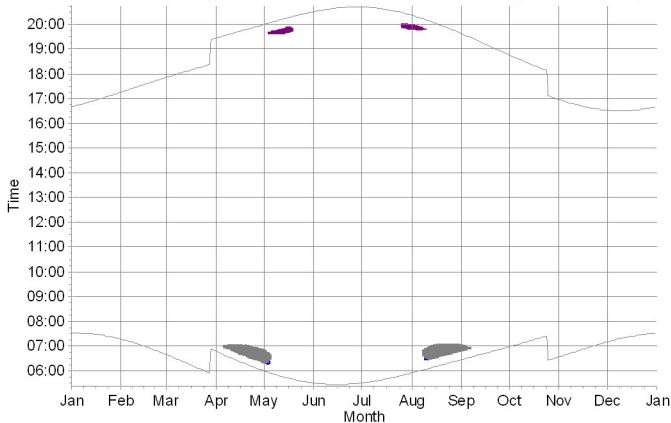
R149: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (122)



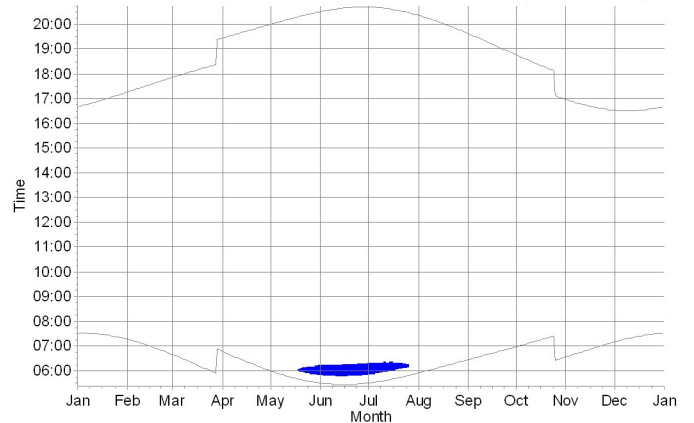
R150: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (123)




R155: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (124)




R159: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (125)



WTGs

 AB03: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (3)

 AB04: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (4)

 AB11: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (11)



Project:

WF Abruzzo Shoadow flikering

Licensed user:

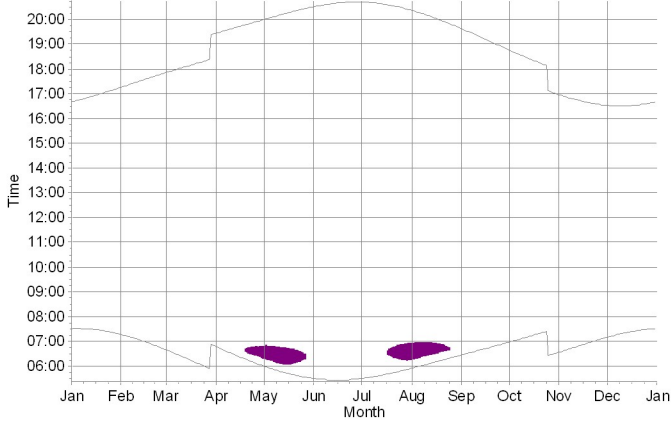
Ge.co.Dor srl  
Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:49/3.5.587

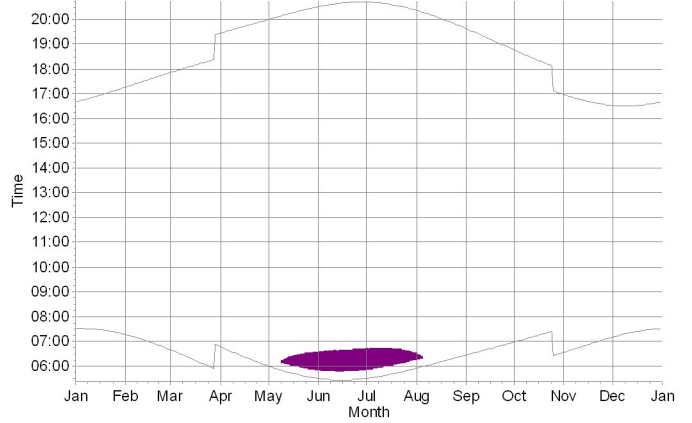
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering worst case

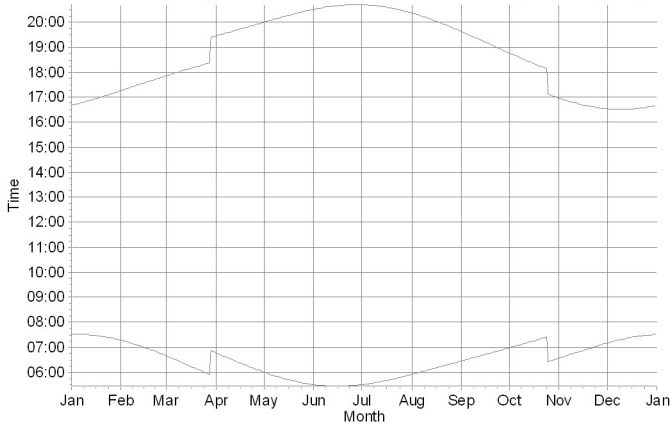
R170: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (126)



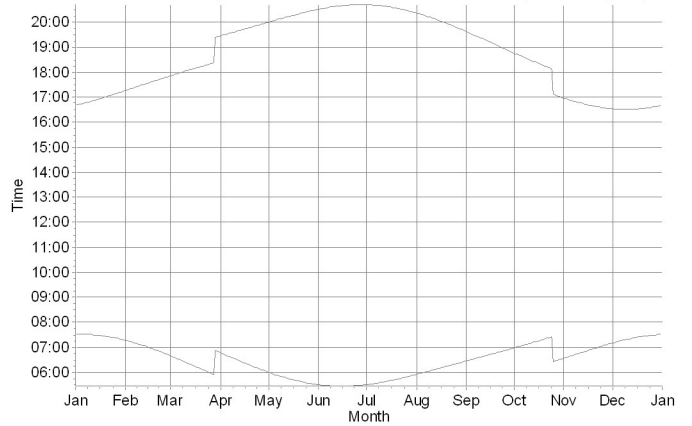
R171: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (127)



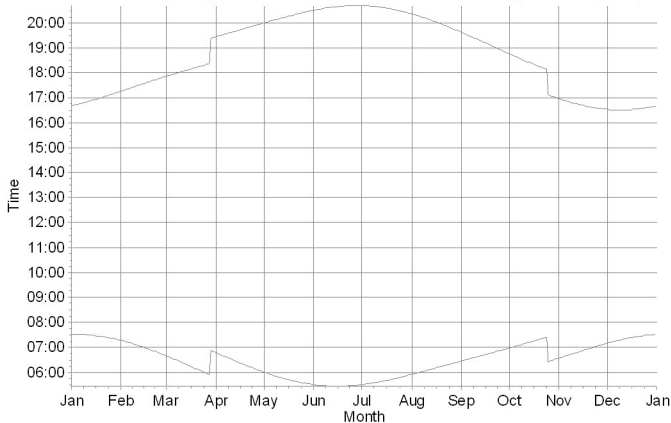
R172: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (128)



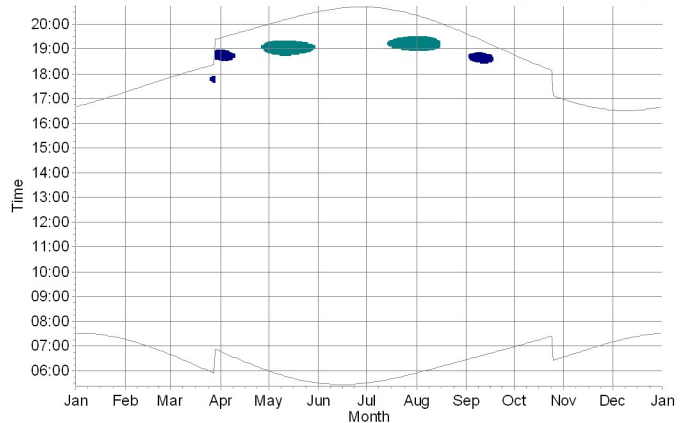
R173: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (129)



R178: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (130)



R185: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (131)



WTGs

AB06: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (6)  
 AB07: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (7)

AB11: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (11)

Project:

WF Abruzzo Shoadow flikering

Licensed user:

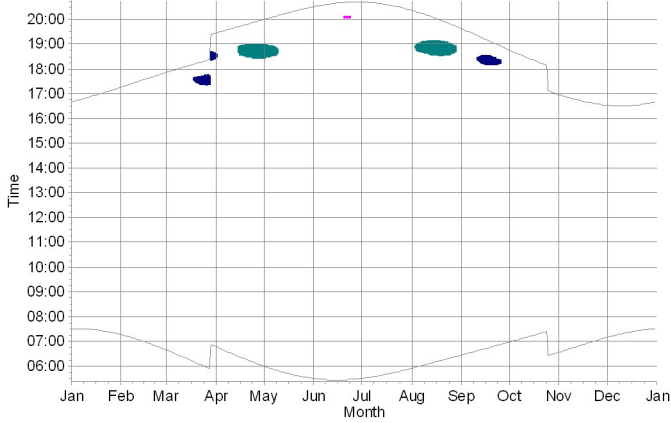
Ge.co.Dor srl  
Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:49/3.5.587

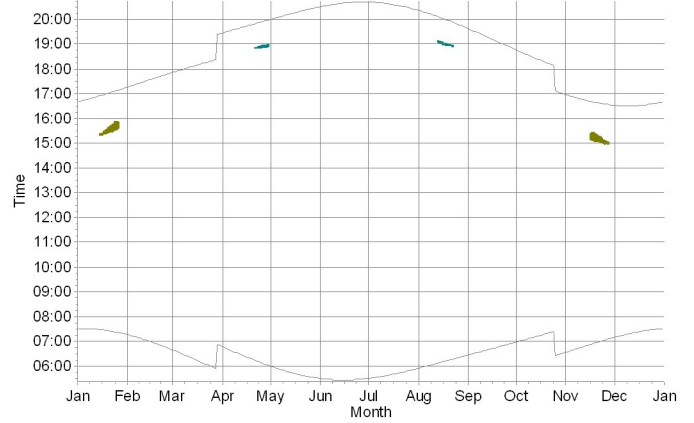
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering worst case

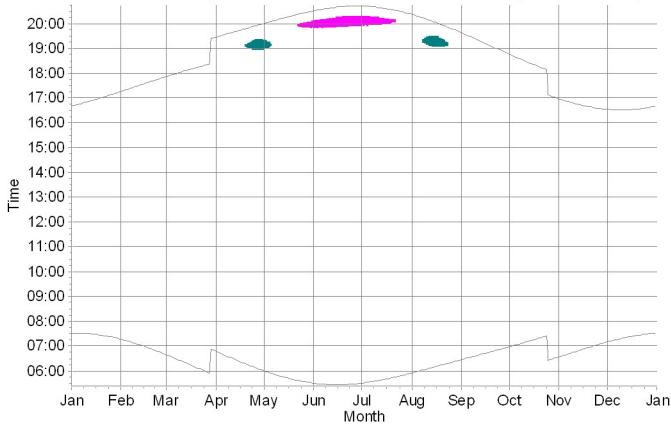
R186: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (132)



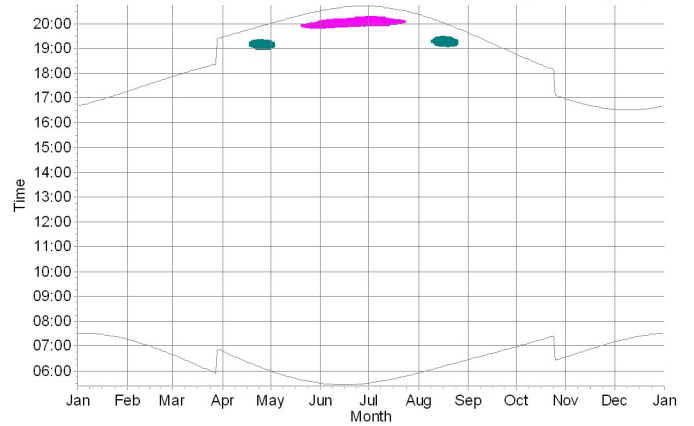
R189: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (133)



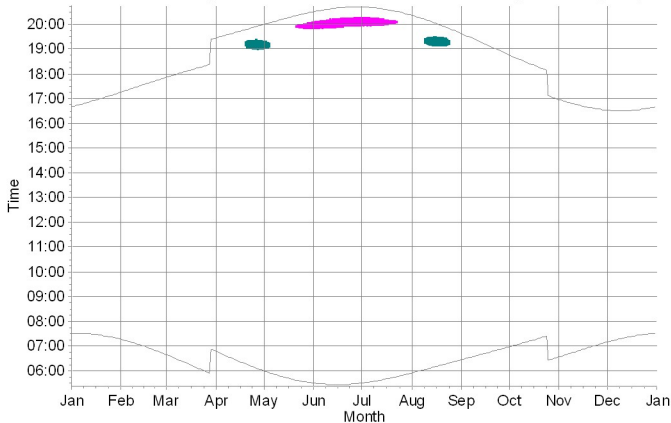
R190: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (134)



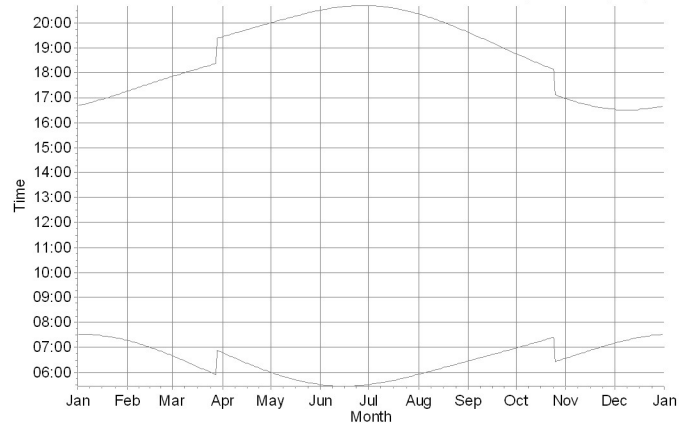
R191: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (135)



R192: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (136)



R193: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (137)



WTGs

AB05: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (5)  
 AB06: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (6)

AB07: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (7)  
 AB10: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (10)

Project:

WF Abruzzo Shoadow flikering

Licensed user:

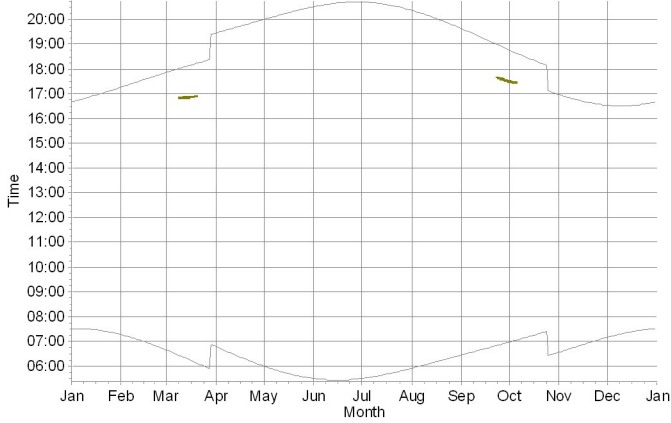
Ge.co.Dor srl  
Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:49/3.5.587

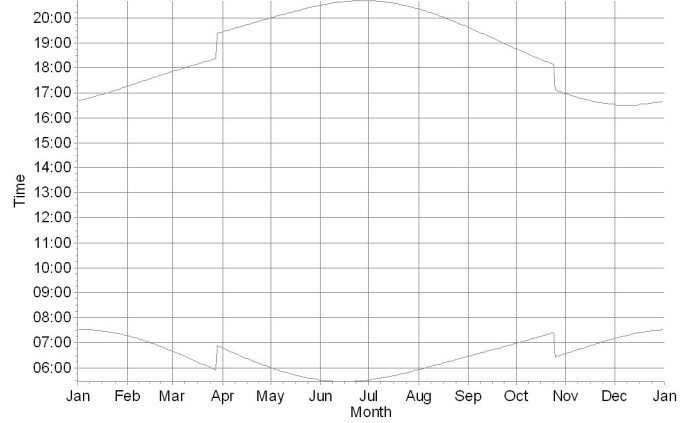
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering worst case

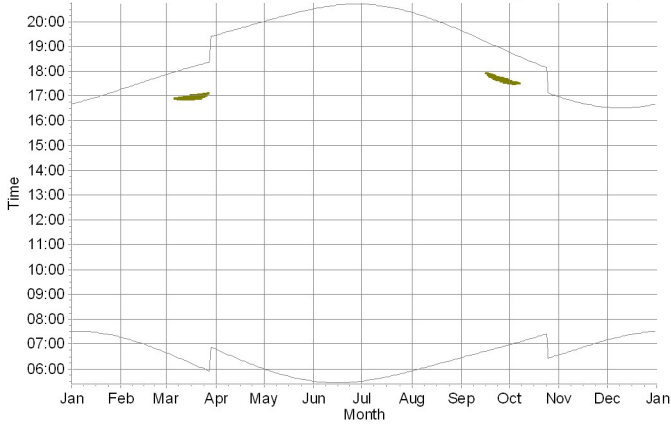
R194: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (138)



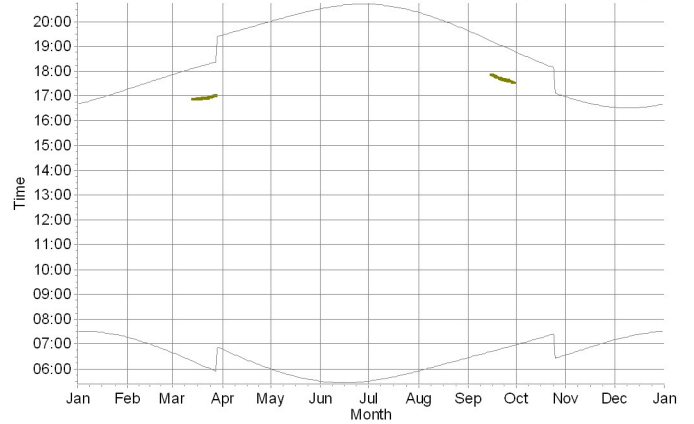
R196: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (139)



R197: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (140)



R198: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (141)



WTGs

AB10: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (10)

## SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flickering worst case WTG: AB01 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135.0 m (TOT: 220.0 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
1	07:30 07:58-08:57/59 16:40 15:16-16:01/45	07:16 07:54-08:56/62 17:16 15:50-16:24/34	06:39 17:06-17:07/1 17:51	06:46 17:56-18:51/55 19:27	05:59 19:25-19:37/12 20:00	05:29 20:30
2	07:30 07:58-08:57/59 16:41 15:16-16:01/45	07:15 07:53-08:54/61 17:17 15:51-16:26/35	06:37 17:03-17:08/5 17:52	06:45 17:56-18:51/55 19:28	05:58 19:24-19:37/13 20:01	05:29 20:31
3	07:30 07:58-08:58/60 16:42 15:17-16:02/45	07:14 07:54-08:52/58 17:18 15:52-16:27/35	06:35 17:02-17:10/8 17:53	06:43 17:57-18:52/55 19:29	05:57 19:23-19:38/15 20:02	05:28 20:32
4	07:30 07:58-08:58/60 16:43 15:18-16:03/45	07:13 07:54-08:49/55 17:19 15:53-16:29/36	06:34 17:00-17:11/11 17:55	06:41 17:57-18:53/56 19:30	05:55 19:23-19:40/17 20:03	05:28 20:33
5	07:30 07:58-08:59/61 16:44 15:18-16:04/46	07:12 07:55-08:44/49 17:21 15:55-16:30/35	06:32 16:59-17:11/12 17:56	06:40 17:57-18:53/56 19:31	05:54 19:23-19:41/18 20:04	05:27 20:33
6	07:30 07:58-09:00/62 16:45 15:19-16:05/46	07:11 07:56-08:40/44 17:22 15:56-16:32/36	06:31 16:58-17:13/15 17:57	06:38 17:58-18:54/56 19:32	05:53 19:23-19:42/19 20:05	05:27 20:34
7	07:30 07:58-09:00/62 16:46 15:20-16:06/46	07:09 07:57-08:40/43 17:23 15:57-16:32/35	06:29 16:57-17:14/17 17:58	06:36 17:59-18:55/56 19:33	05:51 19:22-19:42/20 20:06	05:27 20:35
8	07:30 07:58-09:01/63 16:47 15:21-16:07/46	07:08 07:57-08:38/41 17:25 15:58-16:34/36	06:27 16:56-17:15/19 17:59 17:24-17:28/4	06:35 17:59-18:55/56 19:34	05:50 19:22-19:43/21 20:07	05:27 20:35
9	07:30 07:57-09:01/64 16:48 15:21-16:07/46	07:07 07:58-08:37/39 17:26 16:00-16:35/35	06:26 16:56-17:16/20 18:00 17:20-17:29/9	06:33 18:00-18:56/56 19:35	05:49 19:22-19:44/22 20:08	05:26 20:36
10	07:30 07:57-09:01/64 16:49 15:22-16:09/47	07:06 08:00-08:36/36 17:27 16:03-16:33/30	06:24 16:55-17:30/35 18:02	06:31 18:01-18:57/56 19:37	05:48 19:22-19:46/24 20:10	05:26 20:37
11	07:30 07:56-09:02/66 16:50 15:23-16:10/47	07:05 08:00-08:34/34 17:28 16:04-16:30/26	06:22 16:54-17:30/36 18:03	06:30 18:01-18:57/56 19:38	05:47 19:23-19:47/24 20:11	05:26 20:37
12	07:29 07:55-09:02/67 16:51 15:23-16:10/47	07:03 08:02-08:33/31 17:30 16:08-16:28/20	06:21 16:55-17:32/37 18:04	06:28 18:03-18:58/55 19:39	05:46 19:23-19:48/25 20:12	05:26 20:38
13	07:29 07:55-09:02/67 16:52 15:25-16:12/47	07:02 08:04-08:32/28 17:31 16:13-16:23/10	06:19 16:54-17:32/38 18:05	06:26 18:04-18:58/54 19:40	05:44 19:24-19:49/25 20:13	05:26 20:38
14	07:29 07:54-09:02/68 16:53 15:25-16:12/47	07:01 08:06-08:29/23 17:32	06:17 16:54-17:33/39 18:06	06:25 18:06-18:58/52 19:41	05:43 19:24-19:50/26 20:14	05:26 20:39
15	07:28 07:54-09:03/69 16:55 15:27-16:14/47	06:59 08:09-08:26/17 17:34	06:16 16:54-17:33/39 18:07	06:23 18:07-18:56/49 19:42	05:42 19:25-19:49/24 20:15	05:26 20:39
16	07:28 07:54-09:03/69 16:56 15:27-16:14/47	06:58 08:15-08:20/5 17:35	06:14 16:54-17:34/40 18:09 17:37-17:40/3	06:21 18:09-18:54/45 19:43	05:41 19:26-19:48/22 20:16	05:26 20:39
17	07:27 07:54-09:03/69 16:57 15:29-16:16/47	06:57 17:36	06:12 16:54-17:41/47 18:10	06:20 18:12-18:53/41 19:44	05:40 19:26-19:47/21 20:17	05:26 20:40
18	07:27 07:53-09:03/70 16:58 15:30-16:17/47	06:55 17:37	06:10 16:55-17:41/46 18:11	06:18 18:15-18:50/35 19:45	05:39 19:27-19:46/19 20:18	05:26 20:40
19	07:26 07:53-09:04/71 16:59 15:32-16:18/46	06:54 17:39	06:09 16:56-17:43/47 18:12	06:17 18:21-18:48/27 19:47	05:38 19:28-19:45/17 20:19	05:26 20:40
20	07:26 07:52-09:03/71 17:00 15:33-16:18/45	06:52 17:40	06:07 16:56-17:43/47 18:13	06:15 18:23-18:45/22 19:48	05:38 19:30-19:43/13 20:20	05:26 20:41
21	07:25 07:52-09:03/71 17:02 15:34-16:17/43	06:51 17:41	06:05 16:57-17:43/46 18:14	06:14 18:27-18:41/14 19:49	05:37 19:33-19:42/9 20:21	05:26 20:41
22	07:24 07:53-09:02/69 17:03 15:35-16:16/41	06:49 17:42	06:04 16:58-17:44/46 18:15	06:12 19:50	05:36 20:22	05:26 20:41
23	07:24 07:53-09:03/70 17:04 15:38-16:16/38	06:48 17:44	06:02 16:59-17:45/46 18:16	06:11 19:51	05:35 20:23	05:26 20:41
24	07:23 07:53-09:03/70 17:05 15:40-16:15/35	06:46 17:45	06:00 16:59-17:46/47 18:18	06:09 19:52	05:34 20:24	05:27 20:42
25	07:22 07:53-09:02/69 17:07 15:42-16:16/34	06:45 17:46	05:58 16:58-17:46/48 18:19	06:08 19:53	05:34 20:24	05:27 20:42
26	07:21 07:53-09:01/68 17:08 15:45-16:17/32	06:43 17:47	05:57 16:57-17:46/49 18:20	06:06 19:54	05:33 20:25	05:27 20:42
27	07:20 07:54-09:01/67 17:09 15:47-16:18/31	06:42 17:49	05:55 16:58-17:48/50 18:21	06:05 19:30-19:32/2 19:55	05:32 20:26	05:28 20:42
28	07:20 07:54-09:00/66 17:10 15:48-16:19/31	06:40 17:50	05:53 16:57-17:48/51 18:22	06:03 19:29-19:34/5 19:56	05:31 20:27	05:28 20:42
29	07:19 07:54-08:59/65 17:12 15:48-16:20/32		06:52 17:56-18:49/53 19:23	06:02 19:26-19:34/8 19:58	05:31 20:28	05:28 20:42
30	07:18 07:55-08:58/63 17:13 15:49-16:22/33		06:50 17:57-18:50/53 19:24	06:01 19:26-19:35/9 19:59	05:30 20:29	05:29 20:42
31	07:17 07:55-08:57/62 17:14 15:50-16:23/33		06:48 17:57-18:50/53 19:25		05:30 20:30	
Potential sun hours	295	296	369	400	451	456
Sum of minutes with flicker	3348	1029	1117	1031	406	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: WF Abruzzo shadow flikering worst caseWTG: AB01 - Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 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

	July	August	September	October	November	December
1	05:29 20:42	05:54 19:34-19:58/24 20:22	06:26 18:00-18:56/56 19:37	06:58 17:33-18:11/38 18:45	06:33 07:28-08:05/37 16:57 15:31-16:02/31	07:09 07:38-08:44/66 16:32 15:05-15:52/47
2	05:30 20:41	05:55 19:33-19:57/24 20:21	06:27 17:59-18:55/56 19:36	06:59 17:33-18:09/36 18:44	06:35 07:28-08:07/39 16:56 15:30-16:05/35	07:11 07:40-08:44/64 16:31 15:05-15:52/47
3	05:30 20:41	05:56 19:33-19:56/23 20:19	06:28 17:57-18:53/56 19:34	07:00 17:33-18:08/35 18:42	06:36 07:27-08:08/41 16:55 15:28-16:03/35	07:12 07:41-08:45/64 16:31 15:05-15:52/47
4	05:31 20:41	05:57 19:33-19:55/22 20:18	06:29 17:56-18:52/56 19:32	07:01 17:33-17:53/20 18:40 17:56-18:06/10	06:37 07:26-08:08/42 16:53 15:26-16:02/36	07:13 07:42-08:45/63 16:31 15:05-15:51/46
5	05:32 20:41	05:58 19:33-19:54/21 20:17	06:31 17:55-18:51/56 19:31	07:02 17:33-17:53/20 18:38 17:59-18:06/7	06:38 07:26-08:10/44 16:52 15:26-16:01/35	07:14 07:43-08:45/62 16:31 15:05-15:51/46
6	05:32 20:41	05:59 19:33-19:52/19 20:16	06:32 17:53-18:49/56 19:29	07:03 17:34-17:51/17 18:37 18:03-18:05/2	06:40 07:25-08:15/50 16:51 15:24-16:00/36	07:15 07:44-08:46/62 16:30 15:05-15:51/46
7	05:33 20:40	06:00 19:32-19:51/19 20:15	06:33 17:52-18:48/56 19:27	07:04 17:34-17:49/15 18:35	06:41 07:24-08:19/55 16:50 15:23-15:58/35	07:16 07:45-08:46/61 16:30 15:05-15:51/46
8	05:33 20:40	06:01 19:33-19:50/17 20:13	06:34 17:51-18:47/56 19:25	07:05 17:34-17:48/14 18:33	06:42 07:24-08:23/59 16:49 15:23-15:58/35	07:17 07:46-08:47/61 16:30 15:06-15:51/45
9	05:34 20:40	06:02 19:33-19:49/16 20:12	06:35 17:50-18:46/56 19:24	07:07 17:35-17:46/11 18:32	06:43 07:24-08:25/61 16:48 15:22-15:56/34	07:17 07:47-08:47/60 16:30 15:06-15:51/45
10	05:35 20:39	06:03 19:32-19:47/15 20:11	06:36 17:50-18:44/54 19:22	07:08 17:35-17:44/9 18:30	06:45 07:25-08:27/62 16:47 15:21-15:55/34	07:18 07:48-08:47/59 16:30 15:06-15:51/45
11	05:36 20:39	06:04 19:32-19:45/13 20:09	06:37 17:49-18:43/54 19:20	07:09 17:36-17:43/7 18:28	06:46 07:27-08:29/62 16:45 15:21-15:55/34	07:19 07:49-08:47/58 16:30 15:06-15:51/45
12	05:36 20:38	06:05 19:33-19:44/11 20:08	06:38 17:48-18:42/54 19:18	07:10 17:39-17:42/3 18:27	06:47 07:27-08:30/63 16:44 15:21-15:54/33	07:20 07:49-08:48/59 16:30 15:06-15:51/45
13	05:37 20:38	06:06 19:34-19:43/9 20:07	06:39 17:47-18:40/53 19:17	07:11 17:39-17:42/3 18:25	06:48 07:26-08:31/65 16:43 15:20-15:52/32	07:21 07:50-08:48/58 16:31 15:07-15:51/44
14	05:38 20:37	06:08 19:34-19:41/7 20:05	06:40 17:47-18:39/52 19:15	07:12 17:39-17:42/3 18:23	06:50 07:27-08:33/66 16:43 15:21-15:52/31	07:22 07:51-08:49/58 16:31 15:07-15:52/45
15	05:39 20:37	06:09 19:36-19:40/4 20:04	06:41 17:46-18:38/52 19:13	07:13 17:39-17:42/3 18:22	06:51 07:27-08:34/67 16:42 15:20-15:51/31	07:22 07:52-08:49/57 16:31 15:08-15:52/44
16	05:39 20:36	06:10 19:37-19:39/2 20:02	06:42 17:46-18:36/50 19:11	07:14 17:39-17:42/3 18:20	06:52 07:26-08:34/68 16:41 15:18-15:50/32	07:23 07:53-08:49/56 16:31 15:08-15:52/44
17	05:40 20:35	06:11 19:37-19:39/2 20:01	06:43 17:46-18:35/49 19:10	07:16 17:39-17:42/3 18:19	06:53 07:27-08:36/69 16:40 15:16-15:50/34	07:24 07:54-08:50/56 16:31 15:08-15:52/44
18	05:41 20:35	06:12 19:37-19:39/2 19:59	06:44 17:46-18:35/49 19:08	07:17 17:39-17:42/3 18:17	06:54 07:27-08:37/70 16:39 15:14-15:49/35	07:24 07:55-08:51/56 16:32 15:09-15:53/44
19	05:42 20:34	06:13 19:37-19:39/2 19:58	06:45 17:46-18:33/47 19:06	07:18 17:39-17:42/3 18:16	06:56 07:27-08:37/70 16:38 15:12-15:50/38	07:25 07:55-08:51/56 16:32 15:09-15:53/44
20	05:43 20:33	06:14 19:37-19:39/2 19:56	06:46 17:46-18:32/46 19:04	07:19 17:39-17:42/3 18:14	06:57 07:27-08:37/70 16:38 15:10-15:51/41	07:26 07:56-08:52/56 16:33 15:10-15:54/44
21	05:44 20:32	06:15 19:37-19:39/2 19:55	06:47 17:45-18:30/45 19:03	07:20 17:39-17:42/3 18:13	06:58 07:28-08:39/71 16:37 15:10-15:53/43	07:26 07:56-08:51/55 16:33 15:10-15:54/44
22	05:45 19:44-19:50/6 20:32	06:16 18:31-18:47/16 19:53	06:48 17:43-18:29/46 19:01	07:21 17:39-17:42/3 18:11	06:59 07:28-08:39/71 16:36 15:09-15:54/45	07:27 07:57-08:52/55 16:33 15:11-15:55/44
23	05:45 19:41-19:53/12 20:31	06:17 18:27-18:50/23 19:52	06:49 17:41-18:28/47 18:59	07:23 17:39-17:42/3 18:10	07:00 07:29-08:40/71 16:35 15:08-15:54/46	07:27 07:57-08:53/56 16:34 15:11-15:55/44
24	05:46 19:40-19:55/15 20:30	06:18 18:24-18:52/28 19:50	06:50 17:40-18:26/46 18:57	07:24 17:39-17:42/3 18:08	07:02 07:30-08:40/70 16:35 15:07-15:54/47	07:28 07:58-08:54/56 16:35 15:11-15:55/44
25	05:47 19:38-19:56/18 20:29	06:19 18:18-18:54/36 19:49	06:51 17:38-18:25/47 18:56	07:25 17:39-17:42/3 17:07	07:03 07:32-08:41/69 16:34 15:07-15:54/47	07:28 07:58-08:54/56 16:35 15:12-15:56/44
26	05:48 19:37-19:57/20 20:28	06:20 18:15-18:55/40 19:47	06:52 17:37-18:24/47 18:54	07:26 17:39-17:42/3 17:05	07:04 07:33-08:42/69 16:34 15:06-15:53/47	07:29 07:58-08:54/56 16:36 15:12-15:56/44
27	05:49 19:37-19:58/21 20:27	06:21 18:12-18:56/44 19:45	06:53 17:36-18:22/46 18:52	07:27 17:39-17:42/3 17:04	07:05 07:33-08:42/69 16:33 15:06-15:53/47	07:29 07:58-08:54/56 16:36 15:12-15:57/45
28	05:50 19:36-19:59/23 20:26	06:22 18:08-18:57/49 19:44	06:55 17:35-18:15/40 18:50	07:28 17:39-17:42/3 17:02	07:06 07:34-08:42/68 16:33 15:05-15:52/47	07:29 07:58-08:55/57 16:37 15:14-15:58/44
29	05:51 19:35-20:00/25 20:25	06:23 18:06-18:58/52 19:42	06:56 17:35-18:13/38 18:49	07:29 17:39-17:42/3 17:01 15:41-15:54/13	07:07 07:35-08:42/67 16:32 15:05-15:52/47	07:30 07:58-08:56/58 16:38 15:14-15:59/45
30	05:52 19:35-20:00/25 20:24	06:24 18:04-18:58/54 19:41	06:57 17:34-18:12/38 18:47	07:30 17:39-17:42/3 17:00 15:37-15:58/21	07:08 07:37-08:44/67 16:32 15:06-15:52/46	07:30 07:58-08:56/58 16:39 15:15-15:59/44
31	05:53 19:34-19:59/25 20:23	06:25 18:02-18:57/55 19:39	06:58 17:34-18:12/38 18:47	07:31 17:39-17:42/3 16:58 15:33-16:01/28	07:09 07:38-08:45/67 16:32 15:06-15:52/46	07:30 07:58-08:56/58 16:39 15:15-16:00/45
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	190	643	1504	453	3001	3203

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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Project:

WF Abruzzo Shadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it

Calculated:

15/11/2023 18:49/3.5.587

### SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flickering worst case WTG: AB02 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135.0 m (TOT: 220.0 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	July	August	September	October	November	December	
1	07:30 15:43-16:14/31	07:16 16:33-16:45/12	06:39 06:46	05:59 05:29	05:29 05:29	05:54 06:26	06:58 06:34	07:10 15:33-16:06/33					
	16:40	17:16	17:51 19:27	20:00 20:30	20:42 20:22	19:37 18:45	16:57 16:32						
2	07:30 15:44-16:15/31	07:15 17:17	06:37 06:45	05:58 05:29	05:30 05:30	05:55 06:27	06:59 06:35	07:11 15:33-16:06/33					
	16:41	17:14	17:52 19:28	20:01 20:31	20:41 20:21	19:36 18:44	16:56 16:31						
3	07:30 15:44-16:15/31	07:14 17:13	06:36 06:43	05:57 05:28	05:30 05:56	06:28 07:00	06:36 06:28	07:12 15:33-16:06/33					
	16:42	17:18	17:53 19:29	20:02 20:32	20:41 20:19	19:34 18:42	16:55 16:31						
4	07:30 15:45-16:16/31	07:13 17:19	06:34 06:41	05:55 05:28	05:31 05:57	06:30 07:01	06:37 07:13	15:33-16:05/32					
	16:43	17:19	17:55 19:30	20:03 20:33	20:41 20:18	19:32 18:40	16:53 16:31						
5	07:30 15:46-16:17/31	07:12 17:21	06:32 06:40	05:54 05:27	05:32 05:58	06:31 07:02	06:38 07:14	15:33-16:05/32					
	16:44	17:21	17:56 19:31	20:04 20:33	20:41 20:17	19:31 18:38	16:52 16:31						
6	07:30 15:47-16:19/32	07:11 17:22	06:31 06:38	05:53 05:27	05:32 05:59	06:32 07:03	06:40 07:15	15:33-16:05/32					
	16:45	17:22	17:57 19:32	20:05 20:34	20:41 20:16	19:29 18:37	16:51 16:30						
7	07:30 15:48-16:20/32	07:09 17:23	06:29 06:36	05:51 05:27	05:33 06:00	06:33 07:04	06:41 07:16	15:33-16:05/32					
	16:46	17:23	17:58 19:33	20:06 20:35	20:40 20:15	19:27 18:35	16:50 16:30						
8	07:30 15:48-16:21/33	07:08 17:25	06:27 06:35	05:50 05:27	05:33 06:01	06:34 07:05	06:42 07:17	15:33-16:05/32					
	16:47	17:25	17:59 19:34	20:07 20:35	20:40 20:13	19:25 18:33	16:49 16:30						
9	07:30 15:49-16:21/32	07:07 17:26	06:26 06:33	05:49 05:26	05:34 06:02	06:35 07:07	06:43 07:17	15:33-16:05/32					
	16:48	17:26	18:01 19:35	20:09 20:36	20:40 20:12	19:24 18:32	16:48 16:30						
10	07:30 15:50-16:23/33	07:06 17:27	06:24 06:31	05:48 05:26	05:35 06:03	06:36 07:08	06:45 16:03-16:16/13	07:18 15:34-16:05/31					
	16:49	17:27	18:02 19:37	20:10 20:37	20:39 20:11	19:22 18:30	16:47 16:30						
11	07:30 15:51-16:24/33	07:05 17:29	06:22 06:30	05:47 05:26	05:36 06:04	06:37 07:09	06:46 16:01-16:20/19	07:19 15:33-16:04/31					
	16:50	17:29	18:03 19:38	20:11 20:37	20:39 20:09	19:20 18:28	16:46 16:30						
12	07:29 15:51-16:25/34	07:03 17:30	06:21 06:28	05:46 05:26	05:36 06:06	06:38 07:10	06:47 15:59-16:20/21	07:20 15:34-16:04/30					
	16:51	17:30	18:04 19:39	20:12 20:38	20:38 20:08	19:19 18:27	16:45 16:30						
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	16:52	17:31	18:05 19:40	20:13 20:38	20:38 20:07	19:17 18:25	16:44 16:31						
14	07:29 15:53-16:27/34	07:01 17:32	06:17 06:25	05:43 05:26	05:38 06:08	06:40 07:12	06:50 15:57-16:18/21	07:22 15:35-16:05/30					
	16:53	17:32	18:06 19:41	20:14 20:39	20:37 20:05	19:15 18:24	16:43 16:31						
15	07:28 15:55-16:29/34	06:59 17:34	06:16 06:23	05:42 05:26	05:39 06:09	06:41 07:13	06:51 15:56-16:17/21	07:22 15:35-16:05/30					
	16:55	17:34	18:07 19:42	20:15 20:39	20:37 20:04	19:13 18:22	16:42 16:31						
16	07:28 15:55-16:30/35	06:58 17:35	06:14 06:22	05:41 05:26	05:39 06:10	06:42 07:14	06:52 15:54-16:16/22	07:23 15:35-16:05/30					
	16:56	17:35	18:09 19:43	20:16 20:39	20:36 20:02	19:12 18:20	16:41 16:31						
17	07:27 15:57-16:31/34	06:57 17:36	06:12 06:20	05:40 05:26	05:40 06:11	06:43 07:16	06:53 15:55-16:16/21	07:24 15:36-16:05/29					
	16:57	17:36	18:10 19:44	20:17 20:40	20:35 20:01	19:10 18:19	16:40 16:31						
18	07:27 15:58-16:32/34	06:55 17:37	06:11 06:18	05:39 05:26	05:41 06:12	06:44 07:17	06:54 15:54-16:14/20	07:25 15:37-16:06/29					
	16:58	17:37	18:11 19:45	20:18 20:40	20:35 19:59	19:08 18:17	16:39 16:32						
19	07:26 16:00-16:34/34	06:54 17:39	06:09 06:17	05:39 05:26	05:42 06:13	06:45 07:18	06:56 15:53-16:13/20	07:25 15:36-16:06/30					
	16:59	17:39	18:12 19:47	20:19 20:40	20:34 19:58	19:06 18:16	16:38 15:45-15:52/7	16:32 16:30					
20	07:26 16:02-16:35/33	06:52 17:40	06:07 06:15	05:38 05:26	05:43 06:14	06:46 07:19	06:57 15:41-16:12/31	07:26 15:37-16:06/29					
	17:00	17:40	18:13 19:48	20:20 20:41	20:33 19:56	19:04 18:14	16:38 16:33						
21	07:25 16:04-16:36/32	06:51 17:41	06:05 06:14	05:37 05:26	05:44 06:15	06:47 07:20	06:58 15:40-16:12/32	07:26 15:37-16:06/29					
	17:02	17:41	18:14 19:49	20:21 20:41	20:32 19:55	19:03 18:13	16:37 16:33						
22	07:24 16:06-16:37/31	06:49 17:42	06:04 06:12	05:36 05:26	05:45 06:16	06:48 07:21	06:59 15:38-16:11/33	07:27 15:38-16:07/29					
	17:03	17:42	18:15 19:50	20:22 20:41	20:32 19:53	19:01 18:11	16:36 16:33						
23	07:24 16:19-16:39/20	06:48 17:44	06:02 06:11	05:35 05:26	05:46 06:17	06:49 07:23	07:00 15:36-16:10/34	07:27 15:38-16:07/29					
	17:04	17:44	18:17 19:51	20:23 20:41	20:31 19:52	18:59 18:10	16:35 16:34						
24	07:23 16:20-16:40/20	06:46 17:45	06:00 06:09	05:34 05:27	05:46 06:18	06:50 07:24	07:02 15:35-16:09/34	07:28 15:39-16:09/30					
	17:05	17:45	18:18 19:52	20:24 20:42	20:30 19:50	18:57 18:08	16:35 16:35						
25	07:22 16:21-16:42/21	06:45 17:46	05:58 06:08	05:34 05:27	05:47 06:19	06:51 06:25	07:03 15:35-16:09/34	07:28 15:40-16:09/29					
	17:07	17:46	18:19 19:53	20:25 20:42	20:29 19:49	18:56 17:07	16:34 16:35						
26	07:21 16:21-16:43/22	06:43 17:47	05:57 06:06	05:33 05:27	05:48 06:20	06:52 06:26	07:04 15:34-16:09/35	07:29 15:40-16:09/29					
	17:08	17:47	18:20 19:54	20:25 20:42	20:28 19:47	18:54 17:05	16:34 16:36						
27	07:21 16:23-16:44/21	06:42 17:49	05:55 06:05	05:32 05:28	05:49 06:21	06:54 06:27	07:05 15:34-16:08/34	07:29 15:40-16:09/29					
	17:09	17:49	18:21 19:55	20:26 20:42	20:27 19:45	18:52 17:04	16:33 16:36						
28	07:20 16:24-16:45/21	06:40 17:50	05:53 06:03	05:31 05:28	05:50 06:22	06:55 06:29	07:06 15:33-16:07/34	07:29 15:41-16:11/30					
	17:10	17:50	18:22 19:57	20:27 20:42	20:26 19:44	18:50 17:02	16:33 16:37						
29	07:19 16:25-16:47/22		06:52 06:02	05:31 05:29	05:51 06:23	06:56 06:30	07:07 15:33-16:07/34	07:30 15:42-16:11/29					
	17:12		19:23 19:58	20:28 20:42	20:25 19:42	18:49 17:01	16:32 16:38						
30	07:18 16:27-16:48/21		06:50 06:01	05:30 05:29	05:52 06:24	06:57 06:31	07:08 15:33-16:07/34	07:30 15:42-16:12/30					
	17:13		19:24 19:59	20:29 20:42	20:24 19:41	18:47 17:00	16:32 16:39						
31	07:17 16:29-16:48/19		06:48 06:00	05:30 05:29	05:53 06:25	06:57 06:32	07:00 15:42-16:13/31	07:30 15:42-16:13/31					
	17:14		19:25 20:30	20:30 20:23	19:39 16:58	06:32 06:39	16:33 16:39						
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285	
Sum of minutes with flicker	913	12	0	0	0	0	0	0	0	0	576	944	

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: WF Abruzzo shadow flikering worst case WTG: AB03 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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
1	07:30 15:13-15:45/32 16:40	07:16 17:16	06:39 06:58-07:28/30 17:51	06:46 07:05-07:18/13 19:26 18:17-19:02/45	05:59 06:19-06:31/12 20:00	05:29 05:51-06:10/19 20:30
2	07:30 15:14-15:45/31 16:41	07:15 17:17	06:37 06:56-07:27/31 17:52	06:45 07:07-07:15/8 19:28 18:17-19:03/46	05:58 06:18-06:30/12 20:01	05:29 05:51-06:11/20 20:31
3	07:30 15:16-15:46/30 16:42	07:14 07:34-07:38/4 17:18	06:35 06:55-07:27/32 17:53	06:43 18:17-19:04/47 19:29	05:56 06:16-06:27/11 20:02	05:28 05:50-06:11/21 20:32
4	07:30 15:17-15:47/30 16:43	07:13 07:33-07:41/8 17:19	06:34 06:53-07:26/33 17:55	06:41 18:16-19:04/48 19:30	05:55 06:17-06:25/8 20:03	05:28 05:50-06:11/21 20:33
5	07:30 15:19-15:49/30 16:44	07:12 07:32-07:44/12 17:21	06:32 06:52-07:24/32 17:56	06:40 18:16-19:05/49 19:31	05:54 20:04	05:27 05:50-06:12/22 20:33
6	07:30 15:21-15:50/29 16:45	07:10 07:31-07:45/14 17:22	06:31 06:53-07:23/30 17:57	06:38 18:17-19:05/48 19:32	05:53 20:05	05:27 05:49-06:11/22 20:34
7	07:30 15:22-15:52/30 16:46	07:09 07:30-07:47/17 17:23	06:29 06:53-07:20/27 17:58	06:36 18:17-19:05/48 19:33	05:51 20:06	05:27 05:49-06:11/22 20:35
8	07:30 15:23-15:52/29 16:47	07:08 07:28-07:47/19 17:25	06:27 06:53-07:18/25 17:59	06:35 18:17-19:04/47 19:34	05:50 20:07	05:26 05:49-06:12/23 20:35
9	07:30 15:24-15:54/30 16:48	07:07 07:27-07:48/21 17:26	06:26 06:55-07:17/22 18:00	06:33 18:18-19:04/46 19:35	05:49 20:08	05:26 05:49-06:12/23 20:36
10	07:30 15:26-15:56/30 16:49	07:06 07:26-07:49/23 17:27	06:24 06:55-07:15/20 18:02	06:31 18:18-19:03/45 19:36	05:48 20:09	05:26 05:49-06:12/23 20:36
11	07:29 15:27-15:57/30 16:50	07:04 07:24-07:48/24 17:28	06:22 06:57-07:13/16 18:03	06:30 18:18-19:02/44 19:38	05:47 20:11	05:26 05:48-06:12/24 20:37
12	07:29 15:28-15:58/30 16:51	07:03 07:23-07:49/26 17:30	06:21 07:00-07:10/10 18:04	06:28 18:20-19:01/41 19:39	05:46 20:12	05:26 05:48-06:12/24 20:38
13	07:29 15:30-16:00/30 16:52	07:02 07:22-07:49/27 17:31	06:19 18:05	06:26 18:20-19:00/40 19:40	05:44 20:13	05:26 05:48-06:12/24 20:38
14	07:28 15:31-16:01/30 16:53	07:01 07:21-07:49/28 17:32	06:17 18:06	06:25 18:21-18:58/37 19:41	05:43 20:14	05:26 05:48-06:12/24 20:39
15	07:28 15:34-16:00/26 16:54	06:59 07:22-07:49/27 17:34	06:16 18:07	06:23 18:23-18:58/35 19:42	05:42 20:15	05:26 05:48-06:13/25 20:39
16	07:28 15:36-15:58/22 16:56	06:58 07:23-07:49/26 17:35	06:14 18:09	06:21 18:25-18:56/31 19:43	05:41 20:16	05:26 05:48-06:13/25 20:39
17	07:27 15:40-15:56/16 16:57	06:57 07:23-07:48/25 17:36	06:12 18:10	06:20 18:28-18:54/26 19:44	05:40 20:17	05:26 05:48-06:13/25 20:40
18	07:27 15:44-15:51/7 16:58	06:55 07:15-07:19/4 17:37 07:24-07:47/23	06:10 18:11	06:18 18:29-18:52/23 19:45	05:39 06:00-06:01/1 20:18	05:26 05:49-06:14/25 20:40
19	07:26 16:59	06:54 07:13-07:22/9 17:39 07:24-07:46/22	06:09 18:12	06:17 18:32-18:50/18 19:46	05:38 05:59-06:03/4 20:19	05:26 05:49-06:14/25 20:40
20	07:26 17:00	06:52 07:12-07:25/13 17:40 07:26-07:45/19	06:07 17:37-17:49/12 18:13	06:15 18:36-18:45/9 19:48	05:38 05:59-06:05/6 20:20	05:26 05:49-06:14/25 20:41
21	07:25 17:02	06:51 07:10-07:26/16 17:41 07:27-07:43/16	06:05 17:33-17:52/19 18:14	06:14 06:33-06:34/1 19:49	05:37 05:58-06:06/8 20:21	05:26 05:49-06:14/25 20:41
22	07:24 17:03	06:49 07:09-07:27/18 17:42 07:30-07:40/10	06:04 17:29-17:53/24 18:15	06:12 06:31-06:34/3 19:50	05:36 05:57-06:06/9 20:22	05:26 05:49-06:14/25 20:41
23	07:24 17:04	06:48 07:07-07:27/20 17:44	06:02 06:21-06:23/2 18:16 17:28-17:54/26	06:11 06:30-06:34/4 19:51	05:35 05:56-06:07/11 20:23	05:26 05:49-06:14/25 20:41
24	07:23 17:05	06:46 07:06-07:28/22 17:45	06:00 06:19-06:24/5 18:18 17:26-17:54/28	06:09 06:28-06:34/6 19:52	05:34 05:56-06:08/12 20:24	05:27 05:50-06:15/25 20:41
25	07:22 17:07	06:45 07:04-07:28/24 17:46	05:58 06:17-06:24/7 18:19 17:24-17:57/33	06:08 06:27-06:34/7 19:53	05:33 05:55-06:08/13 20:24	05:27 05:50-06:15/25 20:42
26	07:21 17:08	06:43 07:03-07:29/26 17:47	05:57 06:16-06:24/8 18:20 17:22-17:58/36	06:06 06:26-06:35/9 19:54	05:33 05:54-06:08/14 20:25	05:27 05:50-06:15/25 20:42
27	07:20 17:09	06:42 07:01-07:29/28 17:48	05:55 06:14-06:24/10 18:21 17:22-18:00/38	06:05 06:24-06:34/10 19:55	05:32 05:54-06:09/15 20:26	05:28 05:51-06:16/25 20:42
28	07:20 17:10	06:40 07:00-07:29/29 17:50	05:53 06:12-06:23/11 18:22 17:20-18:00/40	06:03 06:23-06:33/10 19:56	05:31 05:53-06:09/16 20:27	05:28 05:51-06:15/24 20:42
29	07:19 17:12		06:51 07:10-07:22/12 19:23 18:19-19:00/41	06:02 06:21-06:32/11 19:58	05:31 05:53-06:10/17 20:28	05:28 05:52-06:16/24 20:42
30	07:18 17:13		06:50 07:09-07:22/13 19:24 18:18-19:01/43	06:01 06:20-06:32/12 19:59	05:30 05:52-06:10/18 20:29	05:29 05:52-06:16/24 20:42
31	07:17 17:14		06:48 07:07-07:20/13 19:25 18:18-19:02/44		05:30 05:52-06:11/19 20:30	
Potential sun hours	295	296	369	400	451	456
Sum of minutes with flicker	492	600	773	867	206	709

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: WF Abruzzo shadow flikering worst case WTG: AB03 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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

	July	August	September	October	November	December
1	05:29 05:53-06:17/24 20:42	05:54 20:22	06:26 18:17-19:01/44 19:37	06:58 07:41-07:47/6 18:45	06:33 06:55-07:17/22 16:57	07:09 15:09-15:40/31 16:32
2	05:30 05:53-06:17/24 20:41	05:55 20:21	06:27 18:16-19:01/45 19:36	06:59 07:36-07:50/14 18:43	06:35 06:57-07:18/21 16:56	07:10 15:09-15:39/30 16:31
3	05:30 05:54-06:17/23 20:41	05:56 20:19	06:28 18:15-19:01/46 19:34	07:00 07:34-07:52/18 18:42	06:36 06:58-07:17/19 16:55	07:12 15:08-15:38/30 16:31
4	05:31 05:54-06:17/23 20:41	05:57 20:18	06:29 18:14-19:01/47 19:32	07:01 07:32-07:53/21 18:40	06:37 06:59-07:15/16 16:53	07:13 15:08-15:37/29 16:31
5	05:32 05:55-06:18/23 20:41	05:58 20:17	06:30 18:13-19:01/48 19:30	07:02 07:31-07:55/24 18:38	06:38 07:01-07:15/14 16:52	07:14 15:07-15:37/30 16:31
6	05:32 05:55-06:17/22 20:41	05:59 20:16	06:32 18:12-19:00/48 19:29	07:03 07:30-07:56/26 18:37	06:40 07:02-07:13/11 16:51	07:15 15:07-15:36/29 16:30
7	05:33 05:56-06:18/22 20:40	06:00 20:15	06:33 18:11-19:00/49 19:27	07:04 07:29-07:58/29 18:35	06:41 07:03-07:11/8 16:50	07:16 15:06-15:36/30 16:30
8	05:33 05:57-06:18/21 20:40	06:01 20:13	06:34 18:11-18:59/48 19:25	07:05 07:28-07:59/31 18:33	06:42 07:05-07:08/3 16:49	07:16 15:05-15:35/30 16:30
9	05:34 05:57-06:18/21 20:39	06:02 06:26-06:36/10 20:12	06:35 18:10-18:57/47 19:24	07:06 07:28-08:00/32 18:32	06:43 16:48	07:17 15:05-15:35/30 16:30
10	05:35 05:58-06:18/20 20:39	06:03 06:26-06:38/12 20:11	06:36 07:01-07:08/7 19:22	07:08 07:28-08:00/32 18:30	06:45 16:46	07:18 15:04-15:35/31 16:30
11	05:36 05:59-06:19/20 20:39	06:04 06:27-06:39/12 20:09	06:37 06:58-07:11/13 19:20	07:09 07:29-08:01/32 18:28	06:46 16:45	07:19 15:03-15:35/32 16:30
12	05:36 05:59-06:18/19 20:38	06:05 06:28-06:40/12 20:08	06:38 06:59-07:12/13 19:18	07:10 07:31-08:02/31 18:27	06:47 16:44	07:20 15:03-15:36/33 16:30
13	05:37 06:00-06:18/18 20:38	06:06 06:29-06:41/12 20:07	06:39 07:00-07:13/13 19:17	07:11 07:32-08:02/30 18:25	06:48 16:43	07:21 15:03-15:37/34 16:30
14	05:38 06:01-06:19/18 20:37	06:08 06:30-06:41/11 20:05	06:40 07:01-07:13/12 19:15	07:12 07:33-08:01/28 18:23	06:49 16:43	07:22 15:03-15:38/35 16:31
15	05:39 06:02-06:19/17 20:36	06:09 06:31-06:41/10 20:04	06:41 07:02-07:13/11 19:13	07:13 07:34-08:01/27 18:22	06:51 16:42	07:22 15:03-15:38/35 16:31
16	05:39 06:02-06:18/16 20:36	06:10 06:32-06:41/9 20:02	06:42 07:03-07:13/10 19:11	07:14 07:35-08:00/25 18:20	06:52 16:41	07:23 15:03-15:40/37 16:31
17	05:40 06:03-06:18/15 20:35	06:11 06:33-06:41/8 20:01	06:43 07:04-07:13/9 19:10	07:16 07:37-08:01/24 18:19	06:53 16:40	07:24 15:04-15:41/37 16:31
18	05:41 06:04-06:18/14 20:35	06:12 06:34-06:41/7 19:59	06:44 07:05-07:12/7 19:08	07:17 07:38-08:00/22 18:17	06:54 16:39	07:24 15:03-15:41/38 16:32
19	05:42 06:05-06:18/13 20:34	06:13 06:35-06:41/6 19:58	06:45 07:06-07:11/5 19:06	07:18 07:39-07:59/20 18:16	06:56 16:38	07:25 15:04-15:42/38 16:32
20	05:43 06:06-06:17/11 20:33	06:14 06:36-06:40/4 19:56	06:46 07:07-07:10/3 19:04	07:19 07:40-07:57/17 18:14	06:57 16:37	07:26 15:05-15:43/38 16:32
21	05:44 06:07-06:17/10 20:32	06:15 06:37-06:39/2 19:55	06:47 18:15-18:39/24 19:03	07:20 07:41-07:56/15 18:13	06:58 16:37	07:26 15:05-15:43/38 16:33
22	05:45 06:08-06:16/8 20:31	06:16 19:53	06:48 18:17-18:38/21 19:01	07:21 07:43-07:55/12 18:11	06:59 16:36	07:27 15:06-15:44/38 16:33
23	05:45 06:08-06:15/7 20:31	06:17 18:39-18:49/10 19:52	06:49 18:20-18:35/15 18:59	07:23 07:44-07:52/8 18:10	07:00 16:35	07:27 15:06-15:44/38 16:34
24	05:46 06:09-06:14/5 20:30	06:18 18:35-18:53/18 19:50	06:50 18:57	07:24 07:45-07:47/2 18:08	07:02 15:22-15:28/6 16:35	07:28 15:06-15:44/38 16:34
25	05:47 06:10-06:13/3 20:29	06:19 18:32-18:55/23 19:49	06:51 18:56	07:25 06:52-07:18/26 17:07	07:03 15:18-15:34/16 16:34	07:28 15:07-15:45/38 16:35
26	05:48 20:28	06:20 18:30-18:56/26 19:47	06:52 18:54	07:26 06:52-07:19/27 17:05	07:04 15:15-15:37/22 16:34	07:29 15:07-15:45/38 16:36
27	05:49 20:27	06:21 18:27-18:58/31 19:45	06:53 18:52	07:27 06:52-07:19/27 17:04	07:05 15:13-15:39/26 16:33	07:29 15:08-15:45/37 16:36
28	05:50 20:26	06:22 18:24-18:59/35 19:44	06:55 18:50	07:28 06:51-07:18/27 17:02	07:06 15:12-15:41/29 16:33	07:29 15:09-15:45/36 16:37
29	05:51 20:25	06:23 18:22-18:59/37 19:42	06:56 18:49	07:29 06:52-07:19/27 17:01	07:07 15:10-15:40/30 16:32	07:29 15:10-15:45/35 16:38
30	05:52 20:24	06:24 18:20-19:00/40 19:41	06:57 18:47	07:30 06:53-07:19/26 17:00	07:08 15:09-15:39/30 16:32	07:30 15:11-15:45/34 16:39
31	05:53 20:23	06:25 18:19-19:00/41 19:39		06:32 06:54-07:18/24 16:58		07:30 15:12-15:45/33 16:39
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	417	376	1013	809	273	1060

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: WF Abruzzo shadow flikering worst case WTG: AB04 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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	07:30 16:40	07:16 17:16	06:39 06:58-07:24/26 17:51	06:46 19:27	05:59 06:19-06:49/30 20:00 18:51-19:23/32	05:29 20:30
2	07:30 16:41	07:15 17:17	06:37 06:56-07:22/26 17:52 17:28-17:30/2	06:45 19:28	05:58 06:20-06:47/27 20:01 18:51-19:21/30	05:29 20:31
3	07:30 16:42	07:14 17:18	06:35 06:55-07:22/27 17:53 17:28-17:32/4	06:43 19:29	05:57 06:21-06:44/23 20:02 18:52-19:21/29	05:28 20:32
4	07:30 16:43	07:13 17:19	06:34 06:54-07:19/25 17:55 17:26-17:33/7	06:41 19:30	05:55 06:24-06:42/18 20:03 18:54-19:20/26	05:28 20:33
5	07:30 16:44	07:12 17:21	06:32 06:56-07:17/21 17:56 17:26-17:34/8	06:40 19:31	05:54 06:28-06:38/10 20:04 18:55-19:18/23	05:27 20:33
6	07:30 16:45	07:11 17:22	06:31 06:59-07:14/15 17:57 17:26-17:36/10	06:38 06:57-06:59/2 19:32	05:53 18:57-19:17/20 20:05	05:27 20:34
7	07:30 16:46	07:09 17:23	06:29 07:05-07:07/2 17:58 17:26-17:37/11	06:36 06:55-07:00/5 19:33	05:51 18:58-19:14/16 20:06	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 17:25-17:37/12 17:59	06:35 06:53-07:00/7 19:34	05:50 19:01-19:11/10 20:07	05:27 20:35
9	07:30 16:48	07:07 17:26	06:26 17:27-17:39/12 18:00	06:33 06:52-07:01/9 19:35	05:49 20:08	05:26 20:36
10	07:30 16:49	07:06 17:27	06:24 17:27-17:40/13 18:02	06:31 06:50-07:01/11 19:37 19:10-19:13/3	05:48 20:10	05:26 20:37
11	07:29 16:50	07:05 17:29	06:22 17:28-17:41/13 18:03	06:30 06:48-07:01/13 19:38 19:03-19:15/12	05:47 20:11	05:26 20:37
12	07:29 16:51	07:03 17:30	06:21 17:30-17:43/13 18:04	06:28 06:47-07:02/15 19:39 19:01-19:17/16	05:46 20:12	05:26 20:38
13	07:29 16:52	07:02 07:22-07:23/1 17:31	06:19 17:31-17:44/13 18:05	06:26 06:45-07:02/17 19:40 18:58-19:18/20	05:44 20:13	05:26 20:38
14	07:29 16:53	07:01 07:20-07:24/4 17:32	06:17 17:32-17:43/11 18:06	06:25 06:44-07:02/18 19:41 18:57-19:19/22	05:43 20:14	05:26 20:39
15	07:28 16:55	06:59 07:19-07:25/6 17:34	06:16 18:07	06:23 06:42-07:02/20 19:42 18:55-19:20/25	05:42 20:15	05:26 20:39
16	07:28 16:56	06:58 07:18-07:26/8 17:35	06:14 18:09	06:21 06:40-07:01/21 19:43 18:53-19:20/27	05:41 20:16	05:26 20:39
17	07:27 16:57	06:57 07:16-07:27/11 17:36	06:12 18:10	06:20 06:39-07:01/22 19:44 18:53-19:22/29	05:40 20:17	05:26 20:40
18	07:27 16:58	06:55 07:15-07:27/12 17:37	06:10 18:11	06:18 06:37-07:00/23 19:45 18:51-19:23/32	05:39 20:18	05:26 20:40
19	07:26 16:59	06:54 07:13-07:27/14 17:39	06:09 18:12	06:17 06:36-07:01/25 19:46 18:51-19:24/33	05:38 20:19	05:26 20:40
20	07:26 17:00	06:52 07:12-07:28/16 17:40	06:07 18:13	06:15 06:34-07:00/26 19:48 18:50-19:25/35	05:38 20:20	05:26 20:41
21	07:25 17:02	06:51 07:10-07:28/18 17:41	06:05 18:14	06:14 06:33-06:59/26 19:49 18:50-19:26/36	05:37 20:21	05:26 20:41
22	07:24 17:03	06:49 07:09-07:28/19 17:42	06:04 18:15	06:12 06:31-06:58/27 19:50 18:49-19:27/38	05:36 20:22	05:26 20:41
23	07:24 17:04	06:48 07:07-07:27/20 17:44	06:02 18:16	06:11 06:30-06:58/28 19:51 18:49-19:27/38	05:35 20:23	05:26 20:41
24	07:23 17:05	06:46 07:06-07:28/22 17:45	06:00 18:18	06:09 06:28-06:57/29 19:52 18:49-19:27/38	05:34 20:24	05:27 20:41
25	07:22 17:07	06:45 07:04-07:27/23 17:46	05:58 18:19	06:08 06:27-06:56/29 19:53 18:49-19:27/38	05:34 20:24	05:27 20:42
26	07:21 17:08	06:43 07:03-07:27/24 17:47	05:57 18:20	06:06 06:26-06:56/30 19:54 18:49-19:27/38	05:33 20:25	05:27 20:42
27	07:20 17:09	06:42 07:01-07:26/25 17:49	05:55 18:21	06:05 06:24-06:54/30 19:55 18:49-19:26/37	05:32 20:26	05:28 20:42
28	07:20 17:10	06:40 07:00-07:25/25 17:50	05:53 18:22	06:03 06:23-06:53/30 19:56 18:50-19:25/35	05:31 20:27	05:28 20:42
29	07:19 17:12		06:52 19:23	06:02 06:21-06:51/30 19:58 18:49-19:24/35	05:31 20:28	05:29 20:42
30	07:18 17:13		06:50 19:24	06:01 06:20-06:50/30 19:59 18:50-19:24/34	05:30 20:29	05:29 20:42
31	07:17 17:14		06:48 19:25		05:30 20:30	
Potential sun hours	295	296	369	400	451	456
Sum of minutes with flicker	0	248	271	1144	294	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: WF Abruzzo shadow flikering worst case WTG: AB04 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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	05:29 20:42	05:54 20:22	06:26 06:48-07:01/13 19:37 19:02-19:14/12	06:58 18:09-18:22/13 18:45	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:21	06:27 06:49-07:00/11 19:36 19:08-19:11/3	06:59 18:07-18:20/13 18:44	06:35 16:56	07:11 16:31
3	05:30 20:41	05:56 20:19	06:28 06:50-06:59/9 19:34	07:00 18:05-18:18/13 18:42	06:36 16:55	07:12 16:31
4	05:31 20:41	05:57 20:18	06:29 06:51-06:58/7 19:32	07:01 18:04-18:17/13 18:40	06:37 16:53	07:13 16:31
5	05:32 20:41	05:58 19:11-19:23/12 20:17	06:31 06:52-06:57/5 19:31	07:02 18:02-18:15/13 18:38	06:38 16:52	07:14 16:31
6	05:32 20:41	05:59 19:08-19:25/17 20:16	06:32 06:53-06:56/3 19:29	07:03 18:02-18:14/12 18:37	06:40 16:51	07:15 16:30
7	05:33 20:40	06:00 19:06-19:27/21 20:15	06:33 19:27	07:04 07:37-07:48/11 18:35 18:02-18:12/10	06:41 16:50	07:16 16:30
8	05:33 20:40	06:01 06:36-06:49/13 20:13 19:04-19:28/24	06:34 19:25	07:05 07:33-07:51/18 18:33 18:01-18:10/9	06:42 16:49	07:16 16:30
9	05:34 20:40	06:02 06:32-06:52/20 20:12 19:03-19:30/27	06:35 19:24	07:07 07:30-07:53/23 18:32 18:01-18:08/7	06:43 16:48	07:17 16:30
10	05:35 20:39	06:03 06:30-06:55/25 20:11 19:02-19:31/29	06:36 19:22	07:08 07:28-07:54/26 18:30 18:01-18:07/6	06:45 16:47	07:18 16:30
11	05:36 20:39	06:04 06:28-06:56/28 20:09 19:00-19:31/31	06:37 19:20	07:09 07:29-07:56/27 18:28 18:01-18:05/4	06:46 16:46	07:19 16:30
12	05:36 20:38	06:05 06:28-06:58/30 20:08 18:59-19:32/33	06:38 19:18	07:10 07:31-07:57/26 18:27 18:02-18:03/1	06:47 16:44	07:20 16:30
13	05:37 20:38	06:07 06:29-06:59/30 20:07 18:59-19:33/34	06:39 19:17	07:11 07:32-07:58/26 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 06:30-07:00/30 20:05 18:58-19:33/35	06:40 19:15	07:12 07:33-07:58/25 18:23	06:50 16:43	07:22 16:31
15	05:39 20:37	06:09 06:31-07:01/30 20:04 18:57-19:33/36	06:41 19:13	07:13 07:34-07:58/24 18:22	06:51 16:42	07:22 16:31
16	05:39 20:36	06:10 06:32-07:02/30 20:02 18:57-19:33/36	06:42 19:11	07:14 07:35-07:59/24 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 06:33-07:03/30 20:01 18:56-19:33/37	06:43 19:10	07:16 07:37-07:59/22 18:19	06:53 16:40	07:24 16:31
18	05:41 20:35	06:12 06:34-07:03/29 19:59 18:56-19:33/37	06:44 19:08	07:17 07:38-07:59/21 18:17	06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 06:35-07:04/29 19:58 18:55-19:33/38	06:45 19:06	07:18 07:39-07:59/20 18:16	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 06:36-07:04/28 19:56 18:55-19:33/38	06:46 19:04	07:19 07:40-07:59/19 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	06:15 06:37-07:04/27 19:55 18:55-19:32/37	06:47 19:03	07:20 07:41-07:58/17 18:13	06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 06:38-07:04/26 19:53 18:55-19:31/36	06:48 19:01	07:21 07:43-07:59/16 18:11	06:59 16:36	07:27 16:33
23	05:46 20:31	06:17 06:39-07:04/25 19:52 18:55-19:29/34	06:49 18:59	07:23 07:44-07:58/14 18:10	07:00 16:35	07:27 16:34
24	05:46 20:30	06:18 06:40-07:04/24 19:50 18:55-19:28/33	06:50 18:57	07:24 07:45-07:57/12 18:08	07:02 16:35	07:28 16:35
25	05:47 20:29	06:19 06:41-07:04/23 19:49 18:55-19:26/31	06:51 18:56	06:25 06:46-06:56/10 17:07	07:03 16:34	07:28 16:35
26	05:48 20:28	06:20 06:42-07:04/22 19:47 18:55-19:24/29	06:52 18:54	06:26 06:48-06:56/8 17:05	07:04 16:34	07:29 16:36
27	05:49 20:27	06:21 06:43-07:04/21 19:45 18:55-19:22/27	06:53 18:52	06:27 06:49-06:55/6 17:04	07:05 16:33	07:29 16:36
28	05:50 20:26	06:22 06:44-07:04/20 19:44 18:56-19:21/25	06:55 18:50	06:29 06:50-06:53/3 17:02	07:06 16:33	07:29 16:37
29	05:51 20:25	06:23 06:45-07:03/18 19:42 18:57-19:19/22	06:56 18:14-18:23/9 18:49	06:30 06:52-06:53/1 17:01	07:07 16:32	07:29 16:38
30	05:52 20:24	06:24 06:46-07:03/17 19:41 18:58-19:17/19	06:57 18:11-18:24/13 18:47	06:31 17:00	07:08 16:32	07:30 16:39
31	05:53 20:23	06:25 06:47-07:02/15 19:39 19:00-19:16/16		06:32 16:58		07:30 16:39
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	0	1384	85	513	0	0

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: WF Abruzzo shadow flickering worst case WTG: AB05 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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
1	07:30 13:01-13:09/8 16:41	07:16 17:16	06:39 08:14-08:51/37 17:51 15:14-16:06/52	06:46 16:27-17:24/57 19:27	05:59 17:17-18:09/52 20:00	05:29 19:48-20:05/17 20:30
2	07:30 13:02-13:10/8 16:41	07:15 17:17	06:37 08:14-08:50/36 17:52 15:13-16:06/53	06:45 17:37-17:56/19 19:28 16:27-17:23/56	05:58 17:18-18:08/50 20:01	05:29 19:49-20:06/17 20:31
3	07:30 13:02-13:11/9 16:42	07:14 17:18	06:36 08:14-08:50/36 17:53 15:12-16:08/56	06:43 17:34-18:00/26 19:29 16:29-17:23/54	05:57 17:18-18:07/49 20:02	05:28 19:48-20:06/18 20:32
4	07:30 13:03-13:12/9 16:43	07:13 17:20	06:34 08:14-08:49/35 17:55 15:11-16:08/57	06:41 17:31-18:03/32 19:30 16:29-17:21/52	05:55 17:19-18:06/47 20:03	05:28 19:49-20:07/18 20:33
5	07:30 13:03-13:13/10 16:44	07:12 17:21	06:32 08:15-08:47/32 17:56 15:10-16:08/58	06:40 17:28-18:04/36 19:31 16:30-17:20/50	05:54 17:20-18:06/46 20:04	05:28 19:49-20:08/19 20:33
6	07:30 13:04-13:14/10 16:45	07:11 17:22	06:31 08:16-08:46/30 17:57 15:10-16:09/59	06:38 17:26-18:07/41 19:32 16:31-17:20/49	05:53 17:22-18:05/43 20:05	05:27 19:49-20:08/19 20:34
7	07:30 13:05-13:15/10 16:46	07:09 17:23	06:29 08:16-08:44/28 17:58 15:09-16:09/60	06:36 17:24-18:08/44 19:33 16:32-17:18/46	05:52 17:23-18:04/41 20:06	05:27 19:49-20:09/20 20:35
8	07:30 13:04-13:16/12 16:47	07:08 17:25	06:27 08:17-08:42/25 17:59 15:08-16:09/61	06:35 17:22-18:08/46 19:34 16:33-17:16/43	05:50 17:23-18:02/39 20:07	05:27 19:50-20:09/19 20:35
9	07:30 13:05-13:17/12 16:48	07:07 17:26	06:26 08:20-08:40/20 18:01 15:09-16:10/61	06:33 17:22-18:10/48 19:35 16:35-17:15/40	05:49 17:24-18:01/37 20:08	05:27 19:50-20:10/20 20:36
10	07:30 13:06-13:18/12 16:49	07:06 17:27	06:24 08:22-08:37/15 18:02 15:08-16:09/61	06:31 17:20-18:10/50 19:37 16:37-17:13/36	05:48 17:26-18:00/34 20:10	05:26 19:51-20:11/20 20:36
11	07:29 13:07-13:20/13 16:50	07:05 17:29	06:22 08:27-08:30/3 18:03 15:08-16:09/61	06:30 17:19-18:11/52 19:38 16:38-17:11/33	05:47 17:27-17:59/32 20:11	05:26 19:51-20:12/21 20:37
12	07:29 13:07-13:20/13 16:51	07:03 17:30	06:21 15:08-16:10/62 18:04	06:28 17:18-18:12/54 19:39 16:41-17:09/28	05:46 17:29-17:58/29 20:12	05:26 19:51-20:11/20 20:38
13	07:29 13:08-13:22/14 16:52	07:02 17:31	06:19 15:08-16:09/61 18:05	06:26 17:17-18:12/55 19:40 16:44-17:06/22	05:45 17:31-17:56/25 20:13	05:26 19:51-20:12/21 20:38
14	07:28 13:08-13:23/15 16:54	07:01 17:32	06:17 15:08-16:08/60 18:06	06:25 17:17-18:13/56 19:41 16:48-17:02/14	05:44 17:33-17:54/21 20:14	05:26 19:51-20:12/21 20:38
15	07:28 13:09-13:24/15 16:55	06:59 08:27-08:42/15 17:34	06:16 15:09-16:09/60 18:07	06:23 17:16-18:13/57 19:42	05:43 17:36-17:51/15 20:15	05:26 19:52-20:13/21 20:39
16	07:28 13:09-13:26/17 16:56	06:58 08:25-08:45/20 17:35	06:14 15:09-16:08/59 18:09	06:22 17:16-18:13/57 19:43	05:42 17:40-17:47/7 20:16	05:26 19:52-20:13/21 20:39
17	07:27 13:11-13:30/19 16:57	06:57 08:22-08:46/24 17:36	06:12 15:09-16:07/58 18:10	06:20 17:15-18:13/58 19:44	05:41 19:54-19:55/1 20:17	05:26 19:52-20:13/21 20:40
18	07:27 13:11-13:33/22 16:58	06:55 08:21-08:48/27 17:38	06:11 15:09-16:09/60 18:11	06:18 17:14-18:13/59 19:45	05:40 19:54-19:59/9 20:18	05:26 19:53-20:14/21 20:40
19	07:26 13:12-13:37/25 16:59	06:54 08:19-08:49/30 17:39	06:09 15:11-16:11/60 18:12	06:17 17:15-18:13/58 19:46	05:39 19:54-19:55/1 20:19	05:26 19:53-20:15/22 20:40
20	07:26 13:13-13:41/28 17:01	06:52 08:18-08:50/32 17:40 15:37-15:44/7	06:07 15:11-16:12/61 18:13	06:15 17:14-18:13/59 19:48	05:38 19:54-19:55/1 20:20	05:26 19:53-20:15/22 20:41
21	07:25 13:14-13:44/30 17:02	06:51 08:17-08:51/34 17:41 15:30-15:50/20	06:05 15:12-16:13/61 18:14	06:14 17:14-18:13/59 19:49	05:37 19:52-19:56/4 20:21	05:26 19:53-20:15/22 20:41
22	07:24 13:15-13:48/33 17:03	06:49 08:17-08:52/35 17:43 15:27-15:55/28	06:04 15:12-16:15/63 18:15	06:12 17:14-18:12/58 19:50	05:36 19:51-19:57/6 20:22	05:26 19:53-20:15/22 20:41
23	07:24 13:17-13:52/35 17:04	06:48 08:15-08:52/37 17:44 15:24-15:57/33	06:02 15:14-16:17/63 18:17	06:11 17:14-18:13/59 19:51	05:35 19:50-19:57/7 20:23	05:27 19:54-20:16/22 20:41
24	07:23 13:18-13:55/37 17:06	06:46 08:15-08:52/37 17:45 15:22-15:59/37	06:00 15:15-16:18/63 18:18	06:09 17:14-18:12/58 19:52	05:34 19:50-19:59/9 20:24	05:27 19:54-20:15/21 20:41
25	07:22 13:19-13:58/39 17:07	06:45 08:14-08:52/38 17:46 15:19-16:01/42	05:58 15:16-16:20/64 18:19	06:08 17:15-18:12/57 19:53	05:34 19:49-19:59/10 20:24	05:27 19:54-20:15/21 20:42
26	07:21 13:20-13:58/38 17:08	06:43 08:15-08:52/37 17:47 15:18-16:03/45	05:57 15:19-16:22/63 18:20	06:06 17:15-18:12/57 19:54	05:33 19:48-20:00/12 20:25	05:28 19:55-20:16/21 20:42
27	07:20 13:22-13:57/35 17:09	06:42 08:14-08:52/38 17:49 15:16-16:04/48	05:55 15:20-16:23/63 18:21	06:05 17:15-18:11/56 19:55	05:32 19:49-20:01/12 20:26	05:28 19:55-20:16/21 20:42
28	07:20 13:24-13:56/32 17:11	06:40 08:14-08:52/38 17:50 15:16-16:05/49	05:53 15:22-16:25/63 18:22	06:03 17:16-18:11/55 19:56	05:32 19:48-20:02/14 20:27	05:28 19:54-20:15/21 20:42
29	07:19 13:26-13:54/28 17:12	06:39 08:14-08:52/38 17:51 15:16-16:05/49	05:52 15:22-16:25/63 18:23	06:02 17:17-18:10/53 19:58	05:31 19:49-20:03/14 20:28	05:29 19:55-20:16/21 20:42
30	07:18 13:29-13:52/23 17:13	06:38 08:14-08:52/38 17:52 15:16-16:05/49	05:51 15:22-16:25/63 18:24	06:01 17:16-18:09/53 19:59	05:30 19:48-20:03/15 20:29	05:29 19:55-20:15/20 20:42
31	07:17 13:33-13:49/16 17:14	06:37 08:14-08:52/38 17:53 15:16-16:05/49	05:50 15:22-16:25/63 18:25	06:00 16:27-17:25/58 19:25	05:30 19:49-20:05/16 20:30	05:29 19:55-20:15/20 20:42
Potential sun hours	295	296	369	400	451	455
Sum of minutes with flicker	627	751	2158	2052	687	610

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: WF Abruzzo shadow flickering worst case WTG: AB05 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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

	July	August	September	October	November	December
1	05:30 19:55-20:16/21 20:41	05:54 17:39-18:09/30 20:22	06:26 17:19-18:11/52 19:37 16:38-17:11/33	06:58 15:47-16:48/61 18:45	06:33 16:57	07:09 12:49-13:02/13 16:32
2	05:30 19:55-20:15/20 20:41	05:55 17:37-18:10/33 20:21	06:28 17:19-18:09/50 19:36 16:36-17:12/36	06:59 15:46-16:48/62 18:44	06:35 16:56	07:10 12:49-13:01/12 16:32
3	05:31 19:56-20:16/20 20:41	05:56 17:36-18:11/35 20:19	06:29 17:20-18:08/48 19:34 16:33-17:13/40	07:00 09:01-09:13/12 18:42 15:46-16:47/61	06:36 16:55	07:12 12:49-13:01/12 16:31
4	05:31 19:55-20:15/20 20:41	05:57 17:34-18:12/38 20:18	06:30 17:20-18:06/46 19:32 16:31-17:14/43	07:01 08:58-09:17/19 18:40 15:45-16:47/62	06:37 16:54	07:13 12:50-13:01/11 16:31
5	05:32 19:56-20:15/19 20:41	05:58 17:33-18:13/40 20:17	06:31 17:21-18:05/44 19:31 16:29-17:15/46	07:02 08:56-09:19/23 18:38 15:46-16:47/61	06:38 16:52	07:14 12:50-13:00/10 16:31
6	05:32 19:55-20:14/19 20:40	05:59 17:32-18:14/42 20:16	06:32 17:22-18:03/41 19:29 16:28-17:16/48	07:03 08:54-09:20/26 18:37 15:46-16:46/60	06:40 16:51	07:15 12:50-13:00/10 16:31
7	05:33 19:56-20:14/18 20:40	06:00 17:31-18:15/44 20:15	06:33 17:24-18:01/37 19:27 16:26-17:16/50	07:04 08:52-09:21/29 18:35 15:46-16:45/59	06:41 16:50	07:16 12:50-13:00/10 16:31
8	05:34 19:56-20:14/18 20:40	06:01 17:30-18:16/46 20:13	06:34 17:26-17:58/32 19:25 16:24-17:16/52	07:05 08:51-09:22/31 18:33 15:45-16:44/59	06:42 16:49	07:16 12:51-13:00/9 16:30
9	05:34 19:55-20:13/18 20:39	06:03 17:29-18:16/47 20:12	06:35 17:28-17:55/27 19:24 16:23-17:17/54	07:07 08:49-09:23/34 18:32 15:45-16:43/58	06:43 16:48	07:17 12:51-13:00/9 16:30
10	05:35 19:56-20:13/17 20:39	06:04 17:28-18:17/49 20:11	06:36 17:31-17:51/20 19:22 16:22-17:17/55	07:08 08:48-09:23/35 18:30 15:46-16:42/56	06:45 13:12-13:13/1 16:47	07:18 12:51-12:59/8 16:30
11	05:36 19:56-20:13/17 20:39	06:05 17:27-18:17/50 20:09	06:37 17:38-17:43/5 19:20 16:20-17:17/57	07:09 08:48-09:24/36 18:28 15:46-16:41/55	06:46 13:05-13:22/17 16:46	07:19 12:51-12:59/8 16:31
12	05:36 19:56-20:12/16 20:38	06:06 17:26-18:18/52 20:08	06:38 16:19-17:17/58 19:18	07:10 08:48-09:25/37 18:27 15:47-16:40/53	06:47 13:01-13:24/23 16:45	07:20 12:52-12:59/7 16:31
13	05:37 19:56-20:12/16 20:38	06:07 17:25-18:18/53 20:07	06:39 16:18-17:17/59 19:17	07:11 08:47-09:25/38 18:25 15:48-16:39/51	06:48 12:58-13:26/28 16:44	07:21 12:53-13:00/7 16:31
14	05:38 19:57-20:12/15 20:37	06:08 17:24-18:18/54 20:05	06:40 16:17-17:17/60 19:15	07:12 08:47-09:25/38 18:24 15:48-16:37/49	06:49 12:57-13:29/32 16:43	07:22 12:53-13:00/7 16:31
15	05:39 19:57-20:11/14 20:36	06:09 17:23-18:18/55 20:04	06:41 16:13-17:15/62 19:13	07:13 08:46-09:24/38 18:22 15:49-16:36/47	06:51 12:55-13:30/35 16:42	07:22 12:53-12:59/6 16:31
16	05:40 19:58-20:11/13 20:36	06:10 17:23-18:19/56 20:02	06:42 16:10-17:13/63 19:12	07:14 08:46-09:24/38 18:20 15:50-16:34/44	06:52 12:53-13:31/38 16:41	07:23 12:54-13:00/6 16:31
17	05:40 19:58-20:10/12 20:35	06:11 17:22-18:19/57 20:01	06:43 16:08-17:11/63 19:10	07:16 08:47-09:24/37 18:19 15:52-16:31/39	06:53 12:52-13:31/39 16:40	07:24 12:55-13:00/5 16:32
18	05:41 19:58-20:09/11 20:34	06:12 17:21-18:19/58 19:59	06:44 16:05-17:08/63 19:08	07:17 08:47-09:24/37 18:17 15:54-16:30/36	06:54 12:52-13:29/37 16:39	07:24 12:54-13:00/6 16:32
19	05:42 19:59-20:09/10 20:34	06:13 17:21-18:18/57 19:58	06:45 16:03-17:06/63 19:06	07:18 08:47-09:23/36 18:16 15:56-16:27/31	06:56 12:51-13:26/35 16:38	07:25 12:55-13:01/6 16:32
20	05:43 20:00-20:08/8 20:33	06:14 17:20-18:18/58 19:56	06:46 16:01-17:04/63 19:04	07:19 08:47-09:22/35 18:14 15:58-16:24/26	06:57 12:50-13:23/33 16:38	07:26 12:56-13:02/6 16:33
21	05:44 20:01-20:08/7 20:32	06:15 17:20-18:18/58 19:55	06:47 15:59-17:02/63 19:03	07:20 08:48-09:21/33 18:13 16:02-16:20/18	06:58 12:50-13:20/30 16:37	07:26 12:56-13:02/6 16:33
22	05:45 20:02-20:07/5 20:31	06:16 17:19-18:18/59 19:53	06:48 15:57-16:59/62 19:01	07:21 08:49-09:21/32 18:11	06:59 12:49-13:17/28 16:36	07:27 12:57-13:03/6 16:34
23	05:46 20:02-20:05/3 20:31	06:17 17:19-18:17/58 19:52	06:49 15:56-16:57/61 18:59	07:23 08:50-09:19/29 18:10	07:00 12:49-13:14/25 16:36	07:27 12:57-13:03/6 16:34
24	05:47 20:30 20:30	06:18 17:18-18:17/59 19:50	06:50 15:54-16:55/61 18:57	07:24 08:51-09:17/26 18:08	07:02 12:48-13:11/23 16:35	07:28 12:57-13:03/6 16:35
25	05:48 20:29 20:28	06:19 17:18-18:17/59 19:49	06:51 15:53-16:53/60 18:56	06:25 07:52-08:15/23 17:07	07:03 12:49-13:08/19 16:34	07:28 12:58-13:04/6 16:35
26	05:49 20:28 20:28	06:20 17:18-18:16/58 19:47	06:52 15:52-16:50/58 18:54	06:26 07:55-08:14/19 17:05	07:04 12:49-13:05/16 16:34	07:28 12:59-13:04/5 16:36
27	05:49 20:27 20:27	06:21 17:18-18:15/57 19:45	06:54 15:51-16:49/58 18:52	06:27 07:58-08:11/13 17:04	07:05 12:48-13:03/15 16:33	07:29 12:59-13:05/6 16:37
28	05:50 17:49-18:00/11 20:26	06:22 17:18-18:15/57 19:44	06:55 15:50-16:49/59 18:51	06:29 17:03 17:03	07:06 12:48-13:03/15 16:33	07:29 13:00-13:06/6 16:37
29	05:51 17:45-18:03/18 20:25	06:23 17:18-18:14/56 19:42 16:49-17:03/14	06:56 15:49-16:49/60 18:49	06:30 17:01 17:01	07:07 12:48-13:02/14 16:33	07:29 13:00-13:07/7 16:38
30	05:52 17:43-18:05/22 20:24	06:24 17:18-18:13/55 19:41 16:44-17:07/23	06:57 15:48-16:49/61 18:47	06:31 17:00 17:00	07:08 12:48-13:01/13 16:32	07:30 13:01-13:07/6 16:39
31	05:53 17:41-18:07/26 20:23	06:25 17:18-18:12/54 19:39 16:41-17:09/28	 	06:32 16:59 16:59	 	07:30 13:01-13:08/7 16:40
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	414	1649	2073	1802	516	235

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: WF Abruzzo shadow flikering worst case WTG: AB06 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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
1	07:30 09:13-09:35/22 16:41 13:53-14:29/36	07:16 15:01-15:26/25 17:16 14:17-14:56/39	06:39 15:13-15:21/8 17:51	06:46 19:27	05:59 18:27-19:18/51 20:00 17:53-18:23/30	05:29 20:30
2	07:30 09:14-09:36/22 16:41 13:53-14:30/37	07:15 15:00-15:28/28 17:17 14:18-14:55/37	06:37 17:52	06:45 19:28	05:58 18:28-19:18/50 20:01 17:54-18:22/28	05:29 20:31
3	07:30 09:14-09:37/23 16:42 13:54-14:31/37	07:14 14:59-15:30/31 17:18 14:19-14:55/36	06:36 17:53	06:43 19:29	05:57 18:28-19:17/49 20:02 17:55-18:20/25	05:28 20:32
4	07:30 09:14-09:38/24 16:43 13:54-14:32/38	07:13 14:58-15:31/33 17:20 14:20-14:54/34	06:34 17:55	06:41 19:30	05:55 18:29-19:18/49 20:03 17:56-18:18/22	05:28 20:33
5	07:30 09:14-09:39/25 16:44 13:54-14:33/39	07:12 14:57-15:33/36 17:21 14:21-14:54/33	06:32 17:56	06:40 19:31	05:54 18:30-19:18/48 20:04 17:59-18:16/17	05:28 20:33
6	07:30 09:14-09:40/26 16:45 13:55-14:35/40	07:11 14:57-15:34/37 17:22 14:23-14:53/30	06:31 17:57	06:38 18:12-18:13/1 19:32	05:53 18:32-19:19/47 20:05 18:02-18:14/12	05:27 20:34
7	07:30 09:14-09:41/27 16:46 13:55-14:36/41	07:09 14:55-15:34/39 17:23 14:24-14:51/27	06:29 17:58	06:36 18:04-18:20/16 19:33	05:52 18:33-19:19/46 20:06	05:27 20:35
8	07:30 09:14-09:40/26 16:47 13:55-14:36/41	07:08 14:55-15:35/40 17:25 14:27-14:49/22	06:27 17:59	06:35 18:00-18:22/22 19:34	05:50 18:34-19:19/45 20:07	05:27 20:35
9	07:30 09:14-09:41/27 16:48 13:55-14:37/42	07:07 14:55-15:36/41 17:26 14:30-14:47/17	06:26 18:01	06:33 17:58-18:25/27 19:35	05:49 18:37-19:19/42 20:08	05:27 20:36
10	07:30 09:14-09:42/28 16:49 13:56-14:38/42	07:06 14:55-15:37/42 17:27 14:34-14:44/10	06:24 18:02	06:31 17:56-18:26/30 19:37	05:48 18:46-19:19/33 20:09	05:26 20:36
11	07:29 09:15-09:43/28 16:50 13:57-14:39/42	07:05 14:54-15:37/43 17:29	06:22 18:03	06:30 17:54-18:26/32 19:38	05:47 18:46-19:19/33 20:11	05:26 20:37
12	07:29 09:14-09:43/29 16:51 13:57-14:38/41	07:03 14:54-15:37/43 17:30	06:21 18:04	06:28 17:53-18:28/35 19:39	05:46 18:46-19:19/33 20:12	05:26 20:37
13	07:29 09:15-09:44/29 16:52 13:57-14:39/42	07:02 14:54-15:38/44 17:31	06:19 18:05	06:26 17:52-18:28/36 19:40	05:45 18:46-19:19/33 20:13	05:26 20:38
14	07:28 09:15-09:44/29 16:54 13:57-14:39/42	07:01 14:53-15:37/44 17:32	06:17 18:06	06:25 17:51-18:29/38 19:41	05:44 18:46-19:19/33 20:14	05:26 20:38
15	07:28 09:15-09:45/30 16:55 13:58-14:40/42	06:59 14:54-15:38/44 17:34	06:16 18:07	06:23 18:39-18:52/13 19:42 17:50-18:29/39	05:43 18:47-19:19/32 20:15	05:26 20:39
16	07:28 09:15-09:45/30 16:56 13:58-14:40/42	06:58 14:54-15:38/44 17:35	06:14 18:09	06:22 18:35-18:54/19 19:43 17:49-18:29/40	05:42 18:47-19:18/31 20:16	05:26 20:39
17	07:27 09:16-09:46/30 16:57 13:59-14:41/42	06:57 14:54-15:38/44 17:36	06:12 18:10	06:20 18:34-18:56/22 19:44 17:49-18:30/41	05:41 18:47-19:18/31 20:17	05:26 20:40
18	07:27 09:16-09:46/30 16:58 14:00-14:40/40	06:55 14:55-15:38/43 17:38	06:11 18:11	06:18 19:05-19:14/9 17:48-18:29/41 19:45 18:32-18:57/25	05:40 18:48-19:17/29 20:18	05:26 20:40
19	07:26 09:17-09:47/30 16:59 14:00-14:40/40	06:54 14:55-15:37/42 17:39	06:09 18:12	06:17 19:03-19:17/14 17:48-18:30/42 19:46 18:31-18:58/27	05:39 18:48-19:17/29 20:19	05:26 20:40
20	07:25 09:17-09:47/30 17:01 14:01-14:41/40	06:52 14:56-15:37/41 17:40	06:07 18:13	06:15 19:01-19:18/17 19:48 17:48-18:59/71	05:38 18:50-19:17/27 20:20	05:26 20:41
21	07:25 09:17-09:47/30 17:02 14:02-14:41/39	06:51 14:56-15:36/40 17:41	06:05 18:14	06:14 17:48-19:20/92 19:49	05:37 18:50-19:16/26 20:21	05:26 20:41
22	07:24 09:17-09:46/29 17:03 14:02-14:41/39	06:49 14:58-15:36/38 17:43	06:04 18:15	06:12 17:47-19:20/93 19:50	05:36 18:51-19:15/24 20:22	05:26 20:41
23	07:24 09:18-09:47/29 17:04 14:04-14:43/39	06:48 14:58-15:34/36 17:44	06:02 18:17	06:11 17:48-19:21/93 19:51	05:35 18:51-19:14/23 20:23	05:27 20:41
24	07:23 09:19-09:47/28 17:06 14:05-14:45/40	06:46 15:00-15:34/34 17:45	06:00 18:18	06:09 17:48-19:21/93 19:52	05:34 18:53-19:14/21 20:23	05:27 20:41
25	07:22 09:19-09:46/27 17:07 14:05-14:46/41	06:45 15:01-15:32/31 17:46	05:58 18:19	06:08 17:48-19:21/93 19:53	05:34 18:54-19:13/19 20:24	05:27 20:42
26	07:21 09:20-09:46/26 17:08 14:06-14:47/41	06:43 15:03-15:31/28 17:47	05:57 18:20	06:06 17:49-19:22/93 19:54	05:33 18:54-19:12/18 20:25	05:28 20:42
27	07:20 09:21-09:45/24 17:09 14:08-14:49/41	06:42 15:05-15:28/23 17:49	05:55 18:21	06:05 17:49-19:21/92 19:55	05:32 18:56-19:11/15 20:26	05:28 20:42
28	07:20 09:22-09:44/22 17:11 14:09-14:50/41	06:40 15:08-15:26/18 17:50	05:53 18:22	06:04 18:27-19:21/54 19:56 17:50-18:26/36	05:32 18:58-19:09/11 20:27	05:28 20:42
29	07:19 09:23-09:43/20 14:11-14:51/40 17:12 15:09-15:17/8	06:52 19:23	06:52 19:23	06:02 18:27-19:21/54 19:58 17:51-18:25/34	05:31 19:01-19:08/7 20:28	05:29 20:42
30	07:18 09:25-09:41/16 14:13-14:53/40 17:13 15:05-15:21/16	06:50 19:24	06:50 19:24	06:01 18:27-19:19/52 19:59 17:51-18:24/33	05:30 20:29	05:29 20:42
31	07:17 09:27-09:39/12 14:15-14:54/39 17:14 15:03-15:24/21	06:48 19:25	06:48 19:25	05:30 20:30	05:30 20:30	05:29 20:42
Potential sun hours	295	296	369	400	451	455
Sum of minutes with flicker	2099	1317	8	1569	1069	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 Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:49/3.5.587

## SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flikering worst case WTG: AB06 - Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 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

	July	August	September	October	November	December
1	05:30 20:41	05:54 18:57-19:30/33 20:22	06:26 17:54-18:26/32 19:37	06:58 18:45	06:33 14:23-15:06/43 16:57 14:02-14:13/11	07:09 08:57-09:25/28 16:32 13:39-14:21/42
2	05:30 20:41	05:55 18:57-19:30/33 20:21	06:28 17:55-18:25/30 19:36	06:59 18:44	06:35 14:25-15:06/41 16:56 13:59-14:18/19	07:10 08:57-09:25/28 16:32 13:39-14:21/42
3	05:31 20:41	05:56 18:50-18:55/5 20:19 18:57-19:30/33	06:29 17:56-18:23/27 19:34	07:00 18:42	06:36 14:25-15:05/40 16:55 13:56-14:19/23	07:12 08:58-09:26/28 16:31 13:40-14:21/41
4	05:31 20:41	05:57 18:46-19:30/44 20:18	06:30 17:58-18:20/22 19:32	07:01 18:40	06:37 14:25-15:04/39 16:54 13:54-14:21/27	07:13 08:59-09:26/27 16:31 13:40-14:21/41
5	05:32 20:41	05:58 18:44-19:29/45 20:17	06:31 18:01-18:17/16 19:31	07:02 18:38	06:38 14:27-15:04/37 16:52 13:53-14:23/30	07:14 08:59-09:26/27 16:31 13:40-14:21/41
6	05:32 20:40	05:59 18:42-19:29/47 20:16 18:15-18:20/5	06:32 18:07-18:10/3 19:29	07:03 18:37	06:40 14:27-15:02/35 16:51 13:51-14:24/33	07:15 09:00-09:26/26 16:31 13:41-14:21/40
7	05:33 20:40	06:00 18:41-19:29/48 20:15 18:10-18:24/14	06:33 19:27	07:04 18:35	06:41 14:28-15:01/33 16:50 13:50-14:24/34	07:15 09:01-09:26/25 16:31 13:41-14:20/39
8	05:34 20:40	06:01 18:40-19:28/48 20:13 18:08-18:27/19	06:34 19:25	07:05 18:33	06:42 14:30-15:01/31 16:49 13:49-14:26/37	07:16 09:02-09:26/24 16:31 13:42-14:20/38
9	05:34 20:39	06:03 18:38-19:27/49 20:12 18:06-18:28/22	06:35 19:24	07:07 18:32	06:43 14:31-14:59/28 16:48 13:48-14:26/38	07:17 09:03-09:26/23 16:30 13:43-14:20/37
10	05:35 20:39	06:04 18:38-19:26/48 20:11 18:04-18:30/26	06:36 19:22	07:08 18:30	06:45 09:02-09:06/4 13:47-14:27/40 16:47 14:32-14:57/25	07:18 09:04-09:26/22 16:30 13:42-14:19/37
11	05:36 20:39	06:05 18:37-19:27/50 20:09 18:02-18:31/29	06:37 19:20	07:09 18:28	06:46 08:59-09:11/12 13:47-14:26/39 16:46 14:35-14:56/21	07:19 09:03-09:25/22 16:31 13:43-14:19/36
12	05:37 20:38	06:06 18:36-19:27/51 20:08 18:01-18:32/31	06:38 19:18	07:10 18:27	06:47 08:57-09:13/16 13:45-14:25/40 16:45 14:38-14:53/15	07:20 09:04-09:26/22 16:31 13:44-14:19/35
13	05:37 20:38	06:07 18:35-19:28/53 20:07 18:00-18:33/33	06:39 19:17	07:11 15:44-15:57/13 18:25	06:48 08:55-09:15/20 13:43-14:23/40 16:44 14:42-14:48/6	07:21 09:05-09:26/21 16:31 13:44-14:19/35
14	05:38 19:11-19:14/3 20:37	06:08 18:35-19:28/53 20:05 17:59-18:33/34	06:40 19:15	07:12 15:39-16:00/21 18:24	06:49 08:55-09:17/22 16:43 13:42-14:23/41	07:22 09:06-09:26/20 16:31 13:45-14:19/34
15	05:39 19:08-19:18/10 20:36	06:09 17:58-19:29/91 20:04	06:41 19:13	07:13 15:36-16:02/26 18:22	06:51 08:54-09:18/24 16:42 13:41-14:21/40	07:22 09:06-09:26/20 16:31 13:45-14:18/33
16	05:40 19:07-19:20/13 20:36	06:10 17:57-19:29/92 20:02	06:42 19:12	07:14 15:34-16:03/29 18:20	06:52 08:53-09:18/25 16:41 13:39-14:20/41	07:23 09:07-09:26/19 16:31 13:46-14:19/33
17	05:40 19:04-19:21/17 20:35	06:11 17:56-19:28/92 20:01	06:43 19:10	07:16 15:32-16:04/32 18:19	06:53 08:53-09:20/27 16:40 13:38-14:19/41	07:24 09:09-09:27/18 16:32 13:47-14:19/32
18	05:41 19:04-19:22/18 20:34	06:12 17:55-19:28/93 19:59	06:44 19:08	07:17 15:31-16:05/34 18:17	06:54 08:53-09:21/28 16:39 13:39-14:19/40	07:24 09:09-09:27/18 16:32 13:47-14:19/32
19	05:42 19:03-19:23/20 20:34	06:13 17:54-19:28/94 19:58	06:45 19:06	07:18 15:28-16:06/37 18:16	06:56 08:52-09:21/29 16:38 13:38-14:17/39	07:25 09:10-09:27/17 16:32 13:47-14:20/33
20	05:43 19:02-19:24/22 20:33	06:14 17:54-19:27/93 19:56	06:46 19:04	07:19 15:28-16:06/38 18:14	06:57 08:52-09:21/29 16:38 13:37-14:16/39	07:26 09:11-09:28/17 16:33 13:48-14:20/32
21	05:44 19:01-19:25/24 20:32	06:15 17:53-19:26/93 19:55	06:47 19:03	07:20 15:26-16:07/41 18:13	06:58 08:53-09:23/30 16:37 13:38-14:17/39	07:26 09:11-09:28/17 16:33 13:48-14:20/32
22	05:45 19:01-19:26/25 20:31	06:16 19:05-19:25/20 19:53 17:53-19:04/71	06:48 19:01	07:21 15:26-16:08/42 18:11	06:59 08:53-09:23/30 16:36 13:37-14:17/40	07:27 09:12-09:29/17 16:34 13:49-14:21/32
23	05:46 18:59-19:26/27 20:31	06:17 19:06-19:23/17 19:52 17:52-19:03/71	06:49 18:59	07:23 15:25-16:08/43 18:10	07:00 08:53-09:23/30 16:36 13:37-14:17/40	07:27 09:12-09:29/17 16:34 13:49-14:21/32
24	05:47 18:59-19:27/28 20:30	06:18 19:07-19:21/14 17:52-18:34/42 19:50 18:35-19:02/27	06:50 18:57	07:24 15:24-16:07/43 18:08	07:02 08:53-09:23/30 16:35 13:37-14:17/40	07:28 09:12-09:29/17 16:35 13:49-14:22/33
25	05:48 18:58-19:28/30 20:29	06:19 19:10-19:18/8 17:52-18:33/41 19:49 18:36-19:01/25	06:51 18:56	07:25 14:24-15:07/43 17:07	07:03 08:54-09:24/30 16:34 13:38-14:19/41	07:28 09:13-09:30/17 16:35 13:50-14:23/33
26	05:49 18:58-19:28/30 20:28	06:20 18:37-18:59/22 19:47 17:52-18:33/41	06:52 18:54	07:26 14:24-15:08/44 17:05	07:04 08:54-09:24/30 16:34 13:37-14:19/42	07:28 09:13-09:31/18 16:36 13:51-14:23/32
27	05:49 18:58-19:29/31 20:27	06:21 18:38-18:57/19 19:45 17:52-18:32/40	06:54 18:52	07:27 14:23-15:08/45 17:04	07:05 08:54-09:24/30 16:33 13:37-14:19/42	07:29 09:13-09:31/18 16:37 13:51-14:24/33
28	05:50 18:57-19:29/32 20:26	06:22 18:41-18:54/13 19:44 17:52-18:31/39	06:55 18:51	07:29 14:23-15:07/44 17:03	07:06 08:55-09:24/29 16:33 13:37-14:19/42	07:29 09:13-09:32/20 16:37 13:52-14:25/33
29	05:51 18:57-19:29/32 20:25	06:23 17:52-18:30/38 19:42	06:56 18:49	07:30 14:23-15:07/44 17:01	07:07 08:55-09:24/29 16:33 13:38-14:19/41	07:30 09:13-09:34/21 16:38 13:52-14:26/34
30	05:52 18:57-19:30/33 20:24	06:24 17:53-18:29/36 19:41	06:57 18:47	07:31 14:23-15:07/44 17:00	07:08 08:55-09:24/29 16:32 13:38-14:20/42	07:30 09:13-09:34/21 16:39 13:52-14:27/35
31	05:53 18:57-19:30/33 20:23	06:25 17:53-18:28/35 19:39	06:58 18:40	07:32 14:23-15:06/43 16:59	07:09 08:55-09:24/29 16:32 13:38-14:20/42	07:30 09:13-09:35/22 16:40 13:52-14:27/35
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	428	2120	130	706	2028	1753

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
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SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flikering worst caseWTG: AB07 - Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 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

Table with columns for months (January to December) and rows for days (1 to 31). Each cell contains a 2x2 matrix of times (hh:mm) representing sunrise and sunset, and the duration of shadow flicker in minutes. Summary rows at the bottom show 'Potential sun hours' and 'Sum of minutes with flicker' for each month.

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



Project:

WF Abruzzo Shadown flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:49/3.5.587

### SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flikering worst caseWTG: AB08 - Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 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	July	August	September	October	November	December	
1	07:30 16:41	07:16 17:16	06:39 17:51	07:20-07:42/22 19:27	06:47 20:00	06:00 20:30	05:30 20:41	05:55 20:22	06:27 19:37	06:58 18:45	06:33 16:57	07:09 16:32	
2	07:30 16:42	07:15 17:17	06:37 17:52	07:21-07:40/19 19:28	06:45 20:01	05:58 20:31	05:29 20:41	05:56 20:20	06:28 19:36	06:59 18:44	06:35 16:56	07:10 16:32	
3	07:30 16:43	07:14 17:19	06:36 17:54	07:24-07:38/14 19:29	06:43 20:02	05:57 20:32	05:29 20:41	05:57 20:19	06:29 19:34	07:00 18:42	06:36 16:55	07:11 16:32	
4	07:30 16:44	07:13 17:20	06:34 17:55	07:27-07:33/6 19:30	06:42 20:03	05:56 20:32	05:28 20:41	05:58 20:18	06:30 19:32	07:01 18:40	06:37 16:54	07:12 16:31	
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:59 20:17	06:31 19:31	07:02 18:39	06:38 16:53	07:13 16:31	
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:28 20:34	05:33 20:40	06:00 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:14 16:31	
7	07:30 16:46	07:09 17:24	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:34	05:33 20:40	06:01 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:31	
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:51 20:07	05:27 20:35	05:34 20:40	06:02 20:13	06:34 19:25	07:06 18:34	06:42 16:49	07:16 16:31	
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	05:49 20:08	05:27 20:36	05:35 20:39	06:03 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:31	
10	07:30 16:49	07:06 17:28	06:24 18:02	06:32 19:37	05:48 20:09	05:27 20:36	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	07:59-08:10/11 16:44	07:18 16:31	
11	07:29 16:51	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:29	07:56-08:13/17 16:46	07:19 16:31	
12	07:29 16:52	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:37 20:38	06:06 20:08	06:38 19:19	07:10 18:27	07:55-08:15/20 16:45	07:20 16:31	
13	07:29 16:53	07:02 17:31	07:38-07:42/4 18:05	06:19 19:40	06:27 20:13	05:45 20:38	05:38 20:37	06:07 20:07	06:39 19:17	07:11 18:25	07:53-08:16/23 16:44	07:21 16:31	
14	07:28 16:54	07:01 17:33	07:36-07:43/7 18:06	06:17 19:41	06:25 20:14	05:44 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	07:51-08:17/26 16:43	07:21 16:31	
15	07:28 16:55	06:59 17:34	07:34-07:45/11 18:08	06:16 19:42	06:23 20:15	05:43 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	07:50-08:18/28 16:42	07:22 16:31	
16	07:28 16:56	06:58 17:35	07:33-07:46/13 18:09	06:14 19:43	06:22 20:16	05:42 20:39	05:40 20:36	06:10 20:02	06:42 19:12	07:14 18:21	07:50-08:18/28 16:41	07:23 16:32	
17	07:27 16:57	06:57 17:36	07:30-07:46/16 18:10	06:12 19:44	06:20 20:17	05:41 20:40	05:41 20:35	06:11 20:01	06:43 19:10	07:16 18:19	07:52-08:19/27 16:40	07:24 16:32	
18	07:27 16:58	06:55 17:38	07:28-07:47/19 18:11	06:11 19:45	06:19 20:18	05:40 20:40	05:42 20:34	06:12 19:59	06:44 19:08	07:17 18:17	07:53-08:19/26 16:39	07:24 16:32	
19	07:26 17:00	06:54 17:39	07:26-07:47/21 18:12	06:09 19:46	06:17 20:19	05:39 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	07:54-08:19/25 16:39	07:25 16:33	
20	07:25 17:01	06:52 17:40	07:25-07:48/23 18:13	06:07 19:48	06:16 20:20	05:38 20:40	05:43 20:33	06:14 19:56	06:46 19:05	07:19 18:14	07:54-08:18/24 16:38	07:25 16:33	
21	07:25 17:02	06:51 17:41	07:24-07:47/23 18:14	06:05 19:49	06:14 20:21	05:37 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	07:55-08:18/23 16:37	07:26 16:33	
22	07:24 17:03	06:49 17:43	07:24-07:48/24 18:15	06:04 19:50	06:12 20:22	05:36 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	07:56-08:18/22 16:37	07:27 16:34	
23	07:23 17:05	06:48 17:44	07:22-07:47/25 18:17	06:02 19:51	06:11 20:22	05:36 20:41	05:46 20:30	06:17 19:52	06:49 18:59	07:23 18:10	07:57-08:18/21 16:36	07:27 16:34	
24	07:23 17:06	06:46 17:45	07:21-07:47/26 18:18	06:00 19:52	06:09 20:23	05:35 20:41	05:47 20:30	06:18 19:50	06:50 18:58	07:24 18:08	07:59-08:17/18 16:35	07:28 16:35	
25	07:22 17:07	06:45 17:46	07:19-07:46/27 18:19	05:59 19:53	06:08 20:24	05:34 20:41	05:28 20:29	06:19 19:49	06:52 18:56	06:25 17:07	07:00-07:16/16 16:35	07:28 16:36	
26	07:21 17:08	06:43 17:48	07:18-07:46/28 18:20	05:57 19:54	06:07 20:25	05:33 20:41	05:28 20:28	06:20 19:47	06:53 18:54	06:26 17:06	07:03-07:15/12 16:34	07:28 16:36	
27	07:20 17:10	06:42 17:49	07:18-07:45/27 18:21	05:55 19:55	06:05 20:26	05:33 20:42	05:28 20:27	06:21 19:45	06:54 18:52	06:27 17:04	07:04-07:14/10 16:34	07:29 16:37	
28	07:20 17:11	06:40 17:50	07:19-07:44/25 18:22	05:53 19:56	06:04 20:27	05:32 20:42	05:29 20:26	06:22 19:44	06:55 18:51	06:29 17:03	07:06-07:12/6 16:33	07:29 16:38	
29	07:19 17:12	06:39 17:49	07:18-07:44/25 18:22	05:52 19:58	06:02 20:28	05:31 20:41	05:29 20:25	06:24 19:42	06:56 18:49	06:30 17:01	07:09-07:11/2 16:33	07:29 16:38	
30	07:18 17:13	06:38 17:48	07:17-07:44/25 18:21	05:51 19:59	06:01 20:29	05:29 20:41	05:33 20:24	06:25 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39	
31	07:17 17:15	06:37 17:47	07:16-07:43/25 18:20	05:50 19:58	06:00 20:29	05:28 20:41	05:34 20:23	06:26 19:39	06:58 18:37	06:32 16:59	07:07 16:40	07:30 16:40	
Potential sun hours	295	296	319	369	400	451	455	462	430	375	344	296	285
Sum of minutes with flicker	0	0	319	61	0	0	0	0	0	0	385	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: WF Abruzzo shadow flikering worst case WTG: AB09 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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	07:30 08:27-09:18/51 16:41	07:16 08:58-09:04/6 17:16	06:39 17:51	06:47 07:29-08:02/33 19:27	06:00 20:00	05:30 20:30
2	07:30 08:27-09:19/52 16:42	07:15 17:17	06:37 17:52	06:45 07:29-08:03/34 19:28	05:58 20:01	05:29 20:31
3	07:30 08:28-09:19/51 16:43	07:14 17:19	06:36 17:54	06:43 07:27-08:03/36 19:29	05:57 20:02	05:29 20:32
4	07:30 08:28-09:19/51 16:44	07:13 17:20	06:34 17:55	06:42 07:25-08:03/38 19:30	05:56 20:03	05:28 20:32
5	07:30 08:29-09:20/51 16:44	07:12 17:21	06:32 17:56	06:40 07:24-08:03/39 19:31	05:54 20:04	05:28 20:33
6	07:30 08:29-09:20/51 16:45	07:10 17:22	06:31 17:57	06:38 07:22-08:03/41 19:32	05:53 20:05	05:28 20:34
7	07:30 08:30-09:21/51 16:46	07:09 17:24	06:29 17:58	06:36 07:20-08:02/42 19:33	05:52 20:06	05:27 20:35
8	07:30 08:30-09:21/51 16:47	07:08 17:25	06:27 18:00	06:35 07:19-08:02/43 19:34	05:51 20:07	05:27 20:35
9	07:30 08:30-09:21/51 16:48	07:07 17:26	06:26 18:01	06:33 07:17-08:02/45 19:35	05:49 20:08	05:27 20:36
10	07:30 08:31-09:22/51 16:49	07:06 17:28	06:24 18:02	06:32 07:15-08:01/46 19:37	05:48 20:09	05:27 20:36
11	07:29 08:31-09:21/50 16:51	07:05 17:29	06:22 18:03	06:30 07:14-08:01/47 19:38	05:47 20:11	05:26 20:37
12	07:29 08:32-09:22/50 16:52	07:03 17:30	06:21 18:04	06:28 07:14-07:59/45 19:39	05:46 20:12	05:26 20:37
13	07:29 08:33-09:22/49 16:53	07:02 17:31	06:19 18:05	06:27 07:13-07:58/45 19:40	05:45 20:13	05:26 20:38
14	07:28 08:33-09:22/49 16:54	07:01 17:33	06:17 18:06	06:25 07:14-07:58/44 19:41	05:44 20:14	05:26 20:38
15	07:28 08:34-09:22/48 16:55	06:59 17:34	06:16 18:08	06:23 07:14-07:56/42 19:42	05:43 20:15	05:26 20:39
16	07:28 08:34-09:22/48 16:56	06:58 17:35	06:14 18:09	06:22 07:15-07:56/41 19:43	05:42 20:16	05:26 20:39
17	07:27 08:35-09:23/48 16:57	06:57 17:36	06:12 18:10	06:20 07:16-07:54/38 19:44	05:41 20:17	05:26 20:40
18	07:27 08:36-09:22/46 16:58	06:55 17:38	06:11 18:11	06:19 07:17-07:53/36 19:45	05:40 20:18	05:26 20:40
19	07:26 08:36-09:22/46 17:00	06:54 17:39	06:09 18:12	06:17 07:18-07:51/33 19:47	05:39 20:19	05:26 20:40
20	07:25 08:37-09:22/45 17:01	06:52 17:40	06:07 18:13	06:16 07:19-07:50/31 19:48	05:38 20:20	05:26 20:41
21	07:25 08:38-09:21/43 17:02	06:51 17:41	06:05 18:14	06:14 07:20-07:47/27 19:49	05:37 20:21	05:27 20:41
22	07:24 08:39-09:21/42 17:03	06:49 17:43	06:04 18:15	06:12 07:23-07:45/22 19:50	05:36 20:22	05:27 20:41
23	07:23 08:40-09:21/41 17:05	06:48 17:44	06:02 06:43-06:47/4 18:17	06:11 07:25-07:42/17 19:51	05:36 20:23	05:27 20:41
24	07:23 08:41-09:20/39 17:06	06:46 17:45	06:00 06:41-06:52/11 18:18	06:09 07:30-07:37/7 19:52	05:35 20:23	05:27 20:41
25	07:22 08:42-09:19/37 17:07	06:45 17:46	05:59 06:39-06:55/16 18:19	06:08 19:53	05:34 20:24	05:28 20:41
26	07:21 08:43-09:18/35 17:08	06:43 17:48	05:57 06:39-06:57/18 18:20	06:07 19:54	05:33 20:25	05:28 20:41
27	07:20 08:45-09:17/32 17:10	06:42 17:49	05:55 06:37-06:59/22 18:21	06:05 19:55	05:33 20:26	05:28 20:42
28	07:20 08:46-09:16/30 17:11	06:40 17:50	05:53 06:35-07:00/25 18:22	06:04 19:56	05:32 20:27	05:29 20:42
29	07:19 08:48-09:14/26 17:12		06:52 07:35-08:01/26 19:23	06:02 19:58	05:31 20:28	05:29 20:42
30	07:18 08:50-09:12/22 17:13		06:50 07:33-08:02/29 19:24	06:01 19:59	05:31 20:29	05:29 20:41
31	07:17 08:53-09:09/16 17:15		06:48 07:31-08:02/31 19:26		05:30 20:29	
Potential sun hours	295	296	369	400	451	455
Sum of minutes with flicker	1353	6	182	872	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: WF Abruzzo shadow flikering worst case WTG: AB09 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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	05:30 20:41	05:55 20:22	06:27 07:13-08:00/47 19:37	06:58 18:45	06:33 16:57	07:09 08:13-09:03/50 16:32
2	05:30 20:41	05:56 20:21	06:28 07:14-08:00/46 19:36	06:59 18:44	06:35 16:56	07:10 08:14-09:05/51 16:32
3	05:31 20:41	05:57 20:19	06:29 07:15-08:00/45 19:34	07:00 18:42	06:36 16:55	07:11 08:14-09:05/51 16:32
4	05:32 20:41	05:58 20:18	06:30 07:16-07:59/43 19:32	07:01 18:40	06:37 16:54	07:12 08:15-09:06/51 16:31
5	05:32 20:41	05:59 20:17	06:31 07:17-07:59/42 19:31	07:02 18:39	06:38 16:53	07:13 08:15-09:06/51 16:31
6	05:33 20:40	06:00 20:16	06:32 07:18-07:59/41 19:29	07:03 18:37	06:40 16:51	07:14 08:15-09:07/52 16:31
7	05:33 20:40	06:01 20:15	06:33 07:19-07:58/39 19:27	07:04 18:35	06:41 16:50	07:15 08:16-09:07/51 16:31
8	05:34 20:40	06:02 20:13	06:34 07:20-07:58/38 19:25	07:06 18:34	06:42 16:49	07:16 08:16-09:08/52 16:31
9	05:35 20:39	06:03 20:12	06:35 07:21-07:57/36 19:24	07:07 18:32	06:43 16:48	07:17 08:17-09:08/51 16:31
10	05:35 20:39	06:04 20:11	06:36 07:22-07:56/34 19:22	07:08 18:30	06:45 08:29-08:36/7 16:47	07:18 08:16-09:08/52 16:31
11	05:36 20:38	06:05 20:09	06:37 07:22-07:55/33 19:20	07:09 18:29	06:46 08:25-08:41/16 16:46	07:19 08:17-09:08/51 16:31
12	05:37 20:38	06:06 20:08	06:38 07:23-07:54/31 19:19	07:10 18:27	06:47 08:22-08:44/22 16:45	07:20 08:17-09:09/52 16:31
13	05:38 20:37	06:07 20:07	06:39 07:24-07:53/29 19:17	07:11 18:25	06:48 08:20-08:46/26 16:44	07:21 08:18-09:10/52 16:31
14	05:38 20:37	06:08 20:05	06:40 07:25-07:52/27 19:15	07:12 18:24	06:49 08:19-08:49/30 16:43	07:21 08:19-09:10/51 16:31
15	05:39 20:36	06:09 20:04	06:41 07:25-07:50/25 19:13	07:13 18:22	06:51 08:17-08:50/33 16:42	07:22 08:18-09:10/52 16:31
16	05:40 20:36	06:10 20:02	06:42 07:26-07:48/22 19:12	07:14 18:21	06:52 08:16-08:51/35 16:41	07:23 08:19-09:11/52 16:32
17	05:41 20:35	06:11 20:01	06:43 07:27-07:46/19 19:10	07:16 18:19	06:53 08:15-08:52/37 16:40	07:24 08:20-09:11/51 16:32
18	05:42 20:34	06:12 19:59	06:44 07:27-07:44/17 19:08	07:17 18:17	06:54 08:15-08:54/39 16:39	07:24 08:20-09:11/51 16:32
19	05:42 20:34	06:13 07:35-07:44/9 19:58	06:45 07:28-07:40/12 19:06	07:18 18:16	06:56 08:14-08:55/41 16:39	07:25 08:21-09:12/51 16:33
20	05:43 20:33	06:14 07:30-07:48/18 19:56	06:46 07:29-07:36/7 19:05	07:19 18:14	06:57 08:14-08:56/42 16:38	07:26 08:21-09:12/51 16:33
21	05:44 20:32	06:15 07:27-07:50/23 19:55	06:47 19:03	07:20 18:13	06:58 08:14-08:57/43 16:37	07:26 08:22-09:13/51 16:33
22	05:45 20:31	06:16 07:25-07:52/27 19:53	06:48 19:01	07:21 18:11	06:59 08:13-08:58/45 16:37	07:27 08:22-09:13/51 16:34
23	05:46 20:31	06:17 07:23-07:54/31 19:52	06:49 18:59	07:23 18:10	07:00 08:13-08:59/46 16:36	07:27 08:23-09:14/51 16:34
24	05:47 20:30	06:18 07:21-07:55/34 19:50	06:50 18:58	07:24 18:08	07:01 08:13-08:59/46 16:35	07:28 08:23-09:14/51 16:35
25	05:48 20:29	06:19 07:20-07:56/36 19:49	06:52 18:56	06:25 17:07	07:03 08:13-09:01/48 16:35	07:28 08:24-09:15/51 16:36
26	05:49 20:28	06:20 07:18-07:57/39 19:47	06:53 18:54	06:26 17:06	07:04 08:13-09:01/48 16:34	07:28 08:24-09:15/51 16:36
27	05:50 20:27	06:21 07:17-07:58/41 19:45	06:54 18:52	06:27 17:04	07:05 08:13-09:02/49 16:34	07:29 08:24-09:16/52 16:37
28	05:51 20:26	06:22 07:16-07:58/42 19:44	06:55 18:51	06:29 17:03	07:06 08:13-09:02/49 16:33	07:29 08:24-09:16/52 16:38
29	05:52 20:25	06:24 07:15-07:59/44 19:42	06:56 18:49	06:30 17:01	07:07 08:13-09:02/49 16:33	07:29 08:26-09:17/51 16:38
30	05:53 20:24	06:25 07:14-07:59/45 19:41	06:57 18:47	06:31 17:00	07:08 08:13-09:03/50 16:32	07:30 08:26-09:17/51 16:39
31	05:54 20:23	06:26 07:14-07:59/45 19:39		06:32 16:59		07:30 08:26-09:18/52 16:40
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	0	434	633	0	801	1590

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: WF Abruzzo shadow flikering worst case WTG: AB10 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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
1	07:30 08:41-09:29/48 10:36-10:56/20 16:41 09:37-10:05/28	07:16 06:39 17:16 17:51		06:46 05:59 19:26 20:00	05:29 20:30	05:29 20:30
2	07:30 08:42-09:29/47 10:38-10:55/17 16:41 09:39-10:04/25	07:15 06:37 17:17 17:52		06:45 05:58 19:28 20:01	05:29 20:31	05:29 20:31
3	07:30 08:43-09:29/46 10:41-10:52/11 16:42 09:40-10:03/23	07:14 06:35 17:18 17:53		06:43 05:57 19:29 20:02	05:28 20:32	05:28 20:32
4	07:30 08:44-09:29/45 16:43 09:42-10:02/20	07:13 06:34 17:20 17:55		06:41 05:55 19:30 20:03	05:28 20:32	05:28 20:32
5	07:30 08:45-09:28/43 16:44 09:45-10:01/16	07:12 06:32 17:21 17:56		06:40 05:54 19:31 20:04	05:28 20:33	05:28 20:33
6	07:30 08:47-09:28/41 16:45 09:48-09:58/10	07:10 06:31 16:53-16:54/1 17:22 17:57		06:38 05:53 19:32 20:05	05:27 20:34	05:27 20:34
7	07:30 08:48-09:28/40 16:46	07:09 06:29 16:52-16:54/2 17:23 17:58		06:36 05:52 19:33 20:06	05:27 20:35	05:27 20:35
8	07:30 08:49-09:27/38 16:47	07:08 06:27 16:51-16:54/3 17:25 17:59		06:35 05:50 19:34 20:07	05:27 20:35	05:27 20:35
9	07:30 08:50-09:26/36 16:48	07:07 06:26 16:52-16:56/4 17:26 18:01 16:49-16:50/1		06:33 05:49 19:35 20:08	05:26 20:36	05:26 20:36
10	07:30 08:52-09:26/34 16:49	07:06 06:24 16:51-16:56/5 17:27 18:02 16:48-16:50/2		06:31 05:48 19:36 20:09	05:26 20:36	05:26 20:36
11	07:29 08:54-09:24/30 16:50	07:04 06:22 16:48-16:57/9 17:29 18:03		06:30 05:47 19:38 20:10	05:26 20:37	05:26 20:37
12	07:29 08:57-09:23/26 16:51	07:03 06:21 16:49-16:58/9 17:30 18:04		06:28 05:46 19:39 20:12	05:26 20:37	05:26 20:37
13	07:29 09:00-09:21/21 16:52	07:02 06:19 16:48-16:59/11 17:31 18:05		06:26 05:45 19:40 20:13	05:26 20:38	05:26 20:38
14	07:28 09:07-09:17/10 16:54	07:01 06:17 16:48-16:59/11 17:32 18:06		06:25 05:44 19:41 20:14	05:26 20:38	05:26 20:38
15	07:28 15:20-15:22/2 16:55	06:59 06:16 16:48-16:59/11 17:34 18:07 06:35-06:38/3		06:23 05:43 19:42 20:15	05:26 20:39	05:26 20:39
16	07:28 15:21-15:24/3 16:56	06:58 06:14 16:50-17:01/11 17:35 18:09 06:33-06:41/8		06:22 05:42 19:43 20:16	05:26 20:39	05:26 20:39
17	07:27 15:22-15:28/6 16:57	06:57 06:12 16:50-17:01/11 17:36 18:10 06:31-06:43/12		06:20 05:41 19:44 20:17	05:26 20:40	05:26 20:40
18	07:27 15:23-15:31/8 16:58	06:55 06:10 16:50-17:01/11 17:37 18:11 06:29-06:43/14		06:18 05:40 19:45 20:18	05:26 20:40	05:26 20:40
19	07:26 15:24-15:34/10 16:59	06:54 06:09 16:51-17:02/11 17:39 18:12 06:28-06:45/17		06:17 05:39 19:46 20:19	05:26 20:40	05:26 20:40
20	07:25 15:26-15:37/11 17:01	06:52 06:07 16:52-17:02/10 17:40 18:13 06:26-06:45/19		06:15 05:38 19:48 20:20	05:26 20:41	05:26 20:41
21	07:25 15:27-15:40/13 17:02	06:51 06:05 16:52-17:03/11 17:41 18:14 06:24-06:45/21		06:14 05:37 19:49 20:21	05:26 20:41	05:26 20:41
22	07:24 15:28-15:43/15 17:03	06:49 06:04 16:52-17:03/11 17:42 18:15 06:22-06:44/22		06:12 05:36 19:50 20:22	05:26 20:41	05:26 20:41
23	07:23 15:29-15:47/18 17:04	06:48 06:02 16:53-17:04/11 17:44 18:16 06:21-06:45/24		06:11 05:35 19:51 20:22	05:27 20:41	05:27 20:41
24	07:23 15:32-15:51/19 17:06	06:46 06:00 16:54-17:05/11 17:45 18:18 06:19-06:44/25		06:09 05:34 19:52 20:23	05:27 20:41	05:27 20:41
25	07:22 15:34-15:52/18 17:07	06:45 05:58 16:55-17:05/10 17:46 18:19 06:18-06:43/25		06:08 05:34 19:53 20:24	05:27 20:41	05:27 20:41
26	07:21 15:37-15:49/12 17:08	06:43 05:57 16:56-17:05/9 17:47 18:20 06:19-06:42/23		06:06 05:33 19:54 20:25	05:28 20:42	05:28 20:42
27	07:20 17:09	06:42 05:55 16:58-17:01/3 06:19-06:40/21 17:49 18:21 17:04-17:07/3		06:05 05:32 19:55 20:26	05:28 20:42	05:28 20:42
28	07:19 17:11	06:40 05:53 16:59-17:01/2 17:50 18:22 06:20-06:38/18		06:03 05:32 19:56 20:27	05:28 20:42	05:28 20:42
29	07:19 17:12	06:52 07:21-07:35/14 19:23		06:02 05:31 19:57 20:28	05:29 20:42	05:29 20:42
30	07:18 17:13	06:50 07:23-07:33/10 19:24		06:01 05:30 19:59 20:29	05:29 20:41	05:29 20:41
31	07:17 17:14	06:48 19:25		05:30 20:29	05:30 20:41	05:30 20:41
Potential sun hours	295	296	369	400	451	455
Sum of minutes with flicker	810	0	470	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: WF Abruzzo shadow flikering worst case WTG: AB10 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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

	July	August	September	October	November	December
1	05:30 20:41	05:54 20:22	06:26 19:37	06:58 17:27-17:37/10 18:45	06:33 16:57	07:09 08:36-09:06/30 16:32
2	05:30 20:41	05:55 20:20	06:27 19:36	06:59 17:27-17:36/9 18:44	06:35 16:56	07:10 08:36-09:08/32 16:31
3	05:31 20:41	05:56 20:19	06:29 19:34	07:00 17:26-17:34/8 18:42	06:36 16:55	07:11 08:35-09:10/35 16:31
4	05:31 20:41	05:57 20:18	06:30 19:32	07:01 17:28-17:33/5 18:40 17:26-17:27/1	06:37 16:53	07:12 08:34-09:11/37 16:31
5	05:32 20:41	05:58 20:17	06:31 19:30	07:02 17:29-17:33/4 18:38 17:26-17:27/1	06:38 16:52	07:13 08:33-09:13/40 16:31
6	05:32 20:40	05:59 20:16	06:32 19:29	07:03 17:29-17:31/2 18:37	06:40 16:51	07:14 08:33-09:14/41 16:31 09:35-09:44/9
7	05:33 20:40	06:00 20:14	06:33 19:27	07:04 17:29-17:30/1 18:35	06:41 16:50	07:15 08:32-09:15/43 16:31 09:32-09:48/16
8	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 08:32-09:17/45 16:30 09:30-09:50/20
9	05:34 20:39	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 08:32-09:18/46 10:31-10:41/10 16:30 09:29-09:52/23
10	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	06:44 16:47	07:18 08:31-09:18/47 10:27-10:44/17 16:30 09:28-09:53/25
11	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 08:31-09:19/48 10:26-10:46/20 16:31 09:27-09:55/28
12	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 08:32-09:20/48 10:25-10:48/23 16:31 09:27-09:56/29
13	05:37 20:37	06:07 20:07	06:39 07:15-07:23/8 19:17	07:11 18:25	06:48 16:44	07:21 08:32-09:21/49 10:25-10:50/25 16:31 09:27-09:58/31
14	05:38 20:37	06:08 20:05	06:40 07:12-07:26/14 19:15	07:12 18:24	06:49 16:43	07:21 08:32-09:22/50 10:24-10:52/28 16:31 09:27-09:59/32
15	05:39 20:36	06:09 20:04	06:41 17:49-17:51/2 19:13 07:10-07:28/18	07:13 18:22	06:51 16:42	07:22 08:32-09:22/50 10:23-10:53/30 16:31 09:26-09:59/33
16	05:40 20:36	06:10 20:02	06:42 17:48-17:51/3 07:09-07:29/20 19:11 17:54-17:56/2	07:14 18:20	06:52 15:10-15:22/12 16:41	07:23 08:32-09:23/51 10:23-10:54/31 16:31 09:27-10:01/34
17	05:40 20:35	06:11 20:01	06:43 17:45-17:49/4 07:07-07:30/23 19:10 17:50-17:55/5	07:16 18:19	06:53 15:07-15:25/18 16:40	07:24 08:33-09:24/51 10:24-10:55/31 16:32 09:27-10:02/35
18	05:41 20:34	06:12 19:59	06:44 17:43-17:54/11 19:08 07:07-07:31/24	07:17 18:17	06:54 15:06-15:25/19 16:39	07:24 08:33-09:24/51 10:23-10:56/33 16:32 09:27-10:02/35
19	05:42 20:34	06:13 19:58	06:45 17:42-17:52/10 19:06 07:06-07:31/25	07:18 18:16	06:55 15:04-15:22/18 16:38	07:25 08:33-09:25/52 10:24-10:57/33 16:32 09:27-10:03/36
20	05:43 20:33	06:14 19:56	06:46 17:40-17:51/11 19:04 07:07-07:31/24	07:19 18:14	06:57 15:03-15:18/15 16:38	07:26 08:33-09:25/52 10:23-10:57/34 16:33 09:27-10:03/36
21	05:44 20:32	06:15 19:55	06:47 17:39-17:50/11 19:03 07:08-07:31/23	07:20 18:13	06:58 15:03-15:16/13 16:37	07:26 08:34-09:26/52 10:24-10:58/34 16:33 09:28-10:04/36
22	05:45 20:31	06:16 19:53	06:48 17:37-17:48/11 19:01 07:09-07:30/21	07:21 18:11	06:59 15:02-15:14/12 16:36	07:27 08:34-09:26/52 10:24-10:58/34 16:34 09:28-10:04/36
23	05:46 20:30	06:17 19:52	06:49 17:36-17:47/11 18:59 07:10-07:29/19	07:23 18:10	07:00 15:01-15:11/10 16:36	07:27 08:35-09:27/52 10:25-10:59/34 16:34 09:29-10:05/36
24	05:47 20:30	06:18 19:50	06:50 17:35-17:46/11 18:57 07:11-07:28/17	07:24 18:08	07:01 15:00-15:08/8 16:35	07:28 08:35-09:27/52 10:26-10:59/33 16:35 09:29-10:05/36
25	05:48 20:29	06:19 19:49	06:51 17:34-17:45/11 18:56 07:12-07:27/15	06:25 17:07	07:03 14:59-15:05/6 16:34	07:28 08:36-09:28/52 10:27-11:00/33 16:35 09:31-10:06/35
26	05:48 20:28	06:20 19:47	06:52 17:33-17:44/11 18:54 07:13-07:26/13	06:26 17:05	07:04 15:00-15:04/4 16:34	07:28 08:37-09:28/51 10:28-11:00/32 16:36 09:31-10:06/35
27	05:49 20:27	06:21 19:45	06:54 17:31-17:42/11 18:52 07:14-07:24/10	06:27 17:04	07:05 14:59-15:01/2 16:33	07:29 08:37-09:28/51 10:28-10:59/31 16:37 09:31-10:06/35
28	05:50 20:26	06:22 19:44	06:55 17:30-17:41/11 18:50 07:15-07:21/6	06:29 17:03	07:06 08:48-08:57/9 16:33	07:29 08:37-09:28/51 10:29-10:59/30 16:37 09:32-10:05/33
29	05:51 20:25	06:23 19:42	06:56 17:29-17:40/11 18:49	06:30 17:01	07:07 08:41-09:01/20 16:33	07:29 08:39-09:29/50 10:31-10:59/28 16:38 09:34-10:06/32
30	05:52 20:24	06:24 19:41	06:57 17:28-17:39/11 18:47	06:31 17:00	07:08 08:38-09:04/26 16:32	07:30 08:40-09:29/49 10:32-10:59/27 16:39 09:35-10:06/31
31	05:53 20:23	06:25 19:39		06:32 16:59		07:30 08:40-09:29/49 10:33-10:58/25 16:40 09:36-10:05/29
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	0	0	438	41	192	2911

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

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

## SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flikering worst case WTG: AB11 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	05:59 06:19-06:47/28 20:00	05:29 05:51-06:33/42 20:31
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 06:18-06:48/30 20:01	05:29 05:51-06:34/43 20:31
3	07:30 16:42	07:14 17:18	06:36 17:53	06:43 19:29	05:57 06:16-06:47/31 20:02	05:28 05:50-06:33/43 20:32
4	07:31 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 06:15-06:47/32 20:03	05:28 05:50-06:34/44 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 06:14-06:47/33 20:04	05:28 05:50-06:35/45 20:33
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:08-19:11/3 19:32	05:53 06:13-06:47/34 20:05	05:27 05:49-06:34/45 20:34
7	07:30 16:46	07:10 17:23	06:29 17:58	06:36 19:06-19:11/5 19:33	05:52 06:12-06:47/35 20:06	05:27 05:49-06:35/46 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:04-19:12/8 19:34	05:50 06:10-06:45/35 20:08	05:27 05:49-06:35/46 20:35
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:04-19:14/10 19:36	05:49 06:09-06:45/36 20:09	05:26 05:49-06:36/47 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:03-19:15/12 19:37	05:48 06:08-06:45/37 20:10	05:26 05:49-06:36/47 20:37
11	07:30 16:50	07:05 17:29	06:22 18:03	06:30 19:02-19:15/13 19:38	05:47 06:07-06:44/37 20:11	05:26 05:49-06:37/48 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:02-19:17/15 19:39	05:46 06:06-06:44/38 20:12	05:26 05:48-06:36/48 20:38
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:01-19:18/17 19:40	05:45 06:05-06:43/38 20:13	05:26 05:48-06:36/48 20:38
14	07:29 16:54	07:01 17:32	06:17 18:06	06:25 19:02-19:19/17 19:41	05:44 06:04-06:43/39 20:14	05:26 05:48-06:37/49 20:39
15	07:28 16:55	06:59 17:34	06:16 18:08	06:23 19:02-19:20/18 19:42	05:42 06:03-06:42/39 20:15	05:26 05:48-06:37/49 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:01-19:20/19 19:43	05:41 06:02-06:41/39 20:16	05:26 05:48-06:37/49 20:40
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:03-19:22/19 19:44	05:40 06:01-06:40/39 20:17	05:26 05:49-06:38/49 20:40
18	07:27 16:58	06:55 17:38	06:11 18:11	06:18 19:03-19:23/20 19:46	05:40 06:00-06:40/40 20:18	05:26 05:49-06:38/49 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 06:36-06:40/4 19:47	05:39 06:00-06:40/40 20:19	05:26 05:49-06:38/49 20:41
20	07:26 17:01	06:52 17:40	06:07 18:13	06:15 06:34-06:41/7 19:48	05:38 05:59-06:38/39 20:20	05:26 05:49-06:38/49 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 06:33-06:43/10 19:49	05:37 05:58-06:37/39 20:21	05:26 05:49-06:38/49 20:41
22	07:24 17:03	06:50 17:43	06:04 18:15	06:12 06:31-06:43/12 19:50	05:36 05:57-06:36/39 20:22	05:26 05:49-06:38/49 20:41
23	07:24 17:04	06:48 17:44	06:02 18:17	06:11 06:30-06:45/15 19:51	05:35 05:56-06:34/38 20:23	05:27 05:50-06:39/49 20:41
24	07:23 17:05	06:47 17:45	06:00 18:18	06:09 06:29-06:46/17 19:52	05:34 05:56-06:33/37 20:24	05:27 05:50-06:39/49 20:42
25	07:22 17:07	06:45 17:46	05:59 18:19	06:08 06:27-06:46/19 19:53	05:34 05:55-06:31/36 20:25	05:27 05:50-06:39/49 20:42
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 06:26-06:47/21 19:54	05:33 05:54-06:30/36 20:26	05:27 05:51-06:40/49 20:42
27	07:21 17:09	06:42 17:49	05:55 18:21	06:05 06:24-06:46/22 19:55	05:32 05:54-06:31/37 20:26	05:28 05:51-06:40/49 20:42
28	07:20 17:11	06:40 17:50	05:53 18:22	06:03 06:23-06:47/24 19:57	05:32 05:53-06:31/38 20:27	05:28 05:51-06:40/49 20:42
29	07:19 17:12		06:52 19:23	06:02 06:22-06:47/25 19:58	05:31 05:53-06:32/39 20:28	05:29 05:52-06:40/48 20:42
30	07:18 17:13		06:50 19:24	06:01 06:20-06:47/27 19:59	05:30 05:52-06:32/40 20:29	05:29 05:52-06:40/48 20:42
31	07:17 17:14		06:48 19:26		05:30 05:52-06:33/41 20:30	
Potential sun hours	295	296	369	400	451	456
Sum of minutes with flicker	0	0	0	481	1254	1423

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: WF Abruzzo shadow flikering worst caseWTG: AB11 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 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	05:30 05:53-06:41/48 20:42	05:54 06:17-06:55/38 20:22 19:48-19:58/10	06:26 19:02-19:15/13 19:37	06:58 18:45 16:57	06:34 16:57 07:10	07:10 16:32
2	05:30 05:53-06:40/47 20:42	05:55 06:18-06:55/37 20:21 19:48-19:57/9	06:28 19:02-19:13/11 19:36	06:59 18:44 16:56	06:35 16:56 07:11	07:11 16:31
3	05:31 05:54-06:41/47 20:41	05:56 06:19-06:56/37 20:20 19:48-19:56/8	06:29 19:02-19:12/10 19:34	07:00 18:42 16:55	06:36 16:55 07:12	07:12 16:31
4	05:31 05:54-06:41/47 20:41	05:57 06:20-06:56/36 20:18 19:47-19:55/8	06:30 19:02-19:10/8 19:32	07:01 18:40 16:53	06:37 16:53 07:13	07:13 16:31
5	05:32 05:55-06:41/46 20:41	05:58 06:21-06:56/35 20:17 19:47-19:54/7	06:31 19:03-19:08/5 19:31	07:02 18:39 16:52	06:39 16:52 07:14	07:14 16:31
6	05:32 05:55-06:41/46 20:41	05:59 06:22-06:56/34 20:16 19:47-19:52/5	06:32 19:04-19:07/3 19:29	07:03 18:37 16:51	06:40 16:51 07:15	07:15 16:31
7	05:33 05:56-06:41/45 20:40	06:00 06:23-06:56/33 20:15 19:47-19:51/4	06:33 19:27 19:27	07:04 18:35 16:50	06:41 16:50 07:16	07:16 16:30
8	05:34 05:57-06:41/44 20:40	06:01 06:24-06:57/33 20:13 19:48-19:50/2	06:34 19:26 19:26	07:06 18:33 16:49	06:42 16:49 07:17	07:17 16:30
9	05:34 05:57-06:41/44 20:40	06:02 06:25-06:56/31 20:12 19:48-19:49/1	06:35 19:24 19:24	07:07 18:32 16:48	06:43 16:48 07:18	07:18 16:30
10	05:35 05:58-06:41/43 20:39	06:04 06:26-06:56/30 20:11	06:36 19:22 19:22	07:08 18:30 16:47	06:45 16:47 07:18	07:18 16:30
11	05:36 05:59-06:41/42 20:39	06:05 06:27-06:56/29 20:09	06:37 19:20 19:20	07:09 18:28 16:46	06:46 16:46 07:19	07:19 16:30
12	05:36 06:00-06:42/42 20:38	06:06 06:28-06:56/28 20:08	06:38 19:19 19:19	07:10 18:27 16:45	06:47 16:45 07:20	07:20 16:31
13	05:37 06:00-06:41/41 20:38	06:07 06:29-06:56/27 20:07	06:39 19:17 19:17	07:11 18:25 16:44	06:48 16:44 07:21	07:21 16:31
14	05:38 06:01-06:41/40 20:37	06:08 06:30-06:55/25 20:05	06:40 19:15 19:15	07:12 18:24 16:43	06:50 16:43 07:22	07:22 16:31
15	05:39 06:02-06:41/39 20:37	06:09 06:31-06:55/24 20:04	06:41 19:13 19:13	07:13 18:22 16:42	06:51 16:42 07:23	07:23 16:31
16	05:40 06:03-06:41/38 20:36	06:10 06:32-06:54/22 20:02	06:42 19:12 19:12	07:15 18:20 16:41	06:52 16:41 07:23	07:23 16:31
17	05:40 06:03-06:40/37 20:35	06:11 06:33-06:53/20 20:01	06:43 19:10 19:10	07:16 18:19 16:40	06:53 16:40 07:24	07:24 16:32
18	05:41 06:04-06:40/36 20:35	06:12 06:34-06:52/18 20:00 19:21-19:26/5	06:44 19:08 19:08	07:17 18:17 16:39	06:55 16:39 07:25	07:25 16:32
19	05:42 06:05-06:42/37 20:34	06:13 06:35-06:51/16 19:58 19:17-19:29/12	06:45 19:06 19:06	07:18 18:16 16:38	06:56 16:38 07:26	07:26 16:32
20	05:43 06:06-06:44/38 20:33	06:14 06:36-06:50/14 19:57 19:15-19:31/16	06:46 19:05 19:05	07:19 18:14 16:38	06:57 16:38 07:26	07:26 16:33
21	05:44 06:07-06:45/38 20:32	06:15 06:37-06:49/12 19:55 19:13-19:32/19	06:47 19:03 19:03	07:20 18:13 16:37	06:58 16:37 07:26	07:26 16:33
22	05:45 06:08-06:47/39 20:32	06:16 06:38-06:47/9 19:53 19:12-19:31/19	06:48 19:01 19:01	07:22 18:11 16:36	06:59 16:36 07:27	07:27 16:34
23	05:46 06:09-06:48/39 20:31	06:17 06:39-06:46/7 19:52 19:11-19:29/18	06:49 18:59 18:59	07:23 18:10 16:36	07:01 16:36 07:27	07:27 16:34
24	05:47 06:09-06:48/39 20:30	06:18 06:40-06:44/4 19:50 19:09-19:28/19	06:50 18:58 18:58	07:24 18:08 16:35	07:02 16:35 07:28	07:28 16:35
25	05:48 06:10-06:50/40 20:29	06:19 19:07-19:26/19 19:49	06:51 18:56 18:56	06:25 17:07 16:34	07:03 16:34 07:28	07:28 16:35
26	05:48 06:11-06:51/40 20:28	06:20 19:05-19:25/20 19:47	06:53 18:54 18:54	06:26 17:05 16:34	07:04 16:34 07:29	07:29 16:36
27	05:49 06:12-06:51/39 20:27	06:21 19:04-19:23/19 19:46	06:54 18:52 18:52	06:27 17:04 16:33	07:05 16:33 07:29	07:29 16:37
28	05:50 06:13-06:52/39 20:26	06:22 19:03-19:22/19 19:44	06:55 18:51 18:51	06:29 17:03 16:33	07:06 16:33 07:29	07:29 16:37
29	05:51 06:14-06:53/39 20:25	06:23 19:03-19:20/17 19:42	06:56 18:49 18:49	06:30 17:01 16:32	07:07 16:32 07:30	07:30 16:38
30	05:52 06:15-06:54/39 20:24	06:24 19:02-19:18/16 19:41	06:57 18:47 18:47	06:31 17:00 16:32	07:09 16:32 07:30	07:30 16:39
31	05:53 06:16-06:54/38 20:23	06:25 19:02-19:17/15 19:39		06:32 16:59 16:59	07:30 16:39 07:30	07:30 16:39
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	1337	886	50	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 Abruzzo Shoadow flikering

Licensed user:

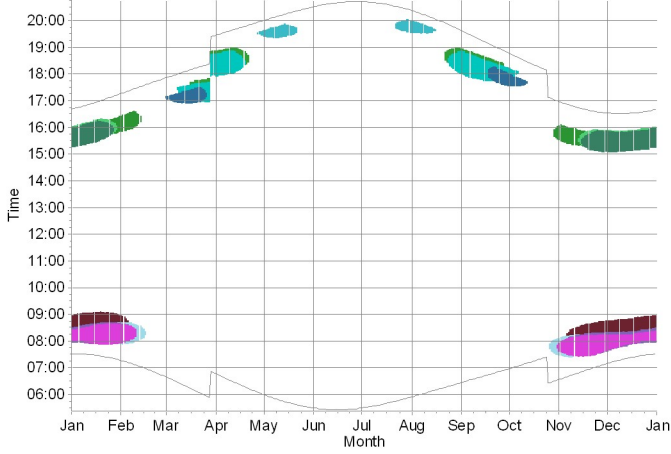
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IT-74023 Grottaglie (TA)

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:49/3.5.587

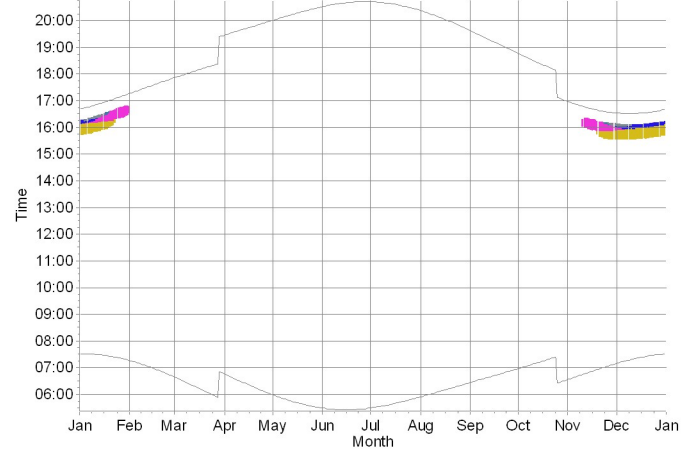
## SHADOW - Calendar per WTG, graphical

Calculation: WF Abruzzo shadow flikering worst case

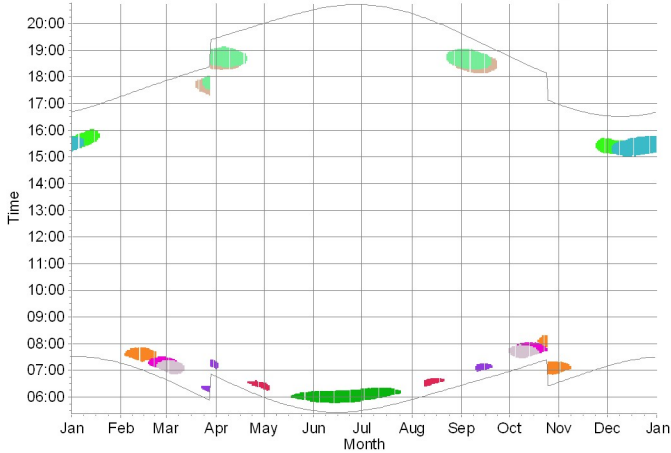
AB01: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 2



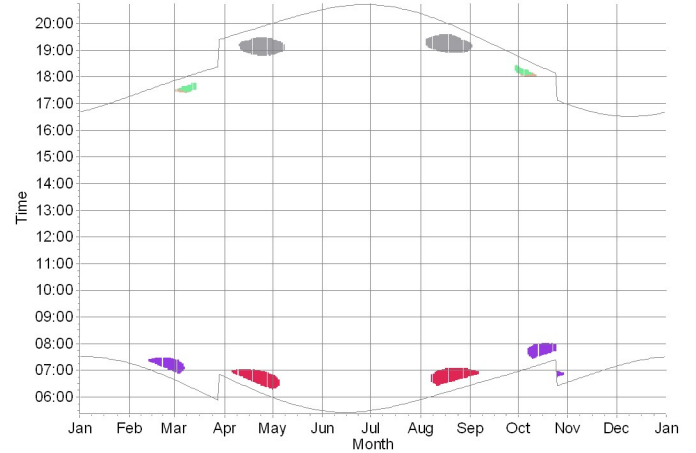
AB02: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m)



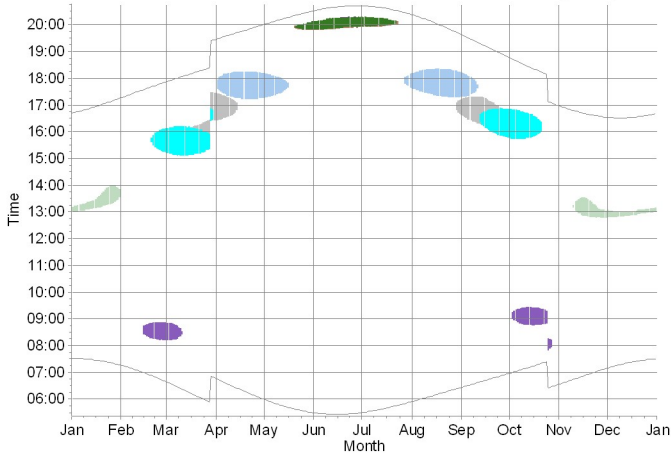
AB03: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 2



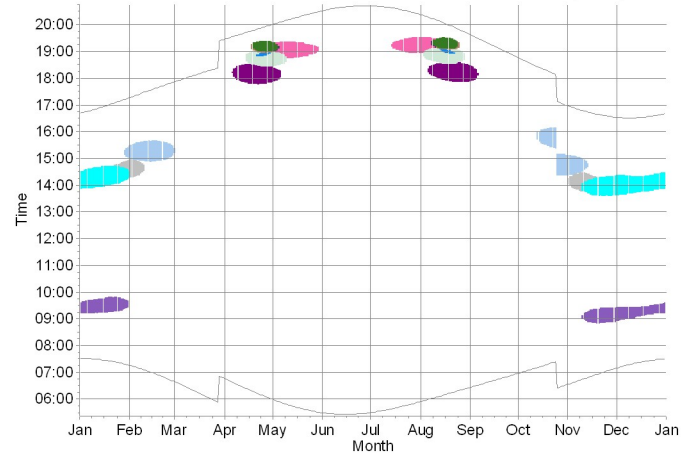
AB04: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m)



AB05: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 2



AB06: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m)



Shadow receptors

- |   |  |  |  |
|---|--|--|--|
| R017: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (82) | R047: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (92)  | R080: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (102) | R155: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (124) |
| R020: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (83) | R049: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (93)  | R082: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (103) | R159: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (125) |
| R023: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (84) | R054: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (94)  | R084: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (104) | R185: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (131) |
| R024: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (85) | R056: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (95)  | R085: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (105) | R186: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (132) |
| R025: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (86) | R057: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (96)  | R088: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (106) | R189: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (133) |
| R028: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (87) | R061: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (97)  | R089: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (107) | R190: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (134) |
| R031: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (88) | R065: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (98)  | R099: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (109) | R191: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (135) |
| R039: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (89) | R066: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (99)  | R126: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (116) | R192: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (136) |
| R040: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (90) | R067: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (100) | R129: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (117) |  |
| R046: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (91) | R079: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (101) |  |  |

Project:

WF Abruzzo Shoadow flikering

Licensed user:

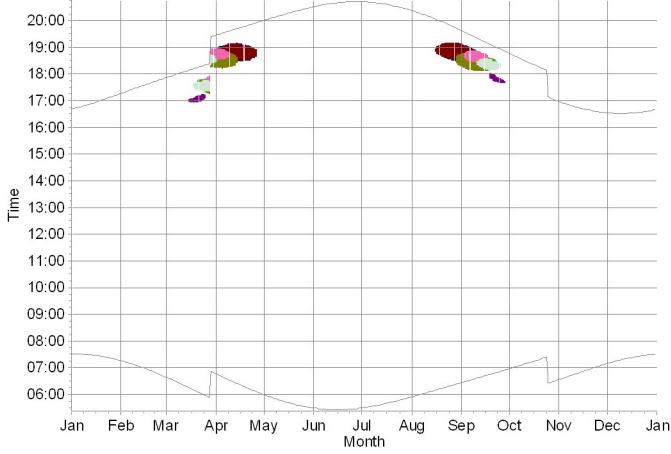
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IT-74023 Grottaglie (TA)

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:49/3.5.587

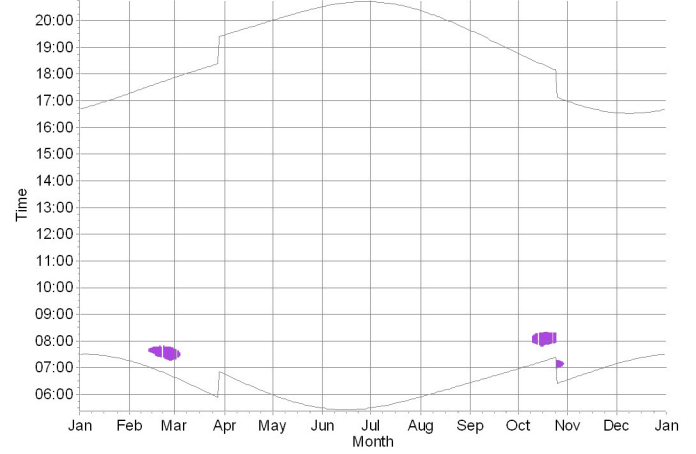
## SHADOW - Calendar per WTG, graphical

Calculation: WF Abruzzo shadow flikering worst case

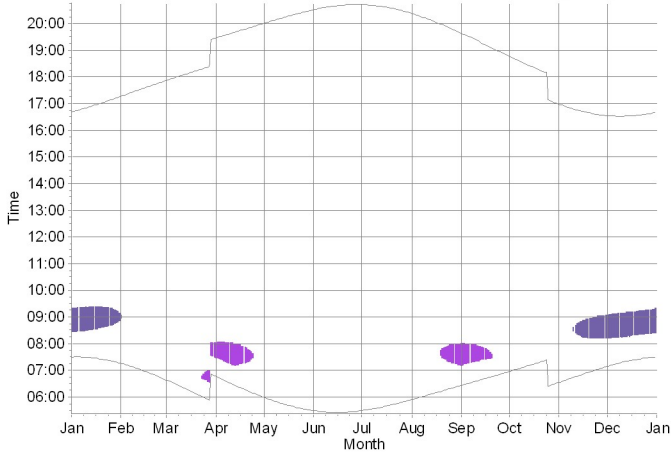
AB07: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 2



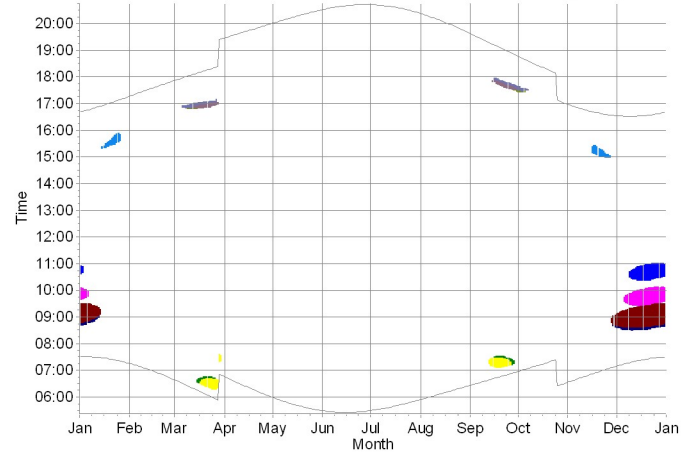
AB08: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m)



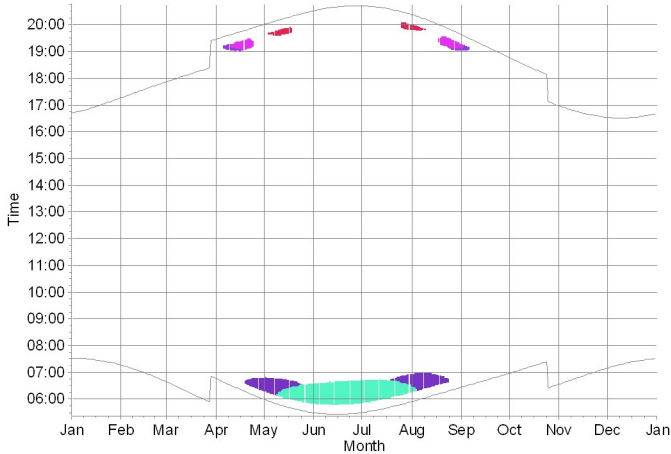
AB09: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 2



























AB10: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m)



AB11: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (11)



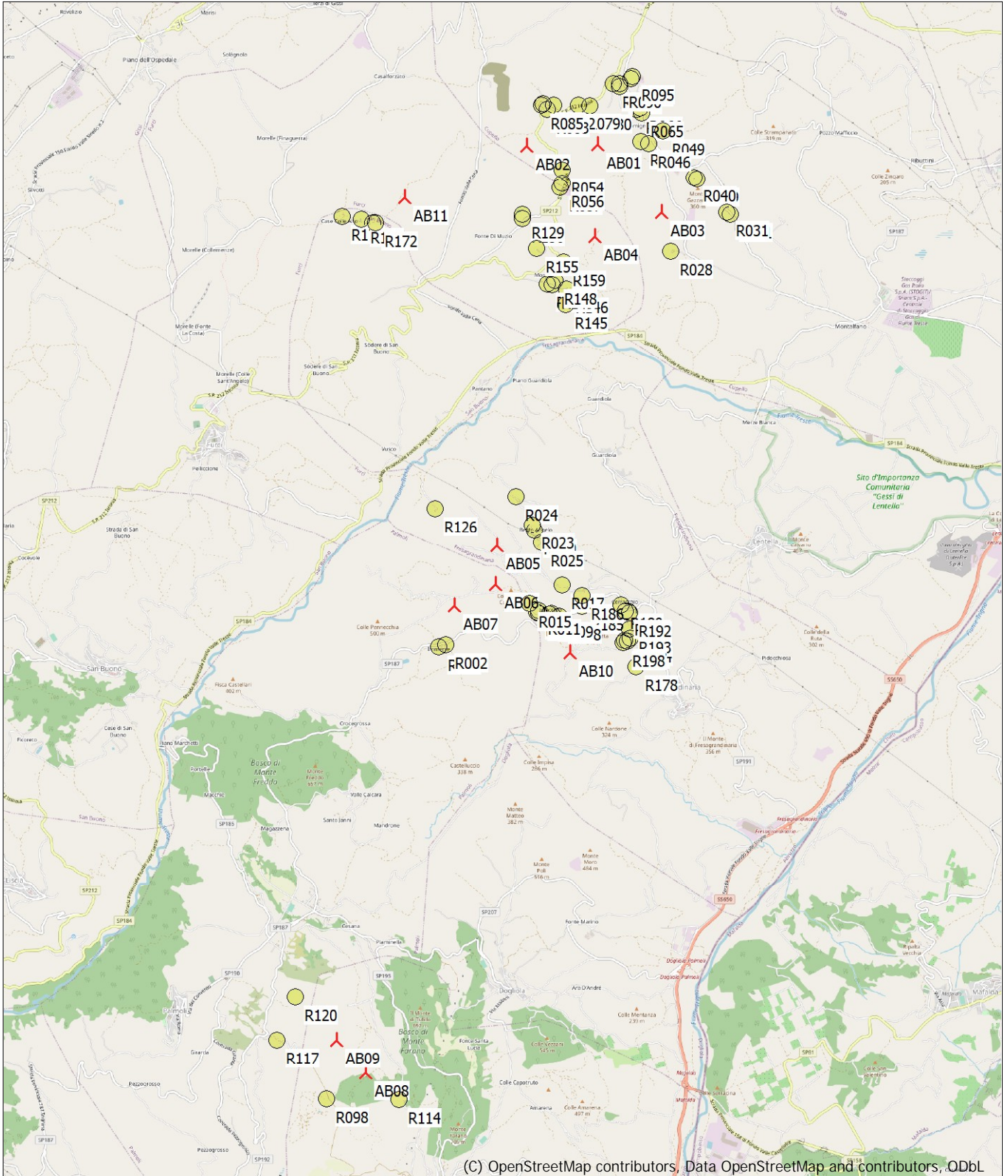
Shadow receptors

 R002: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (72)	 R012: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (78)	 R120: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (115)	 R185: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (131)
 R003: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (73)	 R013: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (79)	 R129: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (117)	 R186: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (132)
 R008: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (74)	 R015: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (80)	 R130: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (118)	 R188: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (133)
 R009: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (75)	 R016: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (81)	 R155: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (124)	 R194: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (138)
 R010: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (76)	 R017: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (82)	 R170: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (126)	 R197: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (140)
 R011: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (77)	 R117: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (114)	 R171: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (127)	 R198: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (141)



## SHADOW - Map

Calculation: WF Abruzzo shadow flikering worst case



Map: EMD OpenStreetMap , Print scale 1:75.000, Map center Geo WGS84 East: 14,634950° E North: 41,990435° N

New WTG

Shadow receptor

Flicker map level: Elevation Grid Data Object: WF Abruzzo Shoadow flikering\_EMDGrid\_0.wpg (1)

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

---

Project:

WF Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it

Calculated:

15/11/2023 18:37/3.5.587

## SHADOW - Main Result

Calculation: WF Abruzzo shadow flikering real 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

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

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 Abruzzo Shoadow flikering\_EMDGrid\_0.wpg (1)

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			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
			[m]									
AB01	14,650204° E	42,044159° N	294,0	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB02	14,638567° E	42,044006° N	224,3	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB03	14,660593° E	42,035884° N	244,4	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB04	14,649737° E	42,033040° N	205,9	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB05	14,633780° E	41,995595° N	451,6	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB06	14,633631° E	41,990946° N	530,2	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB07	14,626857° E	41,988349° N	515,1	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB08	14,612389° E	41,931813° N	441,1	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB09	14,607750° E	41,935748° N	440,0	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB10	14,645631° E	41,982689° N	442,9	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AB11	14,618792° E	42,037765° N	253,5	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8

### Shadow receptor-Input

No.	Longitude	Latitude	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l. [m]	window [°]		(ZVI) a.g.l. [m]
R002	14,625433° E	41,983636° N	429,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R003	14,624331° E	41,983442° N	425,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R008	14,643896° E	41,987066° N	445,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R009	14,642686° E	41,987427° N	454,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R010	14,642299° E	41,987286° N	457,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R011	14,640681° E	41,987731° N	474,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R012	14,640287° E	41,987540° N	475,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R013	14,640628° E	41,987449° N	470,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R015	14,639136° E	41,988662° N	486,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R016	14,638962° E	41,988615° N	486,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R017	14,644418° E	41,990911° N	386,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R020	14,639914° E	41,997436° N	327,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R023	14,639636° E	41,998140° N	324,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R024	14,636895° E	42,001586° N	293,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R025	14,641087° E	41,995961° N	338,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R028	14,662139° E	42,031269° N	215,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R031	14,671140° E	42,035948° N	250,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R039	14,666310° E	42,040012° N	331,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

## SHADOW - Main Result

Calculation: WF Abruzzo shadow flickering real case

...continued from previous page

No.	Longitude	Latitude	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l.	[°]		(ZVI) a.g.l.
									[m]
R040	14,665851° E	42,040130° N	330,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R046	14,658523° E	42,044233° N	326,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R047	14,657223° E	42,044524° N	337,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R049	14,660730° E	42,045782° N	301,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R054	14,644394° E	42,041098° N	239,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R056	14,644462° E	42,039399° N	244,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R057	14,644123° E	42,038917° N	244,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R061	14,671785° E	42,035670° N	248,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R065	14,657427° E	42,047866° N	342,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R066	14,657048° E	42,048506° N	354,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R067	14,656532° E	42,048381° N	358,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R079	14,647094° E	42,048926° N	313,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R080	14,648893° E	42,048766° N	328,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R082	14,643026° E	42,048841° N	297,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R083	14,642009° E	42,048328° N	300,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R084	14,641252° E	42,049016° N	300,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R085	14,641124° E	42,048901° N	300,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R088	14,652681° E	42,051456° N	341,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R089	14,653702° E	42,051162° N	353,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R090	14,653738° E	42,051488° N	350,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R094	14,655563° E	42,052022° N	332,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R095	14,655876° E	42,052278° N	327,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R098	14,606138° E	41,928642° N	361,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R114	14,617794° E	41,928592° N	501,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R117	14,598114° E	41,935825° N	416,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R120	14,600963° E	41,940957° N	409,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R126	14,623734° E	42,000061° N	255,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R129	14,637925° E	42,035642° N	285,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R130	14,637950° E	42,035136° N	286,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R145	14,644979° E	42,024789° N	240,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R146	14,645142° E	42,026680° N	229,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R148	14,643251° E	42,027676° N	252,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R149	14,642761° E	42,027188° N	252,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R150	14,642068° E	42,027291° N	251,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R155	14,640354° E	42,031596° N	307,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R159	14,644637° E	42,029883° N	270,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R170	14,608684° E	42,035425° N	320,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R171	14,611822° E	42,035085° N	313,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R172	14,614006° E	42,034678° N	310,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R173	14,613615° E	42,034665° N	314,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R178	14,656340° E	41,981020° N	389,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R185	14,647725° E	41,988275° N	434,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R186	14,647638° E	41,989554° N	418,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R189	14,653973° E	41,988453° N	436,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R190	14,654668° E	41,987642° N	443,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R191	14,655183° E	41,987669° N	439,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R192	14,655432° E	41,987485° N	442,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R193	14,655292° E	41,985533° N	472,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R194	14,655467° E	41,984422° N	453,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R196	14,655026° E	41,984035° N	456,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R197	14,654570° E	41,984097° N	470,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R198	14,654327° E	41,983940° N	470,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0

## Calculation Results

Shadow receptor

Shadow, expected values

No. Shadow hours  
per year  
[h/year]R002 2:16  
R003 2:02  
R008 7:59  
R009 3:49

To be continued on next page...

Project:

WF Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it

Calculated:

15/11/2023 18:37/3.5.587

## SHADOW - Main Result

Calculation: WF Abruzzo shadow flikering real case

...continued from previous page

Shadow, expected values

No.	Shadow hours per year [h/year]
R010	10:17
R011	8:29
R012	16:33
R013	17:17
R015	6:10
R016	6:18
R017	8:54
R020	21:13
R023	29:24
R024	6:40
R025	25:31
R028	6:47
R031	9:25
R039	10:25
R040	9:02
R046	10:40
R047	13:20
R049	4:37
R054	4:31
R056	4:00
R057	3:42
R061	8:41
R065	10:33
R066	13:42
R067	13:22
R079	9:02
R080	4:56
R082	25:40
R083	16:29
R084	23:03
R085	21:35
R088	1:13
R089	0:10
R090	0:17
R094	0:00
R095	0:00
R098	0:00
R114	0:00
R117	13:12
R120	24:56
R126	21:43
R129	6:47
R130	1:44
R145	0:00
R146	0:00
R148	0:00
R149	0:00
R150	0:00
R155	5:44
R159	4:05
R170	6:56
R171	10:01
R172	0:00
R173	0:00
R178	0:00
R185	9:04
R186	7:43
R189	1:27
R190	5:59
R191	6:37
R192	6:18
R193	0:00
R194	0:16

To be continued on next page...

Project:

WF Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:

15/11/2023 18:37/3.5.587

## SHADOW - Main Result

Calculation: WF Abruzzo shadow flickering real case

...continued from previous page

Shadow, expected values

No.	Shadow hours per year [h/year]
R196	0:00
R197	1:21
R198	0:32

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

No.	Name	Expected [h/year]
AB01	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (1)	83:35
AB02	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (2)	11:54
AB03	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (3)	33:40
AB04	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (4)	16:52
AB05	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (5)	57:35
AB06	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (6)	61:43
AB07	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (7)	12:25
AB08	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (8)	4:12
AB09	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (9)	33:58
AB10	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (10)	29:53
AB11	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (11)	18:28

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: WF Abruzzo shadow flickering real caseShadow receptor: R002 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (72)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:27 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:42	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:28 19:36	06:59 18:44	06:35 16:56	07:10 16:32
3	07:30 16:42	07:14 17:18	06:36 17:53	06:43 19:29	05:57 20:02	05:29 20:32	05:31 20:41	05:56 20:19	06:29 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:54	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:39	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:09 17:24	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:01 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:02 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:31
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	05:49 20:08	05:27 20:36	05:34 20:39	06:03 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:31
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:36	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:31
11	07:29 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:05 20:09	06:37 19:20	07:09 18:29	06:46 16:46	07:19 16:31
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:37 20:38	06:06 20:08	06:38 19:19	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:53	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:33	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	7 07:18 (AB10) 07:12 (AB10)	06:49 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:08	06:35 (AB10) 06:38 (AB10)	06:23 19:42	05:43 20:15	05:26 20:39	06:09 20:36	06:41 20:04	8 07:14 (AB10) 07:18 (AB10)	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:33 (AB10) 06:41 (AB10)	06:22 19:43	05:42 20:16	05:26 20:39	06:10 20:36	06:42 20:02	14 07:12 (AB10) 07:16 (AB10)	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:31 (AB10) 06:43 (AB10)	06:20 19:44	05:41 20:17	05:26 20:40	06:11 20:35	06:43 20:01	17 07:11 (AB10) 07:15 (AB10)	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:38	06:11 18:11	06:29 (AB10) 06:43 (AB10)	06:19 19:45	05:40 20:18	05:26 20:40	06:12 20:34	06:44 19:59	19 07:10 (AB10) 07:14 (AB10)	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:28 (AB10) 06:45 (AB10)	06:17 19:47	05:39 20:19	05:26 20:40	06:13 20:34	06:45 19:58	21 07:09 (AB10) 07:13 (AB10)	06:56 16:39	07:25 16:32
20	07:26 17:01	06:52 17:40	06:07 18:13	06:26 (AB10) 06:45 (AB10)	06:15 19:48	05:38 20:20	05:26 20:41	06:14 20:33	06:46 19:56	22 07:08 (AB10) 07:12 (AB10)	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:24 (AB10) 06:45 (AB10)	06:14 19:49	05:37 20:21	05:26 20:41	06:15 20:32	06:47 19:55	23 07:08 (AB10) 07:12 (AB10)	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:43	06:04 18:15	06:22 (AB10) 06:44 (AB10)	06:12 19:50	05:36 20:22	05:27 20:41	06:16 19:53	06:48 19:01	23 07:09 (AB10) 07:13 (AB10)	06:59 16:36	07:27 16:34
23	07:24 17:04	06:48 17:44	06:02 18:17	06:21 (AB10) 06:45 (AB10)	06:11 19:51	05:35 20:23	05:27 20:41	06:17 20:31	06:49 19:52	19 07:10 (AB10) 07:14 (AB10)	07:00 16:36	07:27 16:34
24	07:23 17:06	06:46 17:45	06:00 18:18	06:21 (AB10) 06:44 (AB10)	06:09 19:52	05:35 20:23	05:27 20:41	06:18 20:30	06:50 19:50	21 07:11 (AB10) 07:15 (AB10)	07:02 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:59 18:19	06:21 (AB10) 06:43 (AB10)	06:08 19:53	05:34 20:24	05:27 20:42	06:19 20:29	06:51 19:49	17 07:12 (AB10) 07:16 (AB10)	07:03 16:35	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:22 (AB10) 06:42 (AB10)	06:06 19:54	05:33 20:25	05:28 20:42	06:20 19:47	06:53 18:54	13 07:13 (AB10) 07:17 (AB10)	06:26 16:34	07:28 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:23 (AB10) 06:40 (AB10)	06:05 19:55	05:32 20:26	05:28 20:42	06:21 19:45	06:54 18:52	10 07:14 (AB10) 07:18 (AB10)	06:27 16:33	07:29 16:37
28	07:20 17:11	06:40 17:50	05:53 18:22	06:24 (AB10) 06:38 (AB10)	06:04 19:56	05:32 20:27	05:28 20:42	06:22 19:44	06:55 18:51	7 07:15 (AB10) 07:19 (AB10)	06:29 16:33	07:29 16:37
29	07:19 17:12	06:52 17:53	06:02 18:23	07:26 (AB10) 07:35 (AB10)	06:02 19:58	05:31 20:28	05:29 20:42	06:23 19:42	06:56 18:49	6 07:21 (AB10)	06:30 16:33	07:29 16:38
30	07:18 17:13	06:50 17:54	06:00 18:24	06:01 19:59	05:31 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:15	06:48 19:25	06:48 19:25	05:30 20:30	05:30 20:30	05:53 20:23	06:25 19:39	06:25 19:39	06:25 19:39	06:32 16:59	07:30 16:40	07:30 16:40
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case			245						248			
Sun reduction			0,49						0,46			
Oper. time red.			0,88						0,88			
Wind dir. red.			0,67						0,67			
Total reduction			0,28						0,27			
Total, real			70						67			

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: WF Abruzzo shadow flickering real caseShadow receptor: R003 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (73) Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

#### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:27 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:42	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:28 19:36	06:59 18:44	06:35 16:56	07:10 16:32
3	07:30 16:42	07:14 17:18	06:36 17:54	06:43 19:29	05:57 20:02	05:29 20:32	05:31 20:41	05:56 20:19	06:29 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:54	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:39	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:09 17:24	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:01 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:02 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:31
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	05:49 20:08	05:27 20:36	05:34 20:39	06:03 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:31
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:36	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:31
11	07:29 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:05 20:09	06:37 19:20	07:09 18:29	06:46 16:46	07:19 16:31
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:37 20:38	06:06 20:08	06:38 19:19	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:53	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	8 07:15 (AB10) 07:23 (AB10)	07:11 18:25	06:48 16:44
14	07:28 16:54	07:01 17:33	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	14 07:12 (AB10) 07:26 (AB10)	07:12 18:24	06:49 16:43
15	07:28 16:55	06:59 17:34	06:16 18:08	06:23 19:42	05:43 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	17 07:10 (AB10) 07:27 (AB10)	07:13 18:22	06:51 16:42
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:12	19 07:09 (AB10) 07:28 (AB10)	07:14 18:20	06:52 16:41
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40	05:41 20:35	06:11 20:01	06:43 19:10	21 07:07 (AB10) 07:28 (AB10)	07:16 18:19	06:53 16:40
18	07:27 16:58	06:55 17:38	06:11 18:11	4 06:35 (AB10) 06:29 (AB10)	05:40 19:45	05:26 20:18	05:41 20:40	06:12 19:59	06:44 19:08	21 07:28 (AB10) 07:06 (AB10)	07:17 18:16	06:54 16:39
19	07:26 16:59	06:54 17:39	06:09 18:12	9 06:38 (AB10) 06:28 (AB10)	05:39 19:47	05:26 20:19	05:42 20:40	06:13 19:58	06:45 19:06	22 07:28 (AB10) 07:07 (AB10)	07:18 18:16	06:56 16:39
20	07:26 17:01	06:52 17:40	06:07 18:13	12 06:40 (AB10) 06:26 (AB10)	06:15 19:48	05:38 20:20	05:26 20:41	06:14 19:56	06:46 19:05	21 07:28 (AB10) 07:08 (AB10)	07:19 18:14	06:57 16:38
21	07:25 17:02	06:51 17:41	06:05 18:14	14 06:40 (AB10) 06:24 (AB10)	05:14 19:49	05:37 20:21	05:26 20:41	06:15 20:32	06:47 19:55	19 07:27 (AB10) 07:09 (AB10)	07:20 18:13	06:58 16:37
22	07:24 17:03	06:49 17:43	06:04 18:15	17 06:41 (AB10) 06:22 (AB10)	05:36 19:50	05:27 20:22	05:45 20:41	06:16 19:53	06:48 19:01	17 07:26 (AB10) 07:10 (AB10)	07:21 18:11	06:59 16:36
23	07:24 17:04	06:48 17:44	06:02 18:17	19 06:41 (AB10) 06:19 (AB10)	06:11 19:51	05:35 20:23	05:27 20:41	06:17 20:31	06:49 19:52	15 07:25 (AB10) 07:11 (AB10)	07:23 18:10	07:00 16:36
24	07:23 17:06	06:46 17:45	06:00 18:18	20 06:41 (AB10) 06:19 (AB10)	06:09 19:52	05:35 20:24	05:27 20:41	06:18 20:30	06:50 19:50	13 07:24 (AB10) 07:12 (AB10)	07:24 18:08	07:02 16:35
25	07:22 17:07	06:45 17:46	05:59 18:19	22 06:41 (AB10) 06:18 (AB10)	06:08 19:53	05:34 20:24	05:27 20:42	06:19 20:29	06:51 19:49	10 07:22 (AB10) 07:13 (AB10)	06:25 17:07	07:03 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	21 06:40 (AB10) 06:19 (AB10)	06:06 19:54	05:33 20:25	05:28 20:42	06:20 20:28	06:53 19:47	6 07:19 (AB10) 07:11 (AB10)	06:26 17:05	07:04 16:34
27	07:20 17:09	06:42 17:49	05:55 18:21	20 06:39 (AB10) 06:20 (AB10)	06:05 19:55	05:32 20:26	05:28 20:42	06:21 20:27	06:54 18:52	06:27 17:04	07:05 16:34	07:29 16:37
28	07:20 17:11	06:40 17:50	05:53 18:22	17 06:37 (AB10) 07:21 (AB10)	06:04 19:56	05:32 20:27	05:28 20:42	06:22 20:26	06:55 18:51	06:29 17:03	07:06 16:33	07:29 16:37
29	07:19 17:12	06:52 17:45	06:02 18:18	14 07:35 (AB10) 07:23 (AB10)	06:02 19:58	05:31 20:28	05:29 20:42	06:23 20:25	06:56 18:49	06:30 17:01	07:07 16:33	07:29 16:38
30	07:18 17:13	06:50 17:46	06:00 18:19	10 07:33 (AB10) 07:21 (AB10)	06:01 19:59	05:31 20:29	05:29 20:42	06:24 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:15	06:48 17:48	06:05 18:25	06:30 19:59	05:30 20:30	05:29 20:42	05:53 20:23	06:25 19:39	06:32 18:59	06:32 16:59	07:30 16:40	07:30 16:40
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case			221						223			
Sun reduction			0,49						0,46			
Oper. time red.			0,88						0,88			
Wind dir. red.			0,66						0,66			
Total reduction			0,28						0,27			
Total, real			62						60			

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: WF Abruzzo shadow flickering real caseShadow receptor: R008 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (74)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June
1	07:30	10:36 (AB10)	07:16	06:39	06:46	05:59
	16:41	20 10:56 (AB10)	17:16	17:51	19:27	20:00
2	07:30	10:38 (AB10)	07:15	06:37	06:45	05:58
	16:41	17 10:55 (AB10)	17:17	17:52	19:28	20:01
3	07:30	10:41 (AB10)	07:14	06:35	06:43	05:57
	16:42	11 10:52 (AB10)	17:18	17:53	19:29	20:02
4	07:30		07:13	06:34	06:41	05:55
	16:43		17:20	17:55	19:30	20:03
5	07:30		07:12	06:32	06:40	05:54
	16:44		17:21	17:56	19:31	20:04
6	07:30		07:10	06:31	06:38	18:51 (AB07)
	16:45		17:22	17:57	19:32	8 18:59 (AB07)
7	07:30		07:09	06:29	06:36	18:47 (AB07)
	16:46		17:23	17:58	19:33	15 19:02 (AB07)
8	07:30		07:08	06:27	06:35	18:44 (AB07)
	16:47		17:25	17:59	19:34	18 19:02 (AB07)
9	07:30		07:07	06:26	06:33	18:43 (AB07)
	16:48		17:26	18:01	19:35	21 19:04 (AB07)
10	07:30		07:06	06:24	06:31	18:42 (AB07)
	16:49		17:27	18:02	19:36	22 19:04 (AB07)
11	07:29		07:04	06:22	06:30	18:40 (AB07)
	16:50		17:29	18:03	19:38	24 19:04 (AB07)
12	07:29		07:03	06:21	06:28	18:40 (AB07)
	16:51		17:30	18:04	19:39	26 19:06 (AB07)
13	07:29		07:02	06:19	06:26	18:39 (AB07)
	16:52		17:31	18:05	19:40	27 19:06 (AB07)
14	07:28		07:01	06:17	06:25	18:39 (AB07)
	16:54		17:32	18:06	19:41	28 19:07 (AB07)
15	07:28		06:59	06:16	06:23	18:38 (AB07)
	16:55		17:34	18:07	19:42	28 19:06 (AB07)
16	07:28		06:58	06:14	06:22	18:38 (AB07)
	16:56		17:35	18:09	19:43	27 19:05 (AB07)
17	07:27		06:57	06:12	06:20	18:38 (AB07)
	16:57		17:36	18:10	19:44	27 19:05 (AB07)
18	07:27		06:55	06:10	06:18	18:38 (AB07)
	16:58		17:37	18:11	19:45	26 19:04 (AB07)
19	07:26		06:54	06:09	06:17	18:39 (AB07)
	16:59		17:39	18:12	19:46	25 19:04 (AB07)
20	07:25		06:52	06:07	06:15	18:39 (AB07)
	17:01		17:40	18:13	19:48	23 19:02 (AB07)
21	07:25		06:51	06:05	06:14	18:40 (AB07)
	17:02		17:41	18:14	19:49	22 19:02 (AB07)
22	07:24		06:49	06:04	06:12	18:41 (AB07)
	17:03		17:42	18:15	19:50	19 19:00 (AB07)
23	07:23		06:48	06:02	06:11	18:43 (AB07)
	17:04		17:44	18:16	19:51	15 18:58 (AB07)
24	07:23		06:46	06:00	06:09	18:44 (AB07)
	17:06		17:45	18:18	19:52	11 18:55 (AB07)
25	07:22		06:45	05:58	06:08	
	17:07		17:46	18:19	19:53	
26	07:21		06:43	05:57	06:06	
	17:08		17:47	18:20	19:54	
27	07:20		06:42	05:55	06:05	
	17:09		17:49	18:21	19:55	
28	07:20		06:40	05:53	06:03	
	17:11		17:50	18:22	19:56	
29	07:19			06:52	06:02	
	17:12			19:23	19:57	
30	07:18			06:50	06:01	
	17:13			19:24	19:59	
31	07:17			06:48		
	17:14			19:25		
Potential sun hours	295	296	369	400	451	455
Total, worst case	48			412		
Sun reduction	0,61			0,44		
Oper. time red.	0,88			0,88		
Wind dir. red.	0,70			0,67		
Total reduction	0,37			0,25		
Total, real	18			105		

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: WF Abruzzo shadow flickering real caseShadow receptor: R008 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (74)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December		
1	05:30 20:41	05:54 20:22	06:26 19:37	18:40 (AB07) 19:04 (AB07)	06:58 18:45	06:33 16:57	07:09 16:32	
2	05:30 20:41	05:55 20:20	06:27 19:36	18:41 (AB07) 19:03 (AB07)	06:59 18:44	06:35 16:56	07:10 16:31	
3	05:31 20:41	05:56 20:19	06:29 19:34	18:41 (AB07) 19:02 (AB07)	07:00 18:42	06:36 16:55	07:11 16:31	
4	05:31 20:41	05:57 20:18	06:30 19:32	18:42 (AB07) 19:00 (AB07)	07:01 18:40	06:37 16:53	07:12 16:31	
5	05:32 20:41	05:58 20:17	06:31 19:30	18:44 (AB07) 18:59 (AB07)	07:02 18:38	06:38 16:52	07:13 16:31	
6	05:32 20:40	05:59 20:16	06:32 19:29	18:47 (AB07) 18:55 (AB07)	07:03 18:37	06:40 16:51	07:14 16:31	
7	05:33 20:40	06:00 20:14	06:33 19:27		07:04 18:35	06:41 16:50	07:15 16:31	
8	05:34 20:40	06:01 20:13	06:34 19:25		07:05 18:33	06:42 16:49	07:16 16:30	
9	05:34 20:39	06:02 20:12	06:35 19:24		07:07 18:32	06:43 16:48	07:17 16:30	10:31 (AB10) 10:41 (AB10)
10	05:35 20:39	06:04 20:11	06:36 19:22		07:08 18:30	06:44 16:47	07:18 16:30	10:27 (AB10) 10:44 (AB10)
11	05:36 20:39	06:05 20:09	06:37 19:20		07:09 18:28	06:46 16:46	07:19 16:30	10:26 (AB10) 10:46 (AB10)
12	05:36 20:38	06:06 20:08	06:38 19:18		07:10 18:27	06:47 16:45	07:20 16:31	10:25 (AB10) 10:48 (AB10)
13	05:37 20:38	06:07 20:07	06:39 19:17		07:11 18:25	06:48 16:44	07:21 16:31	10:25 (AB10) 10:50 (AB10)
14	05:38 20:37	06:08 20:05	06:40 19:15		07:12 18:24	06:49 16:43	07:21 16:31	10:24 (AB10) 10:52 (AB10)
15	05:39 20:36	06:09 20:04	06:41 19:13		07:13 18:22	06:51 16:42	07:22 16:31	10:23 (AB10) 10:53 (AB10)
16	05:40 20:36	06:10 20:02	06:42 19:11		07:14 18:20	06:52 16:41	07:23 16:31	10:23 (AB10) 10:54 (AB10)
17	05:40 20:35	06:11 20:01	06:43 19:10		07:16 18:19	06:53 16:40	07:24 16:32	10:24 (AB10) 10:55 (AB10)
18	05:41 20:34	06:12 19:59	18:55 (AB07) 19:08	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32	10:23 (AB10) 10:56 (AB10)
19	05:42 20:34	06:13 19:58	18:50 (AB07) 19:06	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32	10:24 (AB10) 10:57 (AB10)
20	05:43 20:33	06:14 19:56	18:48 (AB07) 19:04	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33	10:23 (AB10) 10:57 (AB10)
21	05:44 20:32	06:15 19:55	18:46 (AB07) 19:03	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33	10:24 (AB10) 10:58 (AB10)
22	05:45 20:31	06:16 19:53	18:45 (AB07) 19:01	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34	10:24 (AB10) 10:58 (AB10)
23	05:46 20:31	06:17 19:52	18:44 (AB07) 19:00	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34	10:25 (AB10) 10:59 (AB10)
24	05:47 20:30	06:18 19:50	18:43 (AB07) 18:57	06:50 18:57	07:24 18:08	07:01 16:35	07:28 16:35	10:26 (AB10) 10:59 (AB10)
25	05:48 20:29	06:19 19:49	18:42 (AB07) 18:56	06:51 18:56	06:25 17:07	07:03 16:34	07:28 16:35	10:27 (AB10) 11:00 (AB10)
26	05:48 20:28	06:20 19:47	18:41 (AB07) 18:54	06:52 18:54	06:26 17:05	07:04 16:34	07:28 16:36	10:28 (AB10) 11:00 (AB10)
27	05:49 20:27	06:21 19:45	18:41 (AB07) 18:52	06:54 18:52	06:27 17:04	07:05 16:33	07:29 16:37	10:28 (AB10) 10:59 (AB10)
28	05:50 20:26	06:22 19:44	18:40 (AB07) 18:50	06:55 18:50	06:29 17:03	07:06 16:33	07:29 16:37	10:29 (AB10) 10:59 (AB10)
29	05:51 20:25	06:23 19:42	18:40 (AB07) 18:49	06:56 18:49	06:30 17:01	07:07 16:33	07:29 16:38	10:31 (AB10) 10:59 (AB10)
30	05:52 20:24	06:24 19:41	18:40 (AB07) 18:47	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39	10:32 (AB10) 10:59 (AB10)
31	05:53 20:23	06:25 19:39	18:40 (AB07) 19:06 (AB07)		06:32 16:59		07:30 16:40	10:33 (AB10) 10:58 (AB10)
Potential sun hours	462	430	375		344	296	285	
Total, worst case			310	108			656	
Sun reduction			0,42	0,46			0,63	
Oper. time red.			0,88	0,88			0,88	
Wind dir. red.			0,67	0,67			0,70	
Total reduction			0,25	0,27			0,38	
Total, real			76	29			252	

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: WF Abruzzo shadow flikering real caseShadow receptor: R009 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (75) Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June	July	August	September	October	November	December			
1	07:30	07:16	06:39	06:46	05:59	05:29	05:30	05:54	06:26	18:34 (AB07)	06:58	06:33	07:09		
	16:41	17:16	17:51	19:27	20:00	20:30	20:41	20:22	19:37	27	19:01 (AB07)	18:45	16:57	16:32	
2	07:30	07:15	06:37	06:45	05:58	05:29	05:30	05:55	06:27	18:34 (AB07)	06:59	06:35	07:10		
	16:41	17:17	17:52	19:28	20:01	20:31	20:41	20:20	19:36	26	19:00 (AB07)	18:44	16:56	16:31	
3	07:30	07:14	06:35	06:43	05:57	05:28	05:31	05:56	06:29	18:34 (AB07)	07:00	06:36	07:11		
	16:42	17:18	17:53	19:29	6 18:49 (AB07)	20:02	20:32	20:41	19:34	24	18:58 (AB07)	18:42	16:55	16:31	
4	07:30	07:13	06:34	06:41	05:55	05:28	05:31	05:57	06:30	18:34 (AB07)	07:01	06:37	07:12		
	16:43	17:20	17:55	19:30	12 18:56 (AB07)	20:03	20:33	20:41	19:32	23	18:57 (AB07)	18:40	16:53	16:31	
5	07:30	07:12	06:32	06:40	05:54	05:28	05:32	05:58	06:31	18:35 (AB07)	07:02	06:38	07:13		
	16:44	17:21	17:56	19:31	15 18:56 (AB07)	20:04	20:33	20:41	19:30	20	18:55 (AB07)	18:38	16:52	16:31	
6	07:30	07:10	06:31	06:38	05:53	05:27	05:32	05:59	06:32	18:36 (AB07)	07:03	06:40	07:14		
	16:45	17:22	17:57	19:32	18 18:58 (AB07)	20:05	20:34	20:40	19:29	18	18:54 (AB07)	18:37	16:51	16:31	
7	07:30	07:09	06:29	06:36	05:52	05:27	05:33	06:00	06:33	18:37 (AB07)	07:04	06:41	07:15		
	16:46	17:23	17:58	19:33	20 18:58 (AB07)	20:06	20:35	20:40	19:27	15	18:52 (AB07)	18:35	16:50	16:31	
8	07:30	07:08	06:27	06:35	05:50	05:27	05:34	06:01	06:34	18:39 (AB07)	07:05	06:42	07:16		
	16:47	17:25	17:59	19:34	23 18:59 (AB07)	20:07	20:35	20:40	19:25	12	18:51 (AB07)	18:33	16:49	16:30	
9	07:30	07:07	06:26	06:33	05:49	05:26	05:34	06:02	06:35	18:42 (AB07)	07:07	06:43	07:17		
	16:48	17:26	18:01	19:35	24 19:00 (AB07)	20:08	20:36	20:39	19:24	7	18:49 (AB07)	18:32	16:48	16:30	
10	07:30	07:06	06:24	06:31	05:48	05:26	05:35	06:04	06:36	07:08	06:44	07:18			
	16:49	17:27	18:02	19:36	26 19:01 (AB07)	20:09	20:36	20:39	19:22	18:30	16:47	16:30			
11	07:29	07:04	06:22	06:30	05:47	05:26	05:36	06:05	06:37	07:09	06:46	07:19			
	16:50	17:29	18:03	19:38	27 19:01 (AB07)	20:11	20:37	20:39	19:20	18:28	16:46	16:31			
12	07:29	07:03	06:21	06:28	05:46	05:26	05:36	06:06	06:38	07:10	06:47	07:20			
	16:51	17:30	18:04	19:39	28 19:02 (AB07)	20:12	20:37	20:38	19:18	18:27	16:45	16:31			
13	07:29	07:02	06:19	06:26	05:45	05:26	05:37	06:07	06:39	07:11	06:48	07:21			
	16:52	17:31	18:05	19:40	30 19:03 (AB07)	20:13	20:38	20:38	19:17	18:25	16:44	16:31			
14	07:28	07:01	06:17	06:25	05:44	05:26	05:38	06:08	06:40	07:12	06:49	07:21			
	16:54	17:32	18:06	19:41	29 19:03 (AB07)	20:14	20:38	20:37	19:15	18:24	16:43	16:31			
15	07:28	06:59	06:16	06:23	05:43	05:26	05:39	06:09	06:41	07:13	06:51	07:22			
	16:55	17:34	18:07	19:42	28 19:02 (AB07)	20:15	20:39	20:36	19:13	18:22	16:42	16:31			
16	07:28	06:58	06:14	06:22	05:42	05:26	05:40	06:10	06:42	07:14	06:52	07:23			
	16:56	17:35	18:09	19:43	28 19:02 (AB07)	20:16	20:39	20:36	19:11	18:20	16:41	16:31			
17	07:27	06:57	06:12	06:20	05:41	05:26	05:40	06:11	06:43	07:16	06:53	07:24			
	16:57	17:36	18:10	19:44	27 19:01 (AB07)	20:17	20:40	20:35	19:10	18:19	16:40	16:32			
18	07:27	06:55	06:10	06:18	05:40	05:26	05:41	06:12	06:44	07:17	06:54	07:24			
	16:58	17:37	18:11	19:45	26 19:00 (AB07)	20:18	20:40	20:34	19:08	18:17	16:39	16:32			
19	07:26	06:54	06:09	06:17	05:39	05:26	05:42	06:13	06:45	07:18	06:56	07:25			
	16:59	17:39	18:12	19:46	23 18:59 (AB07)	20:19	20:40	20:34	19:06	18:16	16:38	16:32			
20	07:25	06:52	06:07	06:15	05:38	05:26	05:43	06:14	06:46	07:19	06:57	07:26			
	17:01	17:40	18:13	19:48	21 18:57 (AB07)	20:20	20:41	20:33	19:04	18:14	16:38	16:33			
21	07:25	06:51	06:05	06:14	05:37	05:26	05:44	06:15	06:47	07:20	06:58	07:26			
	17:02	17:41	18:14	19:49	18 18:56 (AB07)	20:21	20:41	20:32	19:03	18:13	16:37	16:33			
22	07:24	06:49	06:04	06:12	05:36	05:26	05:45	06:16	06:48	07:21	06:59	07:27			
	17:03	17:42	18:15	19:50	13 18:53 (AB07)	20:22	20:41	20:31	19:01	18:11	16:36	16:34			
23	07:23	06:48	06:02	06:11	05:35	05:27	05:46	06:17	06:49	07:23	07:00	07:27			
	17:04	17:44	18:16	19:51	5 18:49 (AB07)	20:23	20:41	20:31	19:52	21	19:02 (AB07)	18:59	18:10	16:36	16:34
24	07:23	06:46	06:00	06:09	05:34	05:27	05:47	06:18	06:50	07:24	07:01	07:28			
	17:06	17:45	18:18	19:52	20:23	20:41	20:30	19:50	18:57	24	19:03 (AB07)	18:57	18:08	16:35	16:35
25	07:22	06:45	05:58	06:08	05:34	05:27	05:48	06:19	06:51	07:25	07:03	07:28			
	17:07	17:46	18:19	19:53	20:24	20:41	20:29	19:49	18:56	26	19:04 (AB07)	18:56	17:07	16:34	16:35
26	07:21	06:43	05:57	06:06	05:33	05:28	05:48	06:20	06:52	07:26	07:04	07:28			
	17:08	17:47	18:20	19:54	20:25	20:42	20:28	19:47	18:54	27	19:04 (AB07)	18:54	17:05	16:34	16:36
27	07:20	06:42	05:55	06:05	05:32	05:28	05:49	06:21	06:54	07:27	07:05	07:29			
	17:09	17:49	18:21	19:55	20:26	20:42	20:27	19:45	18:52	28	19:04 (AB07)	18:52	17:04	16:33	16:37
28	07:20	06:40	05:53	06:03	05:32	05:28	05:50	06:22	06:55	07:28	07:06	07:29			
	17:11	17:50	18:22	19:56	20:27	20:42	20:26	19:44	18:50	29	19:04 (AB07)	18:50	17:03	16:33	16:37
29	07:19	06:52	06:02	06:12	05:31	05:29	05:51	06:23	06:56	07:29	07:07	07:29			
	17:12	17:53	18:24	19:57	20:28	20:42	20:25	19:42	18:49	29	19:04 (AB07)	18:49	17:01	16:33	16:38
30	07:18	06:50	06:01	06:11	05:30	05:29	05:52	06:24	06:57	07:30	07:08	07:30			
	17:13	17:54	18:25	19:59	20:29	20:42	20:24	19:41	18:47	30	19:04 (AB07)	18:47	17:00	16:32	16:39
31	07:17	06:48	06:00	06:10	05:30	05:30	05:53	06:25	06:52	07:31	07:09	07:30			
	17:14	17:55	18:26	19:60	20:29	20:42	20:23	19:39	18:46	28	19:02 (AB07)	18:46	16:59	16:40	16:40
Potential sun hours	295	296	369	400	451	455	462	430	375		344	296	285		
Total, worst case					447				172						
Sun reduction					0,44				0,46						
Oper. time red.					0,88				0,88						
Wind dir. red.					0,67				0,67						
Total reduction					0,25				0,27						
Total, real					114				47						

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: WF Abruzzo shadow flickering real caseShadow receptor: R010 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (76)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June
1	07:30 16:41	09:37 (AB10) 10:05 (AB10)	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00
2	07:30 16:41	09:39 (AB10) 10:04 (AB10)	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01
3	07:30 16:42	09:40 (AB10) 10:03 (AB10)	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02
4	07:30 16:43	09:42 (AB10) 10:02 (AB10)	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03
5	07:30 16:44	09:45 (AB10) 10:01 (AB10)	07:12 17:21	06:32 17:56	06:40 19:31	11 18:47 (AB07) 20:04
6	07:30 16:45	09:48 (AB10) 09:58 (AB10)	07:10 17:22	06:31 17:57	06:38 19:32	16 18:44 (AB07) 20:05
7	07:30 16:46		07:09 17:23	06:29 17:58	06:36 19:33	18 19:00 (AB07) 20:06
8	07:30 16:47		07:08 17:25	06:27 17:59	06:35 19:34	21 19:01 (AB07) 20:07
9	07:30 16:48		07:07 17:26	06:26 18:01	06:33 19:35	23 18:39 (AB07) 20:08
10	07:30 16:49		07:06 17:27	06:24 18:02	06:31 19:36	25 18:37 (AB07) 20:09
11	07:29 16:50		07:04 17:29	06:22 18:03	06:30 19:38	27 18:36 (AB07) 20:11
12	07:29 16:51		07:03 17:30	06:21 18:04	06:28 19:39	28 19:04 (AB07) 20:12
13	07:29 16:52		07:02 17:31	06:19 18:05	06:26 19:40	30 18:35 (AB07) 20:13
14	07:28 16:54		07:01 17:32	06:17 18:06	06:25 19:41	31 18:35 (AB07) 20:14
15	07:28 16:55		06:59 17:34	06:16 18:07	06:23 19:42	30 19:05 (AB07) 20:15
16	07:28 16:56		06:58 17:35	06:14 18:09	06:22 19:43	30 18:35 (AB07) 20:16
17	07:27 16:57		06:57 17:36	06:12 18:10	06:20 19:44	29 18:35 (AB07) 20:17
18	07:27 16:58		06:55 17:37	06:10 18:11	06:18 19:45	29 18:34 (AB07) 20:18
19	07:26 16:59		06:54 17:39	06:09 18:12	06:17 19:46	28 18:35 (AB07) 20:19
20	07:25 17:01		06:52 17:40	06:07 18:13	06:15 19:48	26 19:01 (AB07) 20:20
21	07:25 17:02		06:51 17:41	06:05 18:14	06:14 19:49	24 18:37 (AB07) 20:21
22	07:24 17:03		06:49 17:42	06:04 18:15	06:12 19:50	22 18:37 (AB07) 20:22
23	07:23 17:04		06:48 17:44	06:02 18:16	06:11 19:51	19 18:39 (AB07) 20:23
24	07:23 17:06		06:46 17:45	06:00 18:18	06:09 19:52	15 18:40 (AB07) 20:23
25	07:22 17:07		06:45 17:46	05:58 18:19	06:08 19:53	8 18:44 (AB07) 20:24
26	07:21 17:08		06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25
27	07:20 17:09		06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26
28	07:20 17:11		06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27
29	07:19 17:12			06:52 19:23	06:02 19:58	05:31 20:28
30	07:18 17:13			06:50 19:24	06:01 19:59	05:30 20:29
31	07:17 17:14			06:48 19:25		05:30 20:29
Potential sun hours	295	296	369	400	451	455
Total, worst case	122			490		
Sun reduction	0,61			0,44		
Oper. time red.	0,88			0,88		
Wind dir. red.	0,74			0,67		
Total reduction	0,39			0,25		
Total, real	48			124		

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: WF Abruzzo shadow flickering real caseShadow receptor: R010 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (76)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December	
1	05:30 20:41	05:54 20:22	06:26 19:37	18:36 (AB07) 19:03 (AB07)	06:58 18:45	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:20	06:27 19:36	18:36 (AB07) 19:01 (AB07)	06:59 18:44	06:35 16:56	07:10 16:31
3	05:31 20:41	05:56 20:19	06:29 19:34	18:37 (AB07) 19:00 (AB07)	07:00 18:42	06:36 16:55	07:11 16:31
4	05:31 20:41	05:57 20:18	06:30 19:32	18:38 (AB07) 18:59 (AB07)	07:01 18:40	06:37 16:53	07:12 16:31
5	05:32 20:41	05:58 20:17	06:31 19:30	18:39 (AB07) 18:57 (AB07)	07:02 18:38	06:38 16:52	07:13 16:31
6	05:32 20:40	05:59 20:16	06:32 19:29	18:40 (AB07) 18:56 (AB07)	07:03 18:37	06:40 16:51	07:14 16:31
7	05:33 20:40	06:00 20:14	06:33 19:27	18:43 (AB07) 18:54 (AB07)	07:04 18:35	06:41 16:50	07:15 16:31
8	05:34 20:40	06:01 20:13	06:34 19:25	06:34 18:33	07:05 16:49	06:42 16:30	07:16 16:30
9	05:34 20:39	06:03 20:12	06:35 19:24	06:35 18:32	07:07 16:48	06:43 16:30	07:17 16:30
10	05:35 20:39	06:04 20:11	06:36 19:22	06:36 18:30	07:08 16:47	06:44 16:30	07:18 16:30
11	05:36 20:39	06:05 20:09	06:37 19:20	06:37 18:28	07:09 16:46	06:46 16:31	07:19 16:31
12	05:36 20:38	06:06 20:08	06:38 19:18	06:38 18:27	07:10 16:45	06:47 16:31	07:20 16:31
13	05:37 20:38	06:07 20:07	06:39 19:17	06:39 18:25	07:11 16:44	06:48 16:31	07:21 16:31
14	05:38 20:37	06:08 20:05	06:40 19:15	06:40 18:24	07:12 16:43	06:49 16:31	07:21 16:31
15	05:39 20:36	06:09 20:04	06:41 19:13	06:41 18:22	07:13 16:42	06:51 16:31	07:22 16:31
16	05:40 20:36	06:10 20:02	06:42 19:11	06:42 18:20	07:14 16:41	06:52 16:31	07:23 16:31
17	05:40 20:35	06:11 20:01	06:43 19:10	06:43 18:19	07:16 16:40	06:53 16:32	07:24 16:32
18	05:41 20:34	06:12 19:59	18:50 (AB07) 19:08	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58	18:47 (AB07) 19:06	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	18:44 (AB07) 19:04	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	06:15 19:55	18:43 (AB07) 19:03	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 19:53	18:41 (AB07) 19:01	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	05:46 20:31	06:17 19:52	18:40 (AB07) 18:59	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	05:47 20:30	06:18 19:50	18:39 (AB07) 18:57	06:50 18:57	07:24 18:08	07:01 16:35	07:28 16:35
25	05:48 20:29	06:19 19:49	18:38 (AB07) 18:56	06:51 18:56	06:25 17:07	07:03 16:34	07:28 16:35
26	05:48 20:28	06:20 19:47	18:38 (AB07) 18:54	06:52 18:54	06:26 17:05	07:04 16:34	07:28 16:36
27	05:49 20:27	06:21 19:45	18:37 (AB07) 18:52	06:54 18:52	06:27 17:04	07:05 16:33	07:29 16:37
28	05:50 20:26	06:22 19:44	18:37 (AB07) 18:50	06:55 18:50	06:29 17:03	07:06 16:33	07:29 16:37
29	05:51 20:25	06:23 19:42	18:36 (AB07) 18:49	06:56 18:49	06:30 17:01	07:07 16:33	07:29 16:38
30	05:52 20:24	06:24 19:41	18:36 (AB07) 18:47	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39
31	05:53 20:23	06:25 19:39	18:36 (AB07) 19:04 (AB07)	06:58 19:04 (AB07)	06:32 16:59	07:30 16:40	09:36 (AB10) 10:05 (AB10)
Potential sun hours	462	430	375	344	296	285	
Total, worst case			353	141			796
Sun reduction			0,42	0,46			0,63
Oper. time red.			0,88	0,88			0,88
Wind dir. red.			0,67	0,67			0,74
Total reduction			0,24	0,27			0,40
Total, real			86	38			322

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: WF Abruzzo shadow flikering real caseShadow receptor: R011 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (77)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June		
1	07:30	09:07 (AB10)	07:16	06:39	06:46	18:41 (AB07)	05:59	05:29
	16:41	09:20 (AB10)	07:16	17:51	19:27	18:56 (AB07)	20:00	20:30
2	07:30	09:09 (AB10)	07:15	06:37	06:45	18:38 (AB07)	05:58	05:29
	16:41	09:18 (AB10)	07:17	17:52	19:28	18:58 (AB07)	20:01	20:31
3	07:30		07:14	06:35	06:43	18:36 (AB07)	05:57	05:28
	16:42		17:18	17:53	19:29	19:00 (AB07)	20:02	20:32
4	07:30		07:13	06:34	06:41	18:34 (AB07)	05:55	05:28
	16:43		17:20	17:55	19:30	19:01 (AB07)	20:03	20:33
5	07:30		07:12	06:32	06:40	18:33 (AB07)	05:54	05:28
	16:44		17:21	17:56	19:31	19:01 (AB07)	20:04	20:33
6	07:30		07:10	06:31	06:38	18:32 (AB07)	05:53	05:27
	16:45		17:22	17:57	19:32	19:03 (AB07)	20:05	20:34
7	07:30		07:09	06:29	06:36	18:31 (AB07)	05:52	05:27
	16:46		17:23	17:58	19:33	19:03 (AB07)	20:06	20:35
8	07:30		07:08	06:27	06:35	18:30 (AB07)	05:50	05:27
	16:47		17:25	17:59	19:34	19:02 (AB07)	20:07	20:35
9	07:30		07:07	06:26	06:33	18:30 (AB07)	05:49	05:26
	16:48		17:26	18:01	19:35	19:03 (AB07)	20:08	20:36
10	07:30		07:06	06:24	06:31	18:29 (AB07)	05:48	05:26
	16:49		17:27	18:02	19:36	19:03 (AB07)	20:09	20:36
11	07:29		07:04	06:22	06:30	18:28 (AB07)	05:47	05:26
	16:50		17:29	18:03	19:38	19:02 (AB07)	20:11	20:37
12	07:29		07:03	06:21	06:28	18:29 (AB07)	05:46	05:26
	16:51		17:30	18:04	19:39	19:02 (AB07)	20:12	20:37
13	07:29		07:02	06:19	06:26	18:28 (AB07)	05:45	05:26
	16:52		17:31	18:05	19:40	19:02 (AB07)	20:13	20:38
14	07:28		07:01	06:17	06:25	18:29 (AB07)	05:44	05:26
	16:54		17:32	18:06	19:41	19:02 (AB07)	20:14	20:38
15	07:28		06:59	06:16	06:23	18:29 (AB07)	05:43	05:26
	16:55		17:34	18:07	19:42	19:00 (AB07)	20:15	20:39
16	07:28		06:58	06:14	06:22	18:30 (AB07)	05:42	05:26
	16:56		17:35	18:09	19:43	19:00 (AB07)	20:16	20:39
17	07:27		06:57	06:12	06:20	18:30 (AB07)	05:41	05:26
	16:57		17:36	18:10	19:44	18:59 (AB07)	20:17	20:40
18	07:27		06:55	06:10	06:18	18:30 (AB07)	05:40	05:26
	16:58		17:38	18:11	19:45	18:57 (AB07)	20:18	20:40
19	07:26		06:54	06:09	06:17	18:31 (AB07)	05:39	05:26
	16:59		17:39	18:12	19:46	18:56 (AB07)	20:19	20:40
20	07:25		06:52	06:07	06:15	18:32 (AB07)	05:38	05:26
	17:01		17:40	18:13	19:48	18:54 (AB07)	20:20	20:41
21	07:25		06:51	06:05	06:14	18:34 (AB07)	05:37	05:26
	17:02		17:41	18:14	19:49	18:53 (AB07)	20:21	20:41
22	07:24		06:49	06:04	06:12	18:36 (AB07)	05:36	05:26
	17:03		17:42	18:15	19:50	18:49 (AB07)	20:22	20:41
23	07:23		06:48	06:02	06:11		05:35	05:27
	17:04		17:44	18:16	19:51		20:23	20:41
24	07:23		06:46	06:00	06:09		05:34	05:27
	17:06		17:45	18:18	19:52		20:23	20:41
25	07:22		06:45	05:58	06:08		05:34	05:27
	17:07		17:46	18:19	19:53		20:24	20:41
26	07:21		06:43	05:57	06:06		05:33	05:28
	17:08		17:47	18:20	19:54		20:25	20:42
27	07:20		06:42	05:55	06:05		05:32	05:28
	17:09		17:49	18:21	19:55		20:26	20:42
28	07:20		06:40	05:53	06:03		05:32	05:28
	17:11		17:50	18:22	19:56		20:27	20:42
29	07:19			06:52	06:02		05:31	05:29
	17:12			19:23	19:58		20:28	20:42
30	07:18			06:50	06:01		05:30	05:29
	17:13			19:24	19:59		20:29	20:42
31	07:17			06:48		18:46 (AB07)	05:30	
	17:14			19:25	6	18:52 (AB07)	20:29	
Potential sun hours	295	296	369	400		451	455	
Total, worst case	22			6		606		
Sun reduction	0,61			0,49		0,44		
Oper. time red.	0,88			0,88		0,88		
Wind dir. red.	0,75			0,66		0,66		
Total reduction	0,40			0,28		0,25		
Total, real	9			2		152		

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: WF Abruzzo shadow flickering real caseShadow receptor: R011 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (77)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December		
1	05:30 20:41	05:54 20:22	06:26 19:37	18:28 (AB07) 19:02 (AB07)	06:58 18:45	06:33 16:57	07:09 16:32	
2	05:30 20:41	05:55 20:21	06:27 19:36	18:28 (AB07) 19:02 (AB07)	06:59 18:44	06:35 16:56	07:10 16:32	
3	05:31 20:41	05:56 20:19	06:29 19:34	18:28 (AB07) 19:01 (AB07)	07:00 18:42	06:36 16:55	07:11 16:31	
4	05:31 20:41	05:57 20:18	06:30 19:32	18:28 (AB07) 19:00 (AB07)	07:01 18:40	06:37 16:54	07:12 16:31	
5	05:32 20:41	05:58 20:17	06:31 19:31	18:28 (AB07) 19:00 (AB07)	07:02 18:38	06:38 16:52	07:14 16:31	
6	05:32 20:40	05:59 20:16	06:32 19:29	18:28 (AB07) 18:59 (AB07)	07:03 18:37	06:40 16:51	07:14 16:31	
7	05:33 20:40	06:00 20:14	06:33 19:27	18:29 (AB07) 18:57 (AB07)	07:04 18:35	06:41 16:50	07:15 16:31	
8	05:34 20:40	06:01 20:13	06:34 19:25	18:29 (AB07) 18:56 (AB07)	07:05 18:33	06:42 16:49	07:16 16:30	
9	05:34 20:39	06:03 20:12	06:35 19:24	18:30 (AB07) 18:54 (AB07)	07:07 18:32	06:43 16:48	07:17 16:30	
10	05:35 20:39	06:04 20:11	06:36 19:22	18:32 (AB07) 18:52 (AB07)	07:08 18:30	06:44 16:47	07:18 16:30	08:59 (AB10)
11	05:36 20:39	06:05 20:09	06:37 19:20	18:34 (AB07) 18:49 (AB07)	07:09 18:28	06:46 16:46	07:19 16:31	08:57 (AB10) 09:10 (AB10)
12	05:36 20:38	06:06 20:08	06:38 19:18	18:37 (AB07) 18:45 (AB07)	07:10 18:27	06:47 16:45	07:20 16:31	08:56 (AB10) 09:12 (AB10)
13	05:37 20:38	06:07 20:07	06:39 19:17	18:45 (AB07)	07:11 18:25	06:48 16:44	07:21 16:31	08:56 (AB10) 09:14 (AB10)
14	05:38 20:37	06:08 20:05	06:40 19:15	18:45 (AB07)	07:12 18:24	06:49 16:43	07:21 16:31	08:56 (AB10) 09:15 (AB10)
15	05:39 20:36	06:09 20:04	06:41 19:13	18:45 (AB07)	07:13 18:22	06:51 16:42	07:22 16:31	08:55 (AB10) 09:16 (AB10)
16	05:40 20:36	06:10 20:02	06:42 19:11	18:45 (AB07)	07:14 18:20	06:52 16:41	07:23 16:31	08:55 (AB10) 09:17 (AB10)
17	05:40 20:35	06:11 20:01	06:43 19:10	18:45 (AB07)	07:16 18:19	06:53 16:40	07:24 16:32	08:55 (AB10) 09:18 (AB10)
18	05:41 20:34	06:12 19:59	06:44 19:08	18:45 (AB07)	07:17 18:17	06:54 16:39	07:24 16:32	08:55 (AB10) 09:18 (AB10)
19	05:42 20:34	06:13 19:58	06:45 19:06	18:45 (AB07)	07:18 18:16	06:56 16:38	07:25 16:32	08:55 (AB10) 09:20 (AB10)
20	05:43 20:33	06:14 19:56	06:46 19:04	18:46 (AB07) 18:52 (AB07)	07:19 18:14	06:57 16:38	07:26 16:33	08:55 (AB10) 09:20 (AB10)
21	05:44 20:32	06:15 19:55	06:47 19:03	18:41 (AB07) 18:56 (AB07)	07:20 18:13	06:58 16:37	07:26 16:33	08:56 (AB10) 09:21 (AB10)
22	05:45 20:31	06:16 19:53	06:48 19:01	18:39 (AB07) 18:58 (AB07)	07:21 18:11	06:59 16:36	07:27 16:34	08:56 (AB10) 09:21 (AB10)
23	05:46 20:31	06:17 19:52	06:49 18:59	18:37 (AB07) 18:59 (AB07)	07:23 18:10	07:00 16:36	07:27 16:34	08:57 (AB10) 09:22 (AB10)
24	05:47 20:30	06:18 19:50	06:50 18:57	18:35 (AB07) 19:00 (AB07)	07:24 18:08	07:01 16:35	07:28 16:35	08:57 (AB10) 09:22 (AB10)
25	05:48 20:29	06:19 19:49	06:51 18:56	18:34 (AB07) 19:01 (AB07)	06:25 17:07	07:03 16:34	07:28 16:35	08:58 (AB10) 09:23 (AB10)
26	05:49 20:28	06:20 19:47	06:52 18:54	18:32 (AB07) 19:02 (AB07)	06:26 17:05	07:04 16:34	07:28 16:36	08:59 (AB10) 09:22 (AB10)
27	05:49 20:27	06:21 19:45	06:54 18:52	18:31 (AB07) 19:02 (AB07)	06:27 17:04	07:05 16:33	07:29 16:37	09:00 (AB10) 09:22 (AB10)
28	05:50 20:26	06:22 19:44	06:55 18:50	18:30 (AB07) 19:02 (AB07)	06:29 17:03	07:06 16:33	07:29 16:37	09:00 (AB10) 09:22 (AB10)
29	05:51 20:25	06:23 19:42	06:56 18:49	18:30 (AB07) 19:03 (AB07)	06:30 17:01	07:07 16:33	07:29 16:38	09:02 (AB10) 09:22 (AB10)
30	05:52 20:24	06:24 19:41	06:57 18:47	18:29 (AB07) 19:03 (AB07)	06:31 17:00	07:08 16:32	07:30 16:39	09:03 (AB10) 09:22 (AB10)
31	05:53 20:23	06:25 19:39	06:58 19:02	18:29 (AB07) 19:02 (AB07)	06:32 16:59	07:30 16:40	07:30 16:40	09:05 (AB10) 09:21 (AB10)
Potential sun hours	462	430	375	344	296	285	16	
Total, worst case		307	318			460		
Sun reduction		0,42	0,46			0,63		
Oper. time red.		0,88	0,88			0,88		
Wind dir. red.		0,66	0,66			0,75		
Total reduction		0,24	0,27			0,41		
Total, real		74	85			188		

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: WF Abruzzo shadow flickering real caseShadow receptor: R012 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (78)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June
1	07:30 16:41 40	08:41 (AB10) 09:21 (AB10) 17:16	07:16 06:39 17:51	06:46 19:27 17:51		05:59 20:00 20:30
2	07:30 16:41 39	08:42 (AB10) 09:21 (AB10) 17:17	07:15 17:17 17:52	06:37 19:28 17:52		05:58 20:01 20:31
3	07:30 16:42 38	08:43 (AB10) 09:21 (AB10) 17:18	07:14 17:53 19:29	06:35 19:29 18:58 (AB07)	14	05:57 20:02 20:32
4	07:30 16:43 37	08:44 (AB10) 09:21 (AB10) 17:20	07:13 17:55 19:30	06:34 19:30 18:41 (AB07)	19	05:55 20:03 20:33
5	07:30 16:44 35	08:45 (AB10) 09:20 (AB10) 17:21	07:12 17:56 19:31	06:32 19:31 18:38 (AB07)	23	05:54 20:04 20:33
6	07:30 16:45 33	08:47 (AB10) 09:20 (AB10) 17:22	07:10 17:57 19:32	06:31 19:32 18:37 (AB07)	26	05:53 20:05 20:34
7	07:30 16:46 32	08:48 (AB10) 09:20 (AB10) 17:23	07:09 17:58 19:33	06:30 19:33 19:04 (AB07)	29	05:52 20:06 20:35
8	07:30 16:47 29	08:49 (AB10) 09:18 (AB10) 17:25	07:08 17:59 19:34	06:29 19:34 18:33 (AB07)	31	05:50 20:07 20:35
9	07:30 16:48 28	08:50 (AB10) 09:18 (AB10) 17:26	07:07 18:01 19:35	06:28 18:01 19:05 (AB07)	32	05:49 20:08 20:36
10	07:30 16:49 25	08:52 (AB10) 09:17 (AB10) 17:27	07:06 18:02 19:36	06:27 18:02 19:05 (AB07)	33	05:48 20:09 20:36
11	07:29 16:50 21	08:54 (AB10) 09:15 (AB10) 17:29	07:04 18:03 19:38	06:26 18:03 19:05 (AB07)	34	05:47 20:11 20:37
12	07:29 16:51 17	08:57 (AB10) 09:14 (AB10) 17:30	07:03 18:04 19:39	06:25 18:04 19:05 (AB07)	34	05:46 20:12 20:37
13	07:29 16:52 12	09:00 (AB10) 09:12 (AB10) 17:31	07:02 18:05 19:40	06:24 18:05 19:05 (AB07)	35	05:45 20:13 20:38
14	07:28 16:54 15	07:28 16:55 15	07:01 17:34 18:07	06:23 18:07 19:42	35	05:44 20:15 20:39
15	07:28 16:55 14	07:28 16:56 14	06:59 17:34 18:07	06:23 18:07 19:42	35	05:43 20:15 20:39
16	07:28 16:56 13	07:28 16:56 13	06:58 17:35 18:09	06:22 18:09 19:43	35	05:42 20:16 20:39
17	07:27 16:57 12	07:27 16:57 12	06:57 17:36 18:10	06:20 18:10 19:44	34	05:41 20:17 20:40
18	07:27 16:58 11	07:27 16:58 11	06:55 17:38 18:11	06:18 18:11 19:45	32	05:40 20:18 20:40
19	07:26 16:59 10	07:26 16:59 10	06:54 17:39 18:12	06:17 18:12 19:46	31	05:39 20:19 20:40
20	07:25 17:01 9	07:25 17:01 9	06:51 17:40 18:13	06:15 18:13 19:48	30	05:38 20:20 20:41
21	07:25 17:02 8	07:25 17:02 8	06:51 17:41 18:14	06:14 18:14 19:49	28	05:37 20:21 20:41
22	07:24 17:03 7	07:24 17:03 7	06:49 17:42 18:15	06:12 18:15 19:50	26	05:36 20:22 20:41
23	07:23 17:04 6	07:23 17:04 6	06:48 17:44 18:16	06:11 18:16 19:51	23	05:35 20:23 20:41
24	07:23 17:06 5	07:23 17:06 5	06:46 17:45 18:18	06:09 18:18 19:52	20	05:34 20:23 20:41
25	07:22 17:07 4	07:22 17:07 4	06:45 17:46 18:19	06:08 18:19 19:53	16	05:34 20:24 20:41
26	07:21 17:08 3	07:21 17:08 3	06:43 17:47 18:20	06:06 18:20 19:54	8	05:33 20:25 20:42
27	07:20 17:09 2	07:20 17:09 2	06:42 17:49 18:21	06:05 18:21 19:55		05:32 20:26 20:42
28	07:20 17:11 1	07:20 17:11 1	06:40 17:50 18:22	06:03 19:56 19:56		05:32 20:27 20:42
29	07:19 17:12 0	07:19 17:12 0	06:40 17:50 18:22	06:03 19:56 19:56		05:32 20:27 20:42
30	07:18 17:13 0	07:18 17:13 0	06:40 17:50 18:22	06:03 19:56 19:56		05:32 20:27 20:42
31	07:17 17:14 0	07:17 17:14 0	06:40 17:50 18:22	06:03 19:56 19:56		05:32 20:27 20:42
Potential sun hours	295	296	369	400	451	455
Total, worst case	386			663		
Sun reduction	0,61			0,44		
Oper. time red.	0,88			0,88		
Wind dir. red.	0,75			0,67		
Total reduction	0,40			0,25		
Total, real	152			167		

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: WF Abruzzo shadow flickering real caseShadow receptor: R012 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (78)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	July	August	September	October	November	December
1	05:30 20:41	05:54 20:22	06:26 19:37	18:31 (AB07) 19:05 (AB07)	06:58 18:45	06:33 16:57
2	05:30 20:41	05:55 20:21	06:27 19:36	18:31 (AB07) 19:04 (AB07)	06:59 18:44	06:35 16:56
3	05:31 20:41	05:56 20:19	06:29 19:34	18:31 (AB07) 19:03 (AB07)	07:00 18:42	06:36 16:55
4	05:31 20:41	05:57 20:18	06:30 19:32	18:31 (AB07) 19:02 (AB07)	07:01 18:40	06:37 16:54
5	05:32 20:41	05:58 20:17	06:31 19:31	18:32 (AB07) 19:01 (AB07)	07:02 18:38	06:38 16:52
6	05:32 20:40	05:59 20:16	06:32 19:29	18:33 (AB07) 18:59 (AB07)	07:03 18:37	06:40 16:51
7	05:33 20:40	06:00 20:14	06:33 19:27	18:34 (AB07) 18:57 (AB07)	07:04 18:35	06:41 16:50
8	05:34 20:40	06:01 20:13	06:34 19:25	18:35 (AB07) 18:55 (AB07)	07:05 18:33	06:42 16:49
9	05:34 20:39	06:03 20:12	06:35 19:24	18:38 (AB07) 18:52 (AB07)	07:07 18:32	06:43 16:48
10	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30
11	05:36 20:39	06:05 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:31
12	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:31
13	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	05:40 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	18:47 (AB07) 18:57 (AB07)	06:43 19:10	07:16 18:19	06:53 16:40
18	05:41 20:34	06:12 19:59	18:44 (AB07) 19:00 (AB07)	06:44 19:08	07:17 18:17	06:54 16:39
19	05:42 20:34	06:13 19:58	18:41 (AB07) 19:02 (AB07)	06:45 19:06	07:18 18:16	06:56 16:38
20	05:43 20:33	06:14 19:56	18:40 (AB07) 19:03 (AB07)	06:46 19:04	07:19 18:14	06:57 16:38
21	05:44 20:32	06:15 19:55	18:38 (AB07) 19:04 (AB07)	06:47 19:03	07:20 18:13	06:58 16:37
22	05:45 20:31	06:16 19:53	18:37 (AB07) 19:05 (AB07)	06:48 19:01	07:21 18:11	06:59 16:36
23	05:46 20:31	06:17 19:52	18:35 (AB07) 19:06 (AB07)	06:49 18:59	07:23 18:10	07:00 16:36
24	05:47 20:30	06:18 19:50	18:34 (AB07) 19:06 (AB07)	06:50 18:57	07:24 18:08	07:01 16:35
25	05:48 20:29	06:19 19:49	18:34 (AB07) 19:06 (AB07)	06:51 18:56	07:03 17:07	07:03 16:34
26	05:49 20:28	06:20 19:47	18:33 (AB07) 19:07 (AB07)	06:52 18:54	07:04 17:05	07:04 16:34
27	05:49 20:27	06:21 19:45	18:32 (AB07) 19:07 (AB07)	06:54 18:52	07:05 17:04	07:05 16:33
28	05:50 20:26	06:22 19:44	18:32 (AB07) 19:06 (AB07)	06:55 18:50	07:06 17:03	07:06 16:33
29	05:51 20:25	06:23 19:42	18:31 (AB07) 19:06 (AB07)	06:56 18:49	07:07 17:01	08:41 (AB10) 16:33
30	05:52 20:24	06:24 19:41	18:31 (AB07) 19:06 (AB07)	06:57 18:47	07:08 17:00	08:52 (AB10) 16:32
31	05:53 20:23	06:25 19:39	18:31 (AB07) 19:05 (AB07)	06:57 18:47	07:08 16:32	08:38 (AB10) 08:55 (AB10)
Potential sun hours	462	430	375	344	296	285
Total, worst case		426	242		28	1210
Sun reduction		0,42	0,46		0,59	0,63
Oper. time red.		0,88	0,88		0,88	0,88
Wind dir. red.		0,67	0,67		0,75	0,75
Total reduction		0,24	0,27		0,38	0,41
Total, real		103	65		11	495

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: WF Abruzzo shadow flickering real caseShadow receptor: R013 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (79)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:41	08:47 (AB10) 09:29 (AB10)	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00
2	07:30 16:41	08:48 (AB10) 09:29 (AB10)	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01
3	07:30 16:42	08:48 (AB10) 09:29 (AB10)	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02
4	07:30 16:43	08:50 (AB10) 09:29 (AB10)	07:13 17:20	06:34 17:55	06:41 19:30	18:45 (AB07) 20:03
5	07:30 16:44	08:51 (AB10) 09:28 (AB10)	07:12 17:21	06:32 17:56	06:40 19:31	18:41 (AB07) 20:04
6	07:30 16:45	08:52 (AB10) 09:28 (AB10)	07:10 17:22	06:31 17:57	06:38 19:32	18:40 (AB07) 20:05
7	07:30 16:46	08:53 (AB10) 09:28 (AB10)	07:09 17:23	06:29 17:58	06:36 19:33	18:37 (AB07) 20:06
8	07:30 16:47	08:54 (AB10) 09:27 (AB10)	07:08 17:25	06:27 17:59	06:35 19:34	18:36 (AB07) 20:07
9	07:30 16:48	08:56 (AB10) 09:26 (AB10)	07:07 17:26	06:26 18:01	06:33 19:35	18:35 (AB07) 20:08
10	07:30 16:49	08:57 (AB10) 09:26 (AB10)	07:06 17:27	06:24 18:02	06:31 19:36	18:34 (AB07) 20:09
11	07:29 16:50	08:59 (AB10) 09:24 (AB10)	07:04 17:29	06:22 18:03	06:30 19:38	18:32 (AB07) 20:11
12	07:29 16:51	09:01 (AB10) 09:23 (AB10)	07:03 17:30	06:21 18:04	06:28 19:39	18:32 (AB07) 20:12
13	07:29 16:52	09:02 (AB10) 09:23 (AB10)	07:02 17:31	06:19 18:05	06:26 19:40	18:31 (AB07) 20:13
14	07:28 16:54	09:07 (AB10) 09:17 (AB10)	07:01 17:32	06:17 18:06	06:25 19:41	18:32 (AB07) 20:14
15	07:28 16:55		06:59 17:34	06:16 18:07	06:23 19:42	18:31 (AB07) 20:15
16	07:28 16:56		06:58 17:35	06:14 18:09	06:22 19:43	18:31 (AB07) 20:16
17	07:27 16:57		06:57 17:36	06:12 18:10	06:20 19:44	18:31 (AB07) 20:17
18	07:27 16:58		06:55 17:38	06:10 18:11	06:18 19:45	18:31 (AB07) 20:18
19	07:26 16:59		06:54 17:39	06:09 18:12	06:17 19:46	18:32 (AB07) 20:19
20	07:25 17:01		06:52 17:40	06:07 18:13	06:15 19:48	18:32 (AB07) 20:20
21	07:25 17:02		06:51 17:41	06:05 18:14	06:14 19:49	18:33 (AB07) 20:21
22	07:24 17:03		06:49 17:42	06:04 18:15	06:12 19:50	18:33 (AB07) 20:22
23	07:23 17:04		06:48 17:44	06:02 18:16	06:11 19:51	18:34 (AB07) 20:23
24	07:23 17:06		06:46 17:45	06:00 18:18	06:09 19:52	18:36 (AB07) 20:23
25	07:22 17:07		06:45 17:46	05:58 18:19	06:08 19:53	18:37 (AB07) 20:24
26	07:21 17:08		06:43 17:47	05:57 18:20	06:06 19:54	18:40 (AB07) 20:25
27	07:20 17:09		06:42 17:49	05:55 18:21	06:05 19:55	18:53 (AB07) 20:26
28	07:20 17:11		06:40 17:50	05:53 18:22	06:03 19:56	20:26 20:27
29	07:19 17:12			06:52 19:23	06:02 19:58	20:27 20:28
30	07:18 17:13			06:50 19:24	06:01 19:59	20:28 20:29
31	07:17 17:14			06:48 19:25		20:29 20:30
Potential sun hours	295	296	369	400	451	455
Total, worst case	437			628		
Sun reduction	0,61			0,44		
Oper. time red.	0,88			0,88		
Wind dir. red.	0,75			0,67		
Total reduction	0,40			0,25		
Total, real	173			159		

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: WF Abruzzo shadow flickering real caseShadow receptor: R013 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (79)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December
1	05:30 20:41	05:54 20:22	06:26 19:37	18:32 (AB07) 19:05 (AB07)	06:58 18:45	06:33 16:57
2	05:30 20:41	05:55 20:21	06:27 19:36	18:33 (AB07) 19:04 (AB07)	06:59 18:44	06:35 16:56
3	05:31 20:41	05:56 20:19	06:29 19:34	18:33 (AB07) 19:03 (AB07)	07:00 18:42	06:36 16:55
4	05:31 20:41	05:57 20:18	06:30 19:32	18:34 (AB07) 19:01 (AB07)	07:01 18:40	06:37 16:54
5	05:32 20:41	05:58 20:17	06:31 19:31	18:34 (AB07) 19:00 (AB07)	07:02 18:38	06:38 16:52
6	05:32 20:40	05:59 20:16	06:32 19:29	18:36 (AB07) 18:58 (AB07)	07:03 18:37	06:40 16:51
7	05:33 20:40	06:00 20:14	06:33 19:27	18:37 (AB07) 18:56 (AB07)	07:04 18:35	06:41 16:50
8	05:34 20:40	06:01 20:13	06:34 19:25	18:40 (AB07) 18:53 (AB07)	07:05 18:33	06:42 16:49
9	05:34 20:39	06:03 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
10	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30
11	05:36 20:39	06:05 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:31
12	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:31
13	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	05:40 20:36	06:10 20:02	18:50 (AB07) 18:56 (AB07)	06:42 19:11	07:14 18:20	06:52 16:41
17	05:40 20:35	06:11 20:01	18:46 (AB07) 19:00 (AB07)	06:43 19:10	07:16 18:19	06:53 16:40
18	05:41 20:34	06:12 19:59	18:43 (AB07) 19:02 (AB07)	06:44 19:08	07:17 18:17	06:54 16:39
19	05:42 20:34	06:13 19:58	18:42 (AB07) 19:04 (AB07)	06:45 19:06	07:18 18:16	06:56 16:38
20	05:43 20:33	06:14 19:56	18:40 (AB07) 19:05 (AB07)	06:46 19:04	07:19 18:14	06:57 16:38
21	05:44 20:32	06:15 19:55	18:38 (AB07) 19:06 (AB07)	06:47 19:03	07:20 18:13	06:58 16:37
22	05:45 20:31	06:16 19:53	18:37 (AB07) 19:06 (AB07)	06:48 19:01	07:21 18:11	06:59 16:36
23	05:46 20:31	06:17 19:52	18:36 (AB07) 19:07 (AB07)	06:49 18:59	07:23 18:10	07:00 16:36
24	05:47 20:30	06:18 19:50	18:35 (AB07) 19:07 (AB07)	06:50 18:57	07:24 18:08	07:01 16:35
25	05:48 20:29	06:19 19:49	18:35 (AB07) 19:07 (AB07)	06:51 18:56	07:03 17:07	07:03 16:34
26	05:49 20:28	06:20 19:47	18:34 (AB07) 19:07 (AB07)	06:52 18:54	07:04 17:05	07:04 16:34
27	05:49 20:27	06:21 19:45	18:33 (AB07) 19:07 (AB07)	06:54 18:52	07:05 17:04	07:05 16:33
28	05:50 20:26	06:22 19:44	18:33 (AB07) 19:07 (AB07)	06:55 18:50	07:06 17:03	08:48 (AB10) 16:33
29	05:51 20:25	06:23 19:42	18:33 (AB07) 19:07 (AB07)	06:56 18:49	07:07 17:01	08:44 (AB10) 16:33
30	05:52 20:24	06:24 19:41	18:32 (AB07) 19:06 (AB07)	06:57 18:47	07:08 17:00	09:01 (AB10) 16:32
31	05:53 20:23	06:25 19:39	18:32 (AB07) 19:06 (AB07)	06:57 16:59	07:08 16:32	09:04 (AB10) 16:32
Potential sun hours	462	430	375	344	296	285
Total, worst case		441	201		48	1287
Sun reduction		0,42	0,46		0,59	0,63
Oper. time red.		0,88	0,88		0,88	0,88
Wind dir. red.		0,67	0,67		0,75	0,75
Total reduction		0,24	0,27		0,38	0,41
Total, real		107	54		18	527

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)

Project:

WF Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it
Calculated:

15/11/2023 18:37/3.5.587

SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R015 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (80)
Assumptions for shadow calculations

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

Table with columns for months (January to December) and rows for time slots (07:30 to 17:14). Includes summary rows for Potential sun hours, Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, and Total, real.

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

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



Project:

WF Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it

Calculated:

15/11/2023 18:37/3.5.587

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R016 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (81) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:27	18:14 (AB07) 20:00	05:59 20:30	05:29 20:41	05:54 20:22	06:26 19:37	18:17 (AB07) 27 18:44 (AB07)	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	18:14 (AB07) 20:01	05:58 20:31	05:29 20:41	05:55 20:21	06:27 19:36	18:15 (AB07) 30 18:45 (AB07)	06:59 18:44	06:35 16:56	07:10 16:32
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	18:14 (AB07) 20:02	05:57 20:32	05:28 20:41	05:56 20:19	06:29 19:34	18:14 (AB07) 31 18:45 (AB07)	07:00 18:42	06:36 16:55	07:11 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	18:14 (AB07) 20:03	05:55 20:33	05:28 20:41	05:57 20:18	06:30 19:32	18:12 (AB07) 34 18:46 (AB07)	07:01 18:40	06:37 16:54	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	18:13 (AB07) 20:04	05:54 20:33	05:28 20:41	05:58 20:17	06:31 19:31	18:11 (AB07) 35 18:46 (AB07)	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	18:14 (AB07) 20:05	05:53 20:34	05:27 20:40	05:59 20:16	06:32 19:29	18:10 (AB07) 37 18:47 (AB07)	07:03 18:37	06:40 16:51	07:14 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	18:14 (AB07) 20:06	05:52 20:35	05:27 20:40	06:00 20:15	06:33 19:27	18:09 (AB07) 38 18:47 (AB07)	07:04 18:35	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	18:14 (AB07) 20:07	05:50 20:35	05:27 20:40	06:01 20:13	06:34 19:25	18:09 (AB07) 38 18:47 (AB07)	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	18:16 (AB07) 20:08	05:49 20:36	05:27 20:39	06:03 20:12	06:35 19:24	18:08 (AB07) 38 18:46 (AB07)	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	18:16 (AB07) 20:09	05:48 20:36	05:26 20:39	06:04 20:11	06:36 19:22	18:08 (AB07) 38 18:46 (AB07)	07:08 18:30	06:45 16:47	07:18 16:30
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	18:17 (AB07) 20:11	05:47 20:37	05:26 20:39	06:05 20:09	06:37 19:20	18:07 (AB07) 38 18:45 (AB07)	07:09 18:28	06:46 16:46	07:19 16:31
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	18:19 (AB07) 20:12	05:46 20:37	05:26 20:38	06:06 20:08	06:38 19:18	18:07 (AB07) 36 18:43 (AB07)	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	18:20 (AB07) 20:13	05:45 20:38	05:26 20:38	06:07 20:07	06:39 19:17	18:07 (AB07) 35 18:42 (AB07)	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	18:20 (AB07) 20:14	05:44 20:38	05:26 20:37	06:08 20:05	06:40 19:15	18:07 (AB07) 33 18:40 (AB07)	07:12 18:24	06:49 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	18:37 (AB07) 20:14	05:43 20:38	05:26 20:37	06:09 20:05	06:41 19:13	18:07 (AB07) 32 18:39 (AB07)	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16	05:26 20:39	05:26 20:36	06:10 20:02	06:42 19:11	18:07 (AB07) 30 18:37 (AB07)	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40	05:26 20:35	06:11 20:01	06:43 19:10	18:08 (AB07) 28 18:36 (AB07)	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:38	06:11 18:11	06:18 19:45	05:40 20:18	05:26 20:40	05:26 20:34	06:12 19:59	06:44 19:08	18:09 (AB07) 26 18:35 (AB07)	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	05:26 20:40	05:26 20:34	06:13 19:58	06:45 19:06	18:10 (AB07) 23 18:33 (AB07)	07:18 18:16	06:56 16:38	07:25 16:32
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:26 20:33	06:14 19:56	06:46 19:04	18:11 (AB07) 21 18:32 (AB07)	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	17:32 (AB07) 06:14	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	18:13 (AB07) 18 18:31 (AB07)	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	17:27 (AB07) 06:12	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	18:16 (AB07) 12 18:28 (AB07)	07:21 18:11	06:59 16:36	07:27 16:34
23	07:24 17:04	06:48 17:44	06:02 18:17	17:25 (AB07) 06:11	05:35 20:23	05:27 20:41	05:46 20:31	06:17 19:52	06:49 18:59	18:10 (AB07) 07:23	18:10	07:00 16:36	07:27 16:34
24	07:23 17:06	06:46 17:45	06:00 18:18	17:23 (AB07) 06:09	05:34 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	18:10 (AB07) 07:24	18:10	07:01 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	17:21 (AB07) 06:08	05:34 20:24	05:27 20:41	05:48 20:29	06:19 19:49	06:51 18:56	18:11 (AB07) 06:25	18:08	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	17:20 (AB07) 06:06	05:33 20:25	05:28 20:42	05:49 20:28	06:20 19:47	06:52 18:54	18:12 (AB07) 06:26	18:04	07:04 16:34	07:28 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	17:18 (AB07) 06:05	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	18:13 (AB07) 06:27	18:04	07:05 16:33	07:29 16:37
28	07:20 17:11	06:40 17:50	05:53 18:22	17:17 (AB07) 06:03	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:51	18:14 (AB07) 06:29	18:04	07:06 16:33	07:29 16:37
29	07:19 17:12	06:52 18:16	06:02 18:16	17:48 (AB07) 06:02	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:38	18:25 (AB07) 13 18:38 (AB07)	06:56 18:49	07:07 16:33	07:29 16:38
30	07:18 17:13	06:50 18:16	06:01 18:16	18:49 (AB07) 06:01	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:41	18:21 (AB07) 20 18:41 (AB07)	06:57 18:47	07:08 16:32	07:30 16:39
31	07:17 17:14	06:48 18:15	06:00 18:15	18:50 (AB07) 06:00	05:29 20:30	05:28 20:42	05:53 20:23	06:25 19:39	06:58 18:42	18:19 (AB07) 23 18:42 (AB07)	06:58 18:47	07:09 16:31	07:30 16:40
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285	
Total, worst case			287	439				56	678				
Sun reduction			0,49	0,44				0,42	0,46				
Oper. time red.			0,88	0,88				0,88	0,88				
Wind dir. red.			0,65	0,65				0,65	0,65				
Total reduction			0,28	0,25				0,24	0,26				
Total, real			79	108				13	178				

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: WF Abruzzo shadow flickering real caseShadow receptor: R017 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (82)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	17:53 (AB06) 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	17:54 (AB06) 20:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	17:55 (AB06) 20:32
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	06:41 20:03	17:56 (AB06) 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	06:40 20:04	17:59 (AB06) 20:33
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	18:12 (AB06) 19:32	05:53 20:05
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	18:04 (AB06) 18:20 (AB06)	05:52 20:06
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	18:00 (AB06) 18:22 (AB06)	05:50 20:07
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	17:58 (AB06) 18:25 (AB06)	05:49 20:08
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	17:56 (AB06) 18:26 (AB06)	05:48 20:09
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	17:54 (AB06) 18:26 (AB06)	05:47 20:11
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	17:53 (AB06) 18:28 (AB06)	05:46 20:12
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	17:52 (AB06) 18:28 (AB06)	05:45 20:13
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	17:51 (AB06) 18:29 (AB06)	05:44 20:14
15	07:28 16:55	06:59 17:34	06:16 18:07	16:59 (AB07) 17:01 (AB07)	06:23 19:42	17:50 (AB06) 20:15
16	07:28 16:56	06:58 17:35	06:14 18:09	16:58 (AB07) 17:02 (AB07)	06:22 19:43	17:49 (AB06) 20:16
17	07:27 16:57	06:57 17:36	06:12 18:10	16:58 (AB07) 17:03 (AB07)	06:20 19:44	17:49 (AB06) 20:17
18	07:27 16:58	06:55 17:37	06:10 18:11	16:57 (AB07) 17:04 (AB07)	06:18 19:45	17:48 (AB06) 20:18
19	07:26 16:59	06:54 17:39	06:09 18:12	16:58 (AB07) 17:06 (AB07)	06:17 19:46	17:48 (AB06) 20:19
20	07:25 17:01	06:52 17:40	06:07 18:13	16:58 (AB07) 17:08 (AB07)	06:15 19:48	17:48 (AB06) 20:20
21	07:25 17:02	06:51 17:41	06:05 18:14	16:58 (AB07) 17:09 (AB07)	06:14 19:49	17:48 (AB06) 20:21
22	07:24 17:03	06:49 17:42	06:04 18:15	16:59 (AB07) 17:10 (AB07)	06:12 19:50	17:47 (AB06) 20:22
23	07:23 17:04	06:48 17:44	06:02 18:16	17:01 (AB07) 17:12 (AB07)	06:11 19:51	17:48 (AB06) 20:23
24	07:23 17:06	06:46 17:45	06:00 18:18	17:02 (AB07) 17:13 (AB07)	06:09 19:52	17:48 (AB06) 20:23
25	07:22 17:07	06:45 17:46	05:58 18:19	17:06 (AB07) 17:11 (AB07)	06:08 19:53	17:48 (AB06) 20:24
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	17:49 (AB06) 18:28 (AB06)	05:33 20:25
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	17:49 (AB06) 18:26 (AB06)	05:32 20:26
28	07:20 17:11	06:40 17:50	05:53 18:22	06:03 19:56	17:50 (AB06) 18:26 (AB06)	05:32 20:27
29	07:19 17:12	06:39 17:51	05:52 18:23	06:02 19:57	17:51 (AB06) 18:25 (AB06)	05:31 20:28
30	07:18 17:13	06:38 17:52	05:51 18:24	06:01 19:58	17:51 (AB06) 18:24 (AB06)	05:30 20:29
31	07:17 17:14	06:37 17:53	05:50 18:25	06:00 19:59	05:30 20:29	05:30 20:29
Potential sun hours	295	296	369	400	451	455
Total, worst case			85	865	134	
Sun reduction			0,49	0,44	0,40	
Oper. time red.			0,88	0,88	0,88	
Wind dir. red.			0,60	0,65	0,65	
Total reduction			0,26	0,25	0,23	
Total, real			22	216	31	

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: WF Abruzzo shadow flickering real caseShadow receptor: R017 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (82)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December
1	05:30 20:41	05:54 20:22		06:26 17:54 (AB06)	06:58 18:26 (AB06)	06:33 16:57
2	05:30 20:41	05:55 20:20		06:27 17:55 (AB06)	06:59 18:25 (AB06)	06:35 16:31
3	05:31 20:41	05:56 20:19		06:29 17:56 (AB06)	07:00 18:23 (AB06)	06:36 16:31
4	05:31 20:41	05:57 20:18		06:30 17:58 (AB06)	07:01 18:20 (AB06)	06:37 16:31
5	05:32 20:41	05:58 20:17		06:31 18:01 (AB06)	07:02 18:17 (AB06)	06:38 16:31
6	05:32 20:40	05:59 20:16	5	18:15 (AB06) 06:32	18:07 (AB06) 07:03	06:40 07:14
7	05:33 20:40	06:00 20:14	14	18:10 (AB06) 06:33	18:10 (AB06) 07:04	16:51 07:15
8	05:34 20:40	06:01 20:13	19	18:24 (AB06) 06:34	18:08 (AB06) 07:05	16:50 07:16
9	05:34 20:39	06:02 20:12	22	18:27 (AB06) 06:35	18:06 (AB06) 07:07	16:49 07:17
10	05:35 20:39	06:04 20:11	26	18:28 (AB06) 06:36	18:28 (AB06) 07:08	16:48 07:18
11	05:35 20:39	06:04 20:11	26	18:04 (AB06) 06:36	18:30 (AB06) 07:08	16:44 07:18
12	05:36 20:39	06:05 20:10	29	18:02 (AB06) 06:37	18:30 (AB06) 07:09	16:47 07:19
13	05:36 20:38	06:06 20:09	31	18:31 (AB06) 06:38	18:28 (AB06) 07:10	16:46 07:20
14	05:37 20:38	06:07 20:08	33	18:32 (AB06) 06:39	18:01 (AB06) 07:11	16:45 07:21
15	05:37 20:38	06:07 20:07	33	18:00 (AB06) 06:39	18:33 (AB06) 07:12	16:44 07:21
16	05:38 20:37	06:08 20:05	34	17:59 (AB06) 06:40	18:24 (AB06) 07:13	16:43 07:22
17	05:38 20:36	06:08 20:04	36	18:33 (AB06) 06:41	18:24 (AB06) 07:14	16:43 07:23
18	05:39 20:36	06:09 20:02	37	17:58 (AB06) 06:42	18:22 (AB06) 07:14	16:51 07:23
19	05:40 20:35	06:10 20:01	38	18:34 (AB06) 06:43	18:22 (AB06) 07:16	16:31 07:24
20	05:40 20:35	06:11 20:01	38	17:56 (AB06) 06:43	18:19 (AB06) 07:16	16:40 07:24
21	05:41 20:34	06:12 19:59	40	18:34 (AB06) 06:44	18:19 (AB06) 07:17	16:40 07:24
22	05:41 20:34	06:12 19:59	40	17:55 (AB06) 06:44	18:17 (AB06) 07:17	16:39 07:24
23	05:42 20:34	06:13 19:58	41	18:35 (AB06) 06:45	18:17 (AB06) 07:18	16:39 07:25
24	05:42 20:34	06:13 19:58	41	17:54 (AB06) 06:45	18:01 (AB07) 18:16	16:38 07:25
25	05:43 20:33	06:14 19:56	41	17:54 (AB06) 06:46	17:48 (AB07) 18:14	16:37 07:26
26	05:43 20:33	06:14 19:56	41	18:35 (AB06) 06:47	17:59 (AB07) 18:14	16:38 07:26
27	05:44 20:32	06:15 19:55	42	17:53 (AB06) 06:47	17:46 (AB07) 18:13	16:58 16:37
28	05:44 20:32	06:15 19:55	42	18:35 (AB06) 06:48	17:57 (AB07) 18:13	16:37 07:27
29	05:45 20:31	06:16 19:53	41	17:53 (AB06) 06:48	17:44 (AB07) 18:11	16:59 16:36
30	05:45 20:31	06:16 19:53	41	18:34 (AB06) 06:49	17:55 (AB07) 18:11	16:36 07:27
31	05:46 20:31	06:17 19:52	42	17:52 (AB06) 06:49	17:43 (AB07) 18:10	16:36 07:27
32	05:46 20:31	06:17 19:52	42	18:34 (AB06) 06:49	17:53 (AB07) 18:10	16:36 07:27
33	05:47 20:30	06:18 19:50	42	17:52 (AB06) 06:50	17:42 (AB07) 18:08	16:36 16:35
34	05:47 20:30	06:18 19:50	42	18:34 (AB06) 06:51	17:50 (AB07) 18:08	16:35 07:28
35	05:48 20:29	06:19 19:49	41	17:52 (AB06) 06:51	17:41 (AB07) 17:07	16:35 16:35
36	05:48 20:28	06:20 19:47	41	18:33 (AB06) 06:52	17:48 (AB07) 17:07	16:34 07:28
37	05:48 20:28	06:20 19:47	41	17:52 (AB06) 06:52	17:40 (AB07) 17:05	16:34 16:36
38	05:49 20:27	06:21 19:45	40	18:33 (AB06) 06:54	17:46 (AB07) 17:05	16:34 07:29
39	05:49 20:27	06:21 19:45	40	17:52 (AB06) 06:54	17:40 (AB07) 17:05	16:34 07:29
40	05:50 20:26	06:22 19:44	39	18:32 (AB06) 06:55	17:44 (AB07) 17:04	16:33 07:29
41	05:50 20:26	06:22 19:44	39	17:52 (AB06) 06:55	17:40 (AB07) 17:04	16:33 07:29
42	05:51 20:25	06:23 19:42	38	18:31 (AB06) 06:56	17:42 (AB07) 17:03	16:33 16:37
43	05:51 20:25	06:23 19:42	38	17:52 (AB06) 06:56	17:03 17:03	16:33 07:29
44	05:52 20:24	06:24 19:41	36	18:30 (AB06) 06:57	17:01 17:01	16:38 07:30
45	05:52 20:24	06:24 19:41	36	17:53 (AB06) 06:57	17:00 17:00	16:38 16:39
46	05:53 20:23	06:25 19:39	35	18:29 (AB06) 06:57	16:32 16:32	16:39 07:30
47	05:53 20:23	06:25 19:39	35	17:53 (AB06) 06:57	16:32 16:32	16:39 07:30
48	05:53 20:23	06:25 19:39	35	18:28 (AB06) 06:57	16:59 16:59	16:40 16:40
Potential sun hours	462	430		375	344	285
Total, worst case		883		211		
Sun reduction		0,42		0,46		
Oper. time red.		0,88		0,88		
Wind dir. red.		0,65		0,63		
Total reduction		0,24		0,26		
Total, real		212		54		

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: WF Abruzzo shadow flikering real caseShadow receptor: R020 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (83)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:41	14:11 (AB06) 07:16	14:17 (AB06) 06:39	06:46	16:27 (AB05) 05:59	05:29 20:30
2	07:30 16:41	14:11 (AB06) 07:15	14:18 (AB06) 06:37	06:45	16:27 (AB05) 05:58	05:29 20:31
3	07:30 16:42	14:11 (AB06) 07:14	14:19 (AB06) 06:35	06:43	16:29 (AB05) 05:57	05:28 20:32
4	07:30 16:43	14:11 (AB06) 07:13	14:20 (AB06) 06:34	06:41	16:29 (AB05) 05:55	05:28 20:33
5	07:30 16:44	14:11 (AB06) 07:12	14:21 (AB06) 06:32	06:40	16:30 (AB05) 05:54	05:28 20:33
6	07:30 16:45	14:12 (AB06) 07:10	14:23 (AB06) 06:31	06:38	16:31 (AB05) 05:53	05:27 20:34
7	07:30 16:46	14:12 (AB06) 07:09	14:24 (AB06) 06:29	15:47 (AB05) 06:36	16:32 (AB05) 05:52	05:27 20:35
8	07:30 16:47	14:11 (AB06) 07:08	14:27 (AB06) 06:27	15:51 (AB05) 19:33	17:18 (AB05) 20:06	20:35 05:27
9	07:30 16:48	14:11 (AB06) 07:07	14:30 (AB06) 06:26	15:53 (AB05) 19:34	16:33 (AB05) 05:49	05:26 20:36
10	07:30 16:49	14:11 (AB06) 07:06	14:34 (AB06) 06:24	15:55 (AB05) 19:35	17:15 (AB05) 20:08	05:26 20:36
11	07:29 16:50	14:11 (AB06) 07:05	14:44 (AB06) 06:22	15:56 (AB05) 19:37	17:13 (AB05) 20:09	05:26 20:37
12	07:29 16:51	14:11 (AB06) 07:03	18:03	15:57 (AB05) 19:38	17:11 (AB05) 20:11	20:37 05:26
13	07:29 16:52	14:28 (AB06) 07:02	18:04	15:36 (AB05) 06:28	16:41 (AB05) 05:46	05:26 20:37
14	07:28 16:54	14:11 (AB06) 07:01	18:06	16:00 (AB05) 19:39	17:09 (AB05) 20:12	20:37 05:26
15	07:28 16:55	14:30 (AB06) 06:59	18:07	15:34 (AB05) 06:26	16:44 (AB05) 05:45	05:26 20:38
16	07:28 16:56	14:32 (AB06) 06:58	18:07	16:01 (AB05) 19:40	17:06 (AB05) 20:13	20:38 05:26
17	07:27 16:57	14:33 (AB06) 06:57	18:09	15:32 (AB05) 06:25	16:48 (AB05) 05:44	05:26 20:38
18	07:27 16:58	14:11 (AB06) 06:55	18:11	16:02 (AB05) 19:41	17:02 (AB05) 20:14	20:38 05:26
19	07:26 16:59	14:33 (AB06) 06:54	18:12	16:06 (AB05) 19:43	17:09 (AB05) 20:16	20:39 05:26
20	07:25 17:01	14:37 (AB06) 06:52	18:12	15:29 (AB05) 06:20	16:44 (AB05) 05:41	05:26 20:40
21	07:25 17:02	14:12 (AB06) 06:51	18:12	16:05 (AB05) 19:42	17:15 (AB05) 20:15	20:39 05:26
22	07:24 17:03	14:12 (AB06) 06:49	18:13	15:30 (AB05) 06:22	16:41 (AB05) 05:46	05:26 20:41
23	07:24 17:04	14:41 (AB06) 06:48	18:13	16:06 (AB05) 19:43	17:09 (AB05) 20:16	20:39 05:26
24	07:23 17:06	14:13 (AB06) 06:46	18:14	15:29 (AB05) 06:20	16:44 (AB05) 05:41	05:26 20:41
25	07:22 17:07	14:43 (AB06) 06:45	18:14	16:02 (AB05) 19:41	17:02 (AB05) 20:14	20:38 05:26
26	07:21 17:08	14:13 (AB06) 06:43	18:15	15:32 (AB05) 06:25	16:48 (AB05) 05:44	05:26 20:38
27	07:20 17:09	14:47 (AB06) 06:42	18:16	16:02 (AB05) 19:41	17:02 (AB05) 20:14	20:38 05:26
28	07:20 17:11	14:13 (AB06) 06:42	18:17	15:28 (AB05) 06:18	16:41 (AB05) 05:46	05:26 20:41
29	07:19 17:12	14:49 (AB06) 06:41	18:18	16:09 (AB05) 19:45	17:13 (AB05) 20:09	20:36 05:26
30	07:18 17:13	14:14 (AB06) 06:40	18:19	15:28 (AB05) 06:17	16:44 (AB05) 05:45	05:26 20:37
31	07:17 17:14	14:53 (AB06) 06:39	18:20	16:11 (AB05) 19:46	17:15 (AB05) 20:08	05:26 20:36
Potential sun hours	295	296	369	400	451	455
Total, worst case	679	285	984	580		
Sun reduction	0,61	0,55	0,49	0,44		
Oper. time red.	0,88	0,88	0,88	0,88		
Wind dir. red.	0,53	0,53	0,57	0,57		
Total reduction	0,28	0,25	0,24	0,22		
Total, real	192	72	241	127		

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

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



## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R020 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (83)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

## Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December				
1	05:30 20:41	05:54 20:22	06:26 19:37	16:38 (AB05) 17:11 (AB05)	06:58 18:45	16:14 (AB05) 16:39 (AB05)	06:33 16:57	14:02 (AB06) 14:13 (AB06)	07:09 16:32	13:54 (AB06) 14:09 (AB06)
2	05:30 20:41	05:55 20:21	06:27 19:36	16:36 (AB05) 17:12 (AB05)	06:59 18:44	16:15 (AB05) 16:37 (AB05)	06:35 16:56	13:59 (AB06) 14:18 (AB06)	07:10 16:31	13:54 (AB06) 14:09 (AB06)
3	05:31 20:41	05:56 20:19	06:29 19:34	16:33 (AB05) 17:13 (AB05)	07:00 18:42	16:16 (AB05) 16:34 (AB05)	06:36 16:55	13:56 (AB06) 14:19 (AB06)	07:12 16:31	13:55 (AB06) 14:08 (AB06)
4	05:31 20:41	05:57 20:18	06:30 19:32	16:31 (AB05) 17:14 (AB05)	07:01 18:40	16:17 (AB05) 16:32 (AB05)	06:37 16:53	13:54 (AB06) 14:21 (AB06)	07:13 16:31	13:56 (AB06) 14:08 (AB06)
5	05:32 20:41	05:58 20:17	06:31 19:31	16:29 (AB05) 17:15 (AB05)	07:02 18:38	16:20 (AB05) 16:31 (AB05)	06:38 16:52	13:53 (AB06) 14:23 (AB06)	07:14 16:31	13:57 (AB06) 14:07 (AB06)
6	05:32 20:40	05:59 20:16	06:32 19:29	16:28 (AB05) 17:16 (AB05)	07:03 18:37	16:22 (AB05) 16:29 (AB05)	06:40 16:51	13:51 (AB06) 14:24 (AB06)	07:15 16:31	13:58 (AB06) 14:07 (AB06)
7	05:33 20:40	06:00 20:15	06:33 19:27	16:26 (AB05) 17:16 (AB05)	07:04 18:35	16:26 (AB05) 16:27 (AB05)	06:41 16:50	13:50 (AB06) 14:24 (AB06)	07:15 16:31	13:58 (AB06) 14:07 (AB06)
8	05:34 20:40	06:01 20:13	06:34 19:25	16:24 (AB05) 17:16 (AB05)	07:05 18:33	16:27 (AB05)	06:42 16:49	13:49 (AB06) 14:26 (AB06)	07:16 16:30	13:59 (AB06) 14:07 (AB06)
9	05:34 20:39	06:02 20:12	06:35 19:24	16:23 (AB05) 17:17 (AB05)	07:07 18:32	16:28 (AB05)	06:43 16:48	13:48 (AB06) 14:26 (AB06)	07:17 16:30	14:00 (AB06) 14:07 (AB06)
10	05:35 20:39	06:04 20:11	06:36 19:22	16:22 (AB05) 17:17 (AB05)	07:08 18:30	16:29 (AB05)	06:45 16:47	13:47 (AB06) 14:27 (AB06)	07:18 16:30	14:00 (AB06) 14:06 (AB06)
11	05:36 20:39	06:05 20:09	06:37 19:20	16:20 (AB05) 17:17 (AB05)	07:09 18:28	16:30 (AB05)	06:46 16:46	13:48 (AB06) 14:26 (AB06)	07:19 16:30	14:01 (AB06) 14:06 (AB06)
12	05:36 20:38	06:06 20:08	06:38 19:18	16:19 (AB05) 17:17 (AB05)	07:10 18:27	16:31 (AB05)	06:47 16:45	13:47 (AB06) 14:25 (AB06)	07:20 16:31	14:03 (AB06) 14:06 (AB06)
13	05:37 20:38	06:07 20:07	06:39 19:17	16:18 (AB05) 17:17 (AB05)	07:11 18:25	16:32 (AB05)	06:48 16:44	13:46 (AB06) 14:23 (AB06)	07:21 16:31	14:04 (AB06) 14:06 (AB06)
14	05:38 20:37	06:08 20:05	06:40 19:15	16:17 (AB05) 17:17 (AB05)	07:12 18:24	16:33 (AB05)	06:49 16:43	13:47 (AB06) 14:23 (AB06)	07:22 16:31	14:05 (AB06) 14:07 (AB06)
15	05:39 20:36	06:09 20:04	06:41 19:13	16:16 (AB05) 17:15 (AB05)	07:13 18:22	16:34 (AB05)	06:51 16:42	13:46 (AB06) 14:21 (AB06)	07:22 16:31	14:05 (AB06) 14:06 (AB06)
16	05:40 20:36	06:10 20:02	06:42 19:11	16:15 (AB05) 17:13 (AB05)	07:14 18:20	16:35 (AB05)	06:52 16:41	13:46 (AB06) 14:20 (AB06)	07:23 16:31	14:06 (AB06) 14:06 (AB06)
17	05:40 20:35	06:11 20:01	06:43 19:10	16:14 (AB05) 17:11 (AB05)	07:16 18:19	16:36 (AB05)	06:53 16:40	13:46 (AB06) 14:19 (AB06)	07:24 16:32	14:07 (AB06) 14:06 (AB06)
18	05:41 20:34	06:12 19:59	06:44 19:08	16:14 (AB05) 17:08 (AB05)	07:17 18:17	16:37 (AB05)	06:54 16:39	13:47 (AB06) 14:19 (AB06)	07:24 16:32	14:07 (AB06) 14:06 (AB06)
19	05:42 20:34	06:13 19:58	06:45 19:06	16:13 (AB05) 17:06 (AB05)	07:18 18:16	16:38 (AB05)	06:56 16:38	13:47 (AB06) 14:17 (AB06)	07:25 16:32	14:07 (AB06) 14:06 (AB06)
20	05:43 20:33	06:14 19:56	06:46 19:04	16:12 (AB05) 17:04 (AB05)	07:19 18:14	16:39 (AB05)	06:57 16:38	13:47 (AB06) 14:16 (AB06)	07:26 16:33	14:07 (AB06) 14:06 (AB06)
21	05:44 20:32	06:15 19:55	06:47 19:03	16:12 (AB05) 17:02 (AB05)	07:20 18:13	16:40 (AB05)	06:58 16:37	13:48 (AB06) 14:16 (AB06)	07:26 16:33	14:07 (AB06) 14:06 (AB06)
22	05:45 20:31	06:16 19:53	06:48 19:01	16:12 (AB05) 16:59 (AB05)	07:21 18:11	16:41 (AB05)	06:59 16:36	13:48 (AB06) 14:15 (AB06)	07:27 16:34	14:07 (AB06) 14:06 (AB06)
23	05:46 20:31	06:17 19:52	06:49 18:59	16:11 (AB05) 16:57 (AB05)	07:23 18:10	16:42 (AB05)	07:00 16:36	13:48 (AB06) 14:14 (AB06)	07:27 16:34	14:07 (AB06) 14:06 (AB06)
24	05:47 20:30	06:18 19:50	06:50 18:57	16:11 (AB05) 16:55 (AB05)	07:24 18:08	16:43 (AB05)	07:02 16:35	13:48 (AB06) 14:13 (AB06)	07:28 16:35	14:07 (AB06) 14:06 (AB06)
25	05:48 20:29	06:19 19:49	06:51 18:56	16:11 (AB05) 16:53 (AB05)	07:25 17:07	16:44 (AB05)	07:03 16:34	13:49 (AB06) 14:13 (AB06)	07:28 16:35	14:07 (AB06) 14:06 (AB06)
26	05:48 20:28	06:20 19:47	06:52 18:54	16:11 (AB05) 16:50 (AB05)	07:26 17:05	16:45 (AB05)	07:04 16:34	13:50 (AB06) 14:12 (AB06)	07:28 16:36	14:07 (AB06) 14:06 (AB06)
27	05:49 20:27	06:21 19:45	06:54 18:52	16:12 (AB05) 16:48 (AB05)	07:27 17:04	16:46 (AB05)	07:05 16:33	13:50 (AB06) 14:11 (AB06)	07:29 16:37	14:07 (AB06) 14:06 (AB06)
28	05:50 20:26	06:22 19:44	06:55 18:50	16:12 (AB05) 16:46 (AB05)	07:29 17:03	16:47 (AB05)	07:06 16:33	13:51 (AB06) 14:10 (AB06)	07:29 16:37	14:12 (AB06) 14:13 (AB06)
29	05:51 20:25	06:23 19:42	16:49 (AB05) 17:03 (AB05)	06:56 18:49	06:30 17:01	16:48 (AB05)	07:07 16:33	13:51 (AB06) 14:09 (AB06)	07:29 16:38	14:12 (AB06) 14:13 (AB06)
30	05:52 20:24	06:24 19:41	16:44 (AB05) 17:07 (AB05)	06:57 18:47	06:31 17:00	16:49 (AB05)	07:08 16:32	13:52 (AB06) 14:09 (AB06)	07:30 16:39	14:12 (AB06) 14:14 (AB06)
31	05:53 20:23	06:25 19:39	16:41 (AB05) 17:09 (AB05)	06:58 18:48	06:32 17:00	16:50 (AB05)	07:09 16:59	13:53 (AB06) 14:10 (AB06)	07:30 16:40	14:12 (AB06) 14:15 (AB06)
Potential sun hours	462	430	375	344	296	285	124			
Total, worst case		65	1422	99	861	285	124			
Sun reduction		0,42	0,46	0,52	0,59	0,63				
Oper. time red.		0,88	0,88	0,88	0,88	0,88				
Wind dir. red.		0,57	0,57	0,57	0,57	0,57				
Total reduction		0,21	0,23	0,26	0,27	0,29				
Total, real		14	332	26	234	36				

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: WF Abruzzo shadow flickering real caseShadow receptor: R023 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (84)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June		
1	07:30 16:41	13:53 (AB06) 14:29 (AB06)	07:16 17:16	06:39 17:51	15:14 (AB05) 16:06 (AB05)	06:46 19:27	05:59 20:00	05:29 20:30
2	07:30 16:41	13:53 (AB06) 14:30 (AB06)	07:15 17:17	06:37 17:52	15:13 (AB05) 16:06 (AB05)	06:45 19:28	05:58 20:01	05:29 20:31
3	07:30 16:42	13:54 (AB06) 14:31 (AB06)	07:14 17:18	06:35 17:53	15:12 (AB05) 16:08 (AB05)	06:43 19:29	05:57 20:02	05:28 20:32
4	07:30 16:43	13:54 (AB06) 14:32 (AB06)	07:13 17:20	06:34 17:55	15:11 (AB05) 16:08 (AB05)	06:41 19:30	05:55 20:03	05:28 20:33
5	07:30 16:44	13:54 (AB06) 14:33 (AB06)	07:12 17:21	06:32 17:56	15:10 (AB05) 16:08 (AB05)	06:40 19:31	05:54 20:04	05:28 20:33
6	07:30 16:45	13:55 (AB06) 14:35 (AB06)	07:10 17:22	06:31 17:57	15:10 (AB05) 16:09 (AB05)	06:38 19:32	05:53 20:05	05:27 20:34
7	07:30 16:46	13:55 (AB06) 14:36 (AB06)	07:09 17:23	06:29 17:58	15:09 (AB05) 16:09 (AB05)	06:36 19:33	05:52 20:06	05:27 20:35
8	07:30 16:47	13:55 (AB06) 14:36 (AB06)	07:08 17:25	06:27 17:59	15:08 (AB05) 16:09 (AB05)	06:35 19:34	05:50 20:07	05:27 20:35
9	07:30 16:48	13:55 (AB06) 14:37 (AB06)	07:07 17:26	06:26 18:01	15:09 (AB05) 16:10 (AB05)	06:33 19:35	05:49 20:08	05:26 20:36
10	07:30 16:49	13:56 (AB06) 14:38 (AB06)	07:06 17:27	06:24 18:02	15:08 (AB05) 16:09 (AB05)	06:31 19:37	05:48 20:09	05:26 20:36
11	07:29 16:50	13:57 (AB06) 14:39 (AB06)	07:05 17:29	06:22 18:03	15:08 (AB05) 16:09 (AB05)	06:30 19:38	05:47 20:11	05:26 20:37
12	07:29 16:51	13:57 (AB06) 14:38 (AB06)	07:03 17:30	06:21 18:04	15:08 (AB05) 16:10 (AB05)	06:28 19:39	05:46 20:12	05:26 20:37
13	07:29 16:52	13:57 (AB06) 14:39 (AB06)	07:02 17:31	06:19 18:05	15:08 (AB05) 16:09 (AB05)	06:26 19:40	05:45 20:13	05:26 20:38
14	07:28 16:54	13:57 (AB06) 14:39 (AB06)	07:01 17:32	06:17 18:06	15:08 (AB05) 16:08 (AB05)	06:25 19:41	05:44 20:14	05:26 20:38
15	07:28 16:55	13:58 (AB06) 14:40 (AB06)	06:59 17:34	06:16 18:07	15:09 (AB05) 16:09 (AB05)	06:23 19:42	05:43 20:15	05:26 20:39
16	07:28 16:56	13:58 (AB06) 14:40 (AB06)	06:58 17:35	06:14 18:09	15:09 (AB05) 16:08 (AB05)	06:22 19:43	05:42 20:16	05:26 20:39
17	07:27 16:57	13:59 (AB06) 14:41 (AB06)	06:57 17:36	06:12 18:10	15:09 (AB05) 16:07 (AB05)	06:20 19:44	05:41 20:17	05:26 20:40
18	07:27 16:58	14:00 (AB06) 14:40 (AB06)	06:55 17:37	06:10 18:11	15:09 (AB05) 16:06 (AB05)	06:18 19:45	05:40 20:18	05:26 20:40
19	07:26 16:59	14:00 (AB06) 14:40 (AB06)	06:54 17:39	06:09 18:12	15:11 (AB05) 16:06 (AB05)	06:17 19:46	05:39 20:19	05:26 20:40
20	07:25 17:01	14:01 (AB06) 14:41 (AB06)	06:52 17:40	06:07 18:13	15:11 (AB05) 16:05 (AB05)	06:15 19:48	05:38 20:20	05:26 20:41
21	07:25 17:02	14:02 (AB06) 14:41 (AB06)	06:51 17:41	06:05 18:14	15:12 (AB05) 16:04 (AB05)	06:14 19:49	05:37 20:21	05:26 20:41
22	07:24 17:03	14:02 (AB06) 14:40 (AB06)	06:49 17:42	06:04 18:15	15:12 (AB05) 16:02 (AB05)	06:12 19:50	05:36 20:22	05:26 20:41
23	07:24 17:04	14:04 (AB06) 14:41 (AB06)	06:48 17:44	06:02 18:16	15:14 (AB05) 16:02 (AB05)	06:11 19:51	05:35 20:23	05:27 20:41
24	07:23 17:06	14:05 (AB06) 14:40 (AB06)	06:46 17:45	06:00 18:18	15:15 (AB05) 16:00 (AB05)	06:09 19:52	05:34 20:24	05:27 20:41
25	07:22 17:07	14:05 (AB06) 14:40 (AB06)	06:45 17:46	05:58 18:19	15:16 (AB05) 15:59 (AB05)	06:08 19:53	05:33 20:24	05:27 20:42
26	07:21 17:08	14:06 (AB06) 14:39 (AB06)	06:43 17:47	05:57 18:20	15:19 (AB05) 15:58 (AB05)	06:06 19:54	05:33 20:25	05:28 20:42
27	07:20 17:09	14:08 (AB06) 14:39 (AB06)	06:42 17:49	05:55 18:21	15:20 (AB05) 15:55 (AB05)	06:05 19:55	05:32 20:26	05:28 20:42
28	07:20 17:11	14:09 (AB06) 14:38 (AB06)	06:40 17:50	05:53 18:22	15:22 (AB05) 15:53 (AB05)	06:03 19:56	05:32 20:27	05:28 20:42
29	07:19 17:12	14:11 (AB06) 14:37 (AB06)		06:52 19:23	16:25 (AB05) 16:50 (AB05)	06:02 19:58	05:31 20:28	05:29 20:42
30	07:18 17:13	14:13 (AB06) 14:35 (AB06)		06:50 19:24	16:29 (AB05) 16:47 (AB05)	06:01 19:59	05:30 20:29	05:29 20:42
31	07:17 17:14	14:15 (AB06) 14:33 (AB06)		06:48 19:25		05:30 20:30		
Potential sun hours	295	296	369	400	451	455		
Total, worst case	1149	321	1551					
Sun reduction	0,61	0,55	0,49					
Oper. time red.	0,88	0,88	0,88					
Wind dir. red.	0,54	0,55	0,55					
Total reduction	0,29	0,27	0,24					
Total, real	329	86	368					

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: WF Abruzzo shadow flickering real caseShadow receptor: R023 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (84)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December			
1	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	15:47 (AB05) 16:48 (AB05)	06:33 16:57	07:09 16:32	13:39 (AB06) 14:21 (AB06)	
2	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	15:46 (AB05) 16:48 (AB05)	06:35 16:56	07:10 16:31	13:39 (AB06) 14:21 (AB06)	
3	05:31 20:41	05:56 20:19	06:29 19:34	07:00 18:42	15:46 (AB05) 16:47 (AB05)	06:36 16:55	07:12 16:31	13:40 (AB06) 14:21 (AB06)	
4	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	15:45 (AB05) 16:47 (AB05)	06:37 16:53	07:13 16:31	13:40 (AB06) 14:21 (AB06)	
5	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	15:46 (AB05) 16:47 (AB05)	06:38 16:52	07:14 16:31	13:40 (AB06) 14:21 (AB06)	
6	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	15:46 (AB05) 16:46 (AB05)	06:40 16:51	07:15 16:31	13:41 (AB06) 14:21 (AB06)	
7	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	15:46 (AB05) 16:45 (AB05)	06:41 16:50	07:15 16:31	13:41 (AB06) 14:20 (AB06)	
8	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	15:45 (AB05) 16:44 (AB05)	06:42 16:49	07:16 16:30	13:42 (AB06) 14:20 (AB06)	
9	05:34 20:39	06:02 20:12	06:35 19:24	07:07 18:32	15:45 (AB05) 16:43 (AB05)	06:43 16:48	07:17 16:30	13:43 (AB06) 14:20 (AB06)	
10	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	15:46 (AB05) 16:42 (AB05)	06:45 16:47	13:49 (AB06) 07:18	13:42 (AB06) 14:19 (AB06)	
11	05:36 20:39	06:05 20:09	06:37 19:20	07:09 18:28	15:46 (AB05) 16:41 (AB05)	06:46 16:46	13:47 (AB06) 14:06 (AB06)	07:19 16:30	13:43 (AB06) 14:19 (AB06)
12	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	15:47 (AB05) 16:40 (AB05)	06:47 16:45	13:45 (AB06) 14:07 (AB06)	07:20 16:31	13:44 (AB06) 14:19 (AB06)
13	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	15:48 (AB05) 16:39 (AB05)	06:48 16:44	13:43 (AB06) 14:09 (AB06)	07:21 16:31	13:44 (AB06) 14:19 (AB06)
14	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	15:48 (AB05) 16:41 (AB05)	06:49 16:43	13:42 (AB06) 14:11 (AB06)	07:22 16:31	13:45 (AB06) 14:19 (AB06)
15	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	15:49 (AB05) 16:36 (AB05)	06:51 16:42	13:41 (AB06) 14:12 (AB06)	07:22 16:31	13:45 (AB06) 14:18 (AB06)
16	05:40 20:36	06:10 20:02	06:42 19:11	07:14 18:20	15:50 (AB05) 16:34 (AB05)	06:52 16:41	13:39 (AB06) 14:12 (AB06)	07:23 16:31	13:46 (AB06) 14:19 (AB06)
17	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	15:52 (AB05) 16:31 (AB05)	06:53 16:40	13:38 (AB06) 14:13 (AB06)	07:24 16:32	13:47 (AB06) 14:19 (AB06)
18	05:41 20:34	06:12 19:59	06:44 19:08	07:17 18:17	15:54 (AB05) 16:30 (AB05)	06:54 16:39	13:39 (AB06) 14:14 (AB06)	07:24 16:32	13:47 (AB06) 14:19 (AB06)
19	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	15:56 (AB05) 16:27 (AB05)	06:56 16:38	13:38 (AB06) 14:15 (AB06)	07:25 16:32	13:47 (AB06) 14:20 (AB06)
20	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	15:58 (AB05) 16:24 (AB05)	06:57 16:38	13:37 (AB06) 14:15 (AB06)	07:26 16:33	13:48 (AB06) 14:20 (AB06)
21	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	16:02 (AB05) 16:20 (AB05)	06:58 16:37	13:38 (AB06) 14:17 (AB06)	07:26 16:33	13:48 (AB06) 14:20 (AB06)
22	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	15:57 (AB05) 16:49 (AB05)	07:21 18:11	13:37 (AB06) 14:17 (AB06)	07:27 16:34	13:49 (AB06) 14:21 (AB06)
23	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	15:56 (AB05) 16:49 (AB05)	07:23 18:10	13:37 (AB06) 14:17 (AB06)	07:27 16:34	13:49 (AB06) 14:21 (AB06)
24	05:47 20:30	06:18 19:50	06:50 18:57	07:24 18:08	15:54 (AB05) 16:49 (AB05)	07:24 18:08	13:37 (AB06) 14:17 (AB06)	07:28 16:35	13:49 (AB06) 14:22 (AB06)
25	05:48 20:29	06:19 19:49	06:51 18:56	06:25 17:07	15:53 (AB05) 16:50 (AB05)	06:25 17:07	13:38 (AB06) 14:19 (AB06)	07:28 16:35	13:50 (AB06) 14:23 (AB06)
26	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05	15:52 (AB05) 16:50 (AB05)	06:26 17:05	13:37 (AB06) 14:19 (AB06)	07:28 16:36	13:51 (AB06) 14:23 (AB06)
27	05:49 20:27	06:21 19:45	06:54 18:52	06:27 17:04	15:51 (AB05) 16:49 (AB05)	06:27 17:04	13:37 (AB06) 14:19 (AB06)	07:29 16:37	13:51 (AB06) 14:24 (AB06)
28	05:50 20:26	06:22 19:44	06:55 18:50	06:29 17:03	15:50 (AB05) 16:49 (AB05)	06:29 17:03	13:37 (AB06) 14:19 (AB06)	07:29 16:37	13:52 (AB06) 14:25 (AB06)
29	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	15:49 (AB05) 16:49 (AB05)	06:30 17:01	13:38 (AB06) 14:19 (AB06)	07:29 16:38	13:52 (AB06) 14:26 (AB06)
30	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00	15:48 (AB05) 16:49 (AB05)	06:31 17:00	13:38 (AB06) 14:20 (AB06)	07:30 16:39	13:52 (AB06) 14:27 (AB06)
31	05:53 20:23	06:25 19:39	06:58 18:45	06:32 16:59	15:47 (AB05) 16:48 (AB05)	06:32 16:59	13:38 (AB06) 14:20 (AB06)	07:30 16:40	13:52 (AB06) 14:27 (AB06)
Potential sun hours	462	430	375	344	296	285			
Total, worst case			838	1048	727	1097			
Sun reduction			0,46	0,52	0,59	0,63			
Oper. time red.			0,88	0,88	0,88	0,88			
Wind dir. red.			0,55	0,55	0,54	0,54			
Total reduction			0,23	0,25	0,28	0,30			
Total, real			189	266	201	325			

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 Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it

Calculated:

15/11/2023 18:37/3.5.587

SHADOW - Calendar

Calculation: WF Abruzzo shadow flikering real caseShadow receptor: R024 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (85)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

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

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

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

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R025 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (86)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:41	07:16 17:16	15:01 (AB06) 15:26 (AB06)	06:39 17:51	15:13 (AB06) 15:21 (AB06)	06:46 19:27
2	07:30 16:41	07:15 17:17	15:00 (AB06) 15:28 (AB06)	06:37 17:52		06:45 19:28
3	07:30 16:42	07:14 17:18	14:59 (AB06) 15:30 (AB06)	06:35 17:53		06:43 19:29
4	07:30 16:43	07:13 17:20	14:58 (AB06) 15:31 (AB06)	06:34 17:55		06:41 19:30
5	07:30 16:44	07:12 17:21	14:57 (AB06) 15:33 (AB06)	06:32 17:56		06:40 19:31
6	07:30 16:45	07:10 17:22	14:57 (AB06) 15:34 (AB06)	06:31 17:57		06:38 19:32
7	07:30 16:46	07:09 17:23	14:55 (AB06) 15:34 (AB06)	06:29 17:58		06:36 19:33
8	07:30 16:47	07:08 17:25	14:55 (AB06) 15:35 (AB06)	06:27 17:59		06:35 19:34
9	07:30 16:48	07:07 17:26	14:55 (AB06) 15:36 (AB06)	06:26 18:01		06:33 19:35
10	07:30 16:49	07:06 17:27	14:55 (AB06) 15:37 (AB06)	06:24 18:02		06:31 19:37
11	07:29 16:50	07:04 17:29	14:54 (AB06) 15:37 (AB06)	06:22 18:03		06:30 19:38
12	07:29 16:51	07:03 17:30	14:54 (AB06) 15:37 (AB06)	06:21 18:04		06:28 19:39
13	07:29 16:52	07:02 17:31	14:54 (AB06) 15:38 (AB06)	06:19 18:05		06:26 19:40
14	07:28 16:54	07:01 17:32	14:53 (AB06) 15:37 (AB06)	06:17 18:06		06:25 19:41
15	07:28 16:55	06:59 17:34	14:54 (AB06) 15:38 (AB06)	06:16 18:07		06:23 19:42
16	07:28 16:56	06:58 17:35	14:54 (AB06) 15:38 (AB06)	06:14 18:09		06:22 19:43
17	07:27 16:57	06:57 17:36	14:54 (AB06) 15:38 (AB06)	06:12 18:10		06:20 19:44
18	07:27 16:58	06:55 17:37	14:55 (AB06) 15:38 (AB06)	06:10 18:11		06:18 19:45
19	07:26 16:59	06:54 17:39	14:55 (AB06) 15:37 (AB06)	06:09 18:12		06:17 19:46
20	07:25 17:01	06:52 17:40	14:56 (AB06) 15:37 (AB06)	06:07 18:13		06:15 19:48
21	07:25 17:02	06:51 17:41	14:56 (AB06) 15:36 (AB06)	06:05 18:14		06:14 19:49
22	07:24 17:03	06:49 17:42	14:58 (AB06) 15:36 (AB06)	06:04 18:15		06:12 19:50
23	07:24 17:04	06:48 17:44	14:58 (AB06) 15:34 (AB06)	06:02 18:16		06:11 19:51
24	07:23 17:06	06:46 17:45	15:00 (AB06) 15:34 (AB06)	06:00 18:18		06:09 19:52
25	07:22 17:07	06:45 17:46	15:01 (AB06) 15:32 (AB06)	05:58 18:19		06:08 19:53
26	07:21 17:08	06:43 17:47	15:03 (AB06) 15:31 (AB06)	05:57 18:20		06:06 19:54
27	07:20 17:09	06:42 17:49	15:05 (AB06) 15:28 (AB06)	05:55 18:21		06:05 19:55
28	07:20 17:11	06:40 17:50	15:08 (AB06) 15:26 (AB06)	05:53 18:22		06:03 19:56
29	07:19 17:12	15:09 (AB06) 15:17 (AB06)		06:52 19:23		06:02 19:58
30	07:18 17:13	15:05 (AB06) 15:21 (AB06)		06:50 19:24		06:01 19:59
31	07:17 17:14	15:03 (AB06) 15:24 (AB06)		06:48 19:25		05:30 20:30
Potential sun hours	295	296	369	400	451	455
Total, worst case	45	1032	8	1472	567	
Sun reduction	0,61	0,55	0,49	0,44	0,40	
Oper. time red.	0,88	0,88	0,88	0,88	0,88	
Wind dir. red.	0,51	0,51	0,51	0,64	0,64	
Total reduction	0,28	0,25	0,22	0,25	0,23	
Total, real	12	257	2	363	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: WF Abruzzo shadow flickering real caseShadow receptor: R025 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (86)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December					
1	05:30 20:41	05:54 20:22	17:39 (AB05) 18:09 (AB05)	06:26 19:37	17:19 (AB05) 18:11 (AB05)	06:58 18:45	06:33 16:57	14:23 (AB06) 15:06 (AB06)	07:09 16:32		
2	05:30 20:41	05:55 20:21	17:37 (AB05) 18:10 (AB05)	06:27 19:36	17:19 (AB05) 18:09 (AB05)	06:59 18:44	06:35 16:56	14:25 (AB06) 15:06 (AB06)	07:10 16:31		
3	05:31 20:41	05:56 20:19	17:36 (AB05) 18:11 (AB05)	06:29 19:34	17:20 (AB05) 18:08 (AB05)	07:00 18:42	06:36 16:55	14:25 (AB06) 15:05 (AB06)	07:11 16:31		
4	05:31 20:41	05:57 20:18	17:34 (AB05) 18:12 (AB05)	06:30 19:32	17:20 (AB05) 18:06 (AB05)	07:01 18:40	06:37 16:53	14:25 (AB06) 15:04 (AB06)	07:13 16:31		
5	05:32 20:41	05:58 20:17	17:33 (AB05) 18:13 (AB05)	06:31 19:31	17:21 (AB05) 18:05 (AB05)	07:02 18:38	06:38 16:52	14:27 (AB06) 15:04 (AB06)	07:14 16:31		
6	05:32 20:40	05:59 20:16	17:32 (AB05) 18:14 (AB05)	06:32 19:29	17:22 (AB05) 18:03 (AB05)	07:03 18:37	06:40 16:51	14:27 (AB06) 15:02 (AB06)	07:15 16:31		
7	05:33 20:40	06:00 20:15	17:31 (AB05) 18:15 (AB05)	06:33 19:27	17:24 (AB05) 18:01 (AB05)	07:04 18:35	06:41 16:50	14:28 (AB06) 15:01 (AB06)	07:15 16:31		
8	05:34 20:40	06:01 20:13	17:30 (AB05) 18:16 (AB05)	06:34 19:25	17:26 (AB05) 17:58 (AB05)	07:05 18:33	06:42 16:49	14:30 (AB06) 15:01 (AB06)	07:16 16:30		
9	05:34 20:39	06:02 20:12	17:29 (AB05) 18:16 (AB05)	06:35 19:24	17:28 (AB05) 17:55 (AB05)	07:07 18:32	06:43 16:48	14:31 (AB06) 14:59 (AB06)	07:17 16:30		
10	05:35 20:39	06:04 20:11	17:28 (AB05) 18:17 (AB05)	06:36 19:22	17:31 (AB05) 17:51 (AB05)	07:08 18:30	06:45 16:47	14:32 (AB06) 14:57 (AB06)	07:18 16:30		
11	05:36 20:39	06:05 20:09	17:27 (AB05) 18:17 (AB05)	06:37 19:20	17:32 (AB05) 17:43 (AB05)	07:09 18:28	06:46 16:46	14:35 (AB06) 14:56 (AB06)	07:19 16:30		
12	05:36 20:38	06:06 20:08	17:26 (AB05) 18:18 (AB05)	06:38 19:18	17:33 (AB05) 17:25 (AB05)	07:10 18:27	06:47 16:45	14:38 (AB06) 14:53 (AB06)	07:20 16:31		
13	05:37 20:38	06:07 20:07	17:25 (AB05) 18:18 (AB05)	06:39 19:17	17:34 (AB05) 18:18 (AB05)	07:11 18:25	15:44 (AB06) 15:57 (AB06)	06:48 16:44	14:42 (AB06) 14:48 (AB06)	07:21 16:31	
14	05:38 20:37	06:08 20:05	17:24 (AB05) 18:18 (AB05)	06:40 19:15	17:35 (AB05) 18:18 (AB05)	07:12 18:24	15:39 (AB06) 16:00 (AB06)	06:49 16:43	14:48 (AB06) 15:00 (AB06)	07:22 16:31	
15	05:39 20:36	06:09 20:04	17:23 (AB05) 18:18 (AB05)	06:41 19:13	17:36 (AB05) 18:18 (AB05)	07:13 18:22	15:36 (AB06) 16:02 (AB06)	06:51 16:42	14:48 (AB06) 15:00 (AB06)	07:22 16:31	
16	05:40 20:36	06:10 20:02	17:23 (AB05) 18:19 (AB05)	06:42 19:11	17:37 (AB05) 18:20 (AB05)	07:14 18:20	15:34 (AB06) 16:03 (AB06)	06:52 16:41	14:48 (AB06) 15:00 (AB06)	07:23 16:31	
17	05:40 20:35	06:11 20:01	17:22 (AB05) 18:19 (AB05)	06:43 19:10	17:38 (AB05) 18:19 (AB05)	07:15 18:19	15:32 (AB06) 16:04 (AB06)	06:53 16:40	14:48 (AB06) 15:00 (AB06)	07:24 16:32	
18	05:41 20:34	06:12 19:59	17:21 (AB05) 18:19 (AB05)	06:44 19:08	17:39 (AB05) 18:17 (AB05)	07:16 18:17	15:31 (AB06) 16:05 (AB06)	06:54 16:39	14:48 (AB06) 15:00 (AB06)	07:24 16:32	
19	05:42 20:34	06:13 19:58	17:21 (AB05) 18:18 (AB05)	06:45 19:06	17:40 (AB05) 18:16 (AB05)	07:18 18:16	15:29 (AB06) 16:06 (AB06)	06:56 16:38	14:48 (AB06) 15:00 (AB06)	07:25 16:32	
20	05:43 20:33	06:14 19:56	17:20 (AB05) 18:18 (AB05)	06:46 19:04	17:41 (AB05) 18:14 (AB05)	07:19 18:14	15:28 (AB06) 16:06 (AB06)	06:57 16:38	14:48 (AB06) 15:00 (AB06)	07:26 16:33	
21	05:44 20:32	06:15 19:55	17:20 (AB05) 18:18 (AB05)	06:47 19:03	17:42 (AB05) 18:13 (AB05)	07:20 18:13	15:26 (AB06) 16:07 (AB06)	06:58 16:37	14:48 (AB06) 15:00 (AB06)	07:26 16:33	
22	05:45 20:31	06:16 19:53	17:19 (AB05) 18:18 (AB05)	06:48 19:01	17:43 (AB05) 18:11 (AB05)	07:21 18:11	15:26 (AB06) 16:08 (AB06)	06:59 16:36	14:48 (AB06) 15:00 (AB06)	07:27 16:34	
23	05:46 20:31	06:17 19:52	17:19 (AB05) 18:17 (AB05)	06:49 18:59	17:44 (AB05) 18:10 (AB05)	07:22 18:10	15:25 (AB06) 16:08 (AB06)	07:00 16:36	14:48 (AB06) 15:00 (AB06)	07:27 16:34	
24	05:47 20:30	06:18 19:50	17:18 (AB05) 18:17 (AB05)	06:50 18:57	17:45 (AB05) 18:08 (AB05)	07:23 18:08	15:24 (AB06) 16:07 (AB06)	07:02 16:35	14:48 (AB06) 15:00 (AB06)	07:28 16:35	
25	05:48 20:29	06:19 19:49	17:18 (AB05) 18:17 (AB05)	06:51 18:56	17:46 (AB05) 18:06 (AB05)	07:25 17:07	15:24 (AB06) 16:07 (AB06)	07:03 16:34	14:48 (AB06) 15:00 (AB06)	07:28 16:35	
26	05:48 20:28	06:20 19:47	17:18 (AB05) 18:16 (AB05)	06:52 18:54	17:47 (AB05) 18:05 (AB05)	07:26 17:05	15:24 (AB06) 16:08 (AB06)	07:04 16:34	14:48 (AB06) 15:00 (AB06)	07:28 16:36	
27	05:49 20:27	06:21 19:45	17:18 (AB05) 18:15 (AB05)	06:54 18:52	17:48 (AB05) 18:04 (AB05)	07:27 17:04	15:23 (AB06) 16:09 (AB06)	07:05 16:33	14:48 (AB06) 15:00 (AB06)	07:29 16:37	
28	05:50 20:26	17:49 (AB05) 18:00 (AB05)	06:22 19:44	17:18 (AB05) 18:50	18:03 17:03	06:29 17:03	14:23 (AB06) 15:07 (AB06)	07:06 16:33	14:48 (AB06) 15:00 (AB06)	07:29 16:37	
29	05:51 20:25	17:45 (AB05) 18:03 (AB05)	06:23 19:42	17:18 (AB05) 18:49	18:04 17:01	06:30 17:01	14:23 (AB06) 15:07 (AB06)	07:07 16:33	14:48 (AB06) 15:00 (AB06)	07:29 16:38	
30	05:52 20:24	17:43 (AB05) 18:05 (AB05)	06:24 19:41	17:18 (AB05) 18:47	18:05 17:00	06:31 17:00	14:23 (AB06) 15:07 (AB06)	07:08 16:32	14:48 (AB06) 15:00 (AB06)	07:30 16:39	
31	05:53 20:23	17:41 (AB05) 18:07 (AB05)	06:25 19:39	17:18 (AB05) 18:12 (AB05)	18:06 16:59	06:32 16:59	14:23 (AB06) 15:06 (AB06)	07:30 16:40	14:48 (AB06) 15:00 (AB06)	07:30 16:40	
Potential sun hours	462	430	375	344	296	285					
Total, worst case	77	1584	402	706	394						
Sun reduction	0,39	0,42	0,46	0,52	0,59						
Oper. time red.	0,88	0,88	0,88	0,88	0,88						
Wind dir. red.	0,64	0,64	0,64	0,51	0,51						
Total reduction	0,22	0,24	0,26	0,24	0,27						
Total, real	17	375	106	167	105						

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 Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:37/3.5.587

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R028 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (87)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	18:51 (AB04) 18:23 (AB04)	05:29 20:30	05:54 20:41	06:26 19:37	19:02 (AB04) 19:14 (AB04)	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	18:51 (AB04) 19:21 (AB04)	05:29 20:31	05:55 20:41	06:27 19:36	19:08 (AB04) 19:11 (AB04)	06:59 18:43	06:35 16:56	07:10 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:56 20:02	18:52 (AB04) 19:21 (AB04)	05:28 20:32	05:56 20:41	06:28 19:34	19:08 (AB04)	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	18:54 (AB04) 19:20 (AB04)	05:28 20:33	05:57 20:41	06:29 19:32	19:11 (AB04)	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	18:55 (AB04) 19:18 (AB04)	05:27 20:33	05:58 20:41	06:30 19:30	19:23 (AB04)	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	18:57 (AB04) 19:17 (AB04)	05:27 20:34	05:59 20:16	06:32 19:29	19:08 (AB04) 19:25 (AB04)	07:03 18:37	06:40 16:51	07:15 16:30
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	18:58 (AB04) 19:14 (AB04)	05:27 20:35	06:00 20:15	06:33 19:27	19:06 (AB04) 19:27 (AB04)	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	19:01 (AB04) 19:11 (AB04)	05:27 20:35	06:01 20:13	06:34 19:25	19:04 (AB04) 19:28 (AB04)	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	19:11 (AB04) 19:13 (AB04)	05:26 20:36	06:02 20:12	06:35 19:30	19:03 (AB04) 19:02 (AB04)	07:06 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	19:13 (AB04) 19:03 (AB04)	05:26 20:36	06:03 20:11	06:36 19:31	19:02 (AB04) 19:31 (AB04)	07:08 18:30	06:45 16:47	07:18 16:30
11	07:29 16:50	07:04 17:28	06:22 18:03	06:30 19:38	05:47 20:11	19:15 (AB04) 19:15 (AB04)	05:26 20:37	06:04 20:09	06:37 19:31	19:00 (AB04) 19:31 (AB04)	07:09 18:28	06:46 16:45	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	19:01 (AB04) 19:17 (AB04)	05:26 20:38	06:05 20:08	06:38 19:32	18:59 (AB04) 19:32 (AB04)	07:10 18:27	06:47 16:44	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:44 20:13	18:58 (AB04) 19:18 (AB04)	05:26 20:38	06:06 20:07	06:39 19:33	18:59 (AB04) 19:33 (AB04)	07:11 18:25	06:48 16:43	07:21 16:31
14	07:28 16:53	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	18:57 (AB04) 19:19 (AB04)	05:26 20:38	06:08 20:05	06:40 19:34	18:58 (AB04) 19:33 (AB04)	07:12 18:23	06:49 16:43	07:22 16:31
15	07:28 16:54	06:59 17:33	06:16 18:07	06:23 19:42	05:42 20:15	18:55 (AB04) 19:20 (AB04)	05:26 20:39	06:09 20:04	06:41 19:35	18:57 (AB04) 19:33 (AB04)	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:21 19:43	05:41 20:16	18:53 (AB04) 19:20 (AB04)	05:26 20:39	06:10 20:02	06:42 19:33	18:57 (AB04) 19:33 (AB04)	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	18:53 (AB04) 19:22 (AB04)	05:26 20:40	06:11 20:35	06:43 19:33	18:56 (AB04) 19:33 (AB04)	07:16 18:19	06:53 16:40	07:24 16:31
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	18:51 (AB04) 19:23 (AB04)	05:26 20:40	06:12 20:34	06:44 19:59	18:56 (AB04) 19:33 (AB04)	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:38 20:19	18:51 (AB04) 19:24 (AB04)	05:26 20:40	06:13 20:34	06:45 19:58	18:55 (AB04) 19:33 (AB04)	07:18 18:16	06:56 16:38	07:25 16:32
20	07:25 17:00	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	18:50 (AB04) 19:25 (AB04)	05:26 20:41	06:14 20:33	06:46 19:56	18:55 (AB04) 19:33 (AB04)	07:19 18:14	06:57 16:37	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	18:50 (AB04) 19:26 (AB04)	05:26 20:41	06:15 20:32	06:47 19:55	18:55 (AB04) 19:32 (AB04)	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	18:49 (AB04) 19:27 (AB04)	05:26 20:41	06:16 20:31	06:48 19:53	18:55 (AB04) 19:31 (AB04)	07:21 18:11	06:59 16:36	07:27 16:33
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	18:49 (AB04) 19:27 (AB04)	05:26 20:41	06:17 20:31	06:49 19:52	18:55 (AB04) 19:29 (AB04)	07:23 18:10	07:00 16:35	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:23	18:49 (AB04) 19:27 (AB04)	05:27 20:41	06:18 20:30	06:50 19:50	18:55 (AB04) 19:28 (AB04)	07:24 18:08	07:02 16:35	07:28 16:34
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:33 20:24	18:49 (AB04) 19:27 (AB04)	05:27 20:42	06:19 20:29	06:51 19:49	18:55 (AB04) 19:26 (AB04)	07:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	18:49 (AB04) 19:27 (AB04)	05:27 20:42	06:20 20:28	06:52 19:47	18:55 (AB04) 19:24 (AB04)	07:26 17:05	07:04 16:34	07:28 16:36
27	07:20 17:09	06:42 17:48	05:55 18:21	06:05 19:55	05:32 20:26	18:49 (AB04) 19:26 (AB04)	05:28 20:42	06:21 20:27	06:53 19:45	18:55 (AB04) 19:22 (AB04)	07:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:31 20:27	18:50 (AB04) 19:25 (AB04)	05:28 20:42	06:22 20:26	06:54 19:44	18:56 (AB04) 19:21 (AB04)	07:28 17:02	07:06 16:33	07:29 16:37
29	07:19 17:12	06:41 17:51	05:52 18:23	06:02 19:57	05:31 20:28	18:49 (AB04) 19:24 (AB04)	05:28 20:42	06:23 20:25	06:55 19:42	18:57 (AB04) 19:19 (AB04)	07:29 17:01	07:07 16:32	07:29 16:38
30	07:18 17:13	06:40 17:52	05:51 18:24	06:01 19:58	05:30 20:29	18:50 (AB04) 19:24 (AB04)	05:29 20:42	06:24 20:24	06:56 19:40	18:58 (AB04) 19:17 (AB04)	07:30 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14	06:40 17:53	05:50 18:25	06:00 19:59	05:30 20:30	18:50 (AB04) 19:24 (AB04)	05:29 20:42	06:25 20:24	06:57 19:39	19:00 (AB04) 19:16 (AB04)	07:31 16:58	07:09 16:33	07:30 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285	
Total, worst case				621	186			794		15			
Sun reduction				0,44	0,40			0,42		0,46			
Oper. time red.				0,88	0,88			0,88		0,88			
Wind dir. red.				0,68	0,68			0,68		0,68			
Total reduction				0,26	0,24			0,25		0,28			
Total, real				161	44			198		4			

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: WF Abruzzo shadow flickering real caseShadow receptor: R031 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (88)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June
1	07:30 16:40	07:16 17:15	06:39 17:51	06:46 19:26	18:17 (AB03) 05:59	05:29 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	17:28 (AB04) 06:45	18:17 (AB03) 05:58	05:29 20:31
3	07:30 16:42	07:14 17:18	06:35 17:53	17:28 (AB04) 06:43	18:17 (AB03) 05:56	05:28 20:32
4	07:30 16:43	07:13 17:19	06:34 17:54	17:26 (AB04) 06:41	18:16 (AB03) 05:55	05:28 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56	17:26 (AB04) 06:40	18:16 (AB03) 05:54	05:27 20:33
6	07:30 16:45	07:10 17:22	06:31 17:57	17:26 (AB04) 06:38	18:17 (AB03) 05:53	05:27 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	17:26 (AB04) 06:36	18:17 (AB03) 05:51	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	17:25 (AB04) 06:34	18:17 (AB03) 05:50	05:26 20:35
9	07:30 16:48	07:07 17:26	06:26 18:00	17:27 (AB04) 06:33	18:18 (AB03) 05:49	05:26 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	17:39 (AB04) 06:35	18:58 (AB03) 20:08	05:26 20:36
11	07:29 16:50	07:04 17:28	06:22 18:03	17:27 (AB04) 06:31	18:18 (AB03) 05:48	05:26 20:36
12	07:29 16:51	07:03 17:30	06:21 18:04	17:41 (AB04) 06:30	18:18 (AB03) 05:47	05:26 20:37
13	07:29 16:52	07:02 17:31	06:19 18:05	17:31 (AB04) 06:28	18:20 (AB03) 05:45	05:26 20:38
14	07:28 16:53	07:01 17:32	06:17 18:06	17:41 (AB04) 06:27	18:54 (AB03) 20:12	05:26 20:38
15	07:28 16:54	06:59 17:34	06:15 18:07	17:36 (AB04) 06:26	18:20 (AB03) 05:44	05:26 20:38
16	07:28 16:55	06:58 17:35	06:14 18:08	19:40 06:25	18:52 (AB03) 20:13	05:26 20:38
17	07:27 16:56	06:56 17:36	06:12 18:10	19:41 06:23	18:21 (AB03) 05:43	05:26 20:38
18	07:27 16:57	06:55 17:37	06:10 18:11	19:42 06:21	18:50 (AB03) 20:14	05:26 20:39
19	07:26 16:58	06:54 17:39	06:09 18:12	19:43 06:20	18:45 (AB03) 20:16	05:26 20:39
20	07:25 17:00	06:52 17:40	06:07 18:13	18:29 (AB03) 06:18	18:29 (AB03) 05:40	05:26 20:40
21	07:25 17:02	06:51 17:41	06:05 18:14	17:37 (AB03) 06:15	18:42 (AB03) 20:17	05:26 20:40
22	07:24 17:03	06:49 17:42	06:04 18:15	19:48 06:14	20:19 05:44	05:26 20:41
23	07:23 17:04	06:48 17:44	06:02 18:16	17:33 (AB03) 06:14	20:20 05:43	05:26 20:41
24	07:23 17:05	06:46 17:45	06:00 18:18	17:52 (AB03) 19:49	20:21 05:42	05:26 20:41
25	07:22 17:07	06:45 17:46	05:58 18:19	17:29 (AB03) 06:12	20:22 05:41	05:26 20:41
26	07:21 17:08	06:43 17:47	05:57 18:20	17:28 (AB03) 06:11	20:23 05:40	05:26 20:41
27	07:20 17:09	06:42 17:48	05:55 18:21	17:54 (AB03) 19:51	20:23 05:39	05:26 20:41
28	07:20 17:10	06:40 17:50	05:53 18:22	17:26 (AB03) 06:09	20:24 05:38	05:27 20:41
29	07:19 17:12	06:39 17:51	05:52 18:23	17:54 (AB03) 19:52	20:24 05:37	05:27 20:41
30	07:18 17:13	06:38 17:52	05:51 18:24	17:24 (AB03) 06:08	20:25 05:36	05:27 20:41
31	07:17 17:14	06:37 17:53	05:50 18:25	17:55 (AB03) 19:53	20:25 05:35	05:27 20:41
Potential sun hours	295	296	369	400	451	456
Total, worst case			465	610		
Sun reduction			0,49	0,44		
Oper. time red.			0,88	0,88		
Wind dir. red.			0,64	0,65		
Total reduction			0,27	0,25		
Total, real			127	152		

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: WF Abruzzo shadow flickering real caseShadow receptor: R031 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (88)  
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	July	August	September	October	November	December
1	05:29 20:41	05:54 20:22	06:26 18:17 (AB03)	06:58 18:54 (AB03)	18:11 (AB04)	06:33 07:09
2	05:30 20:41	05:55 20:21	06:27 18:16 (AB03)	06:59 18:54 (AB03)	18:07 (AB04)	06:35 07:10
3	05:30 20:41	05:56 20:19	06:28 18:15 (AB03)	07:00 18:55 (AB03)	18:05 (AB04)	06:36 07:11
4	05:31 20:41	05:57 20:18	06:29 18:14 (AB03)	07:01 18:55 (AB03)	18:04 (AB04)	06:37 07:13
5	05:32 20:41	05:58 20:17	06:30 18:13 (AB03)	07:02 18:55 (AB03)	18:02 (AB04)	06:38 07:14
6	05:32 20:40	05:59 20:16	06:31 18:12 (AB03)	07:03 18:55 (AB03)	18:02 (AB04)	06:40 07:15
7	05:33 20:40	06:00 20:14	06:33 18:11 (AB03)	07:04 18:55 (AB03)	18:02 (AB04)	06:41 07:15
8	05:33 20:40	06:01 20:13	06:34 18:11 (AB03)	07:05 18:55 (AB03)	18:01 (AB04)	06:42 07:16
9	05:34 20:39	06:02 20:12	06:35 18:10 (AB03)	07:06 18:54 (AB03)	18:01 (AB04)	06:43 07:17
10	05:35 20:39	06:03 20:11	06:36 18:10 (AB03)	07:08 18:52 (AB03)	18:01 (AB04)	06:44 07:18
11	05:35 20:39	06:04 20:09	06:37 18:09 (AB03)	07:09 18:51 (AB03)	18:01 (AB04)	06:46 07:19
12	05:36 20:38	06:05 20:08	06:38 18:09 (AB03)	07:10 18:50 (AB03)	18:02 (AB04)	06:47 07:20
13	05:37 20:38	06:06 20:07	06:39 18:09 (AB03)	07:11 18:49 (AB03)	18:03 (AB04)	06:48 07:21
14	05:38 20:37	06:07 20:05	06:40 18:09 (AB03)	07:12 18:47 (AB03)		06:49 16:42
15	05:39 20:36	06:09 20:04	06:41 18:09 (AB03)	07:13 18:46 (AB03)		06:51 16:42
16	05:39 20:36	06:10 20:02	06:42 18:10 (AB03)	07:14 18:45 (AB03)		06:52 16:41
17	05:40 20:35	06:11 20:01	06:43 18:10 (AB03)	07:15 18:44 (AB03)		06:53 16:40
18	05:41 20:34	06:12 19:59	06:44 18:11 (AB03)	07:17 18:42 (AB03)		06:54 16:39
19	05:42 20:34	06:13 19:58	06:45 18:12 (AB03)	07:18 18:41 (AB03)		06:56 16:38
20	05:43 20:33	06:14 19:56	06:46 18:14 (AB03)	07:19 18:41 (AB03)		06:57 16:37
21	05:44 20:32	06:15 19:55	06:47 18:15 (AB03)	07:20 18:39 (AB03)		06:58 16:37
22	05:45 20:31	06:16 19:53	06:48 18:17 (AB03)	07:21 18:38 (AB03)		06:59 16:36
23	05:45 20:31	06:17 19:52	06:49 18:20 (AB03)	07:23 18:35 (AB03)		07:00 16:35
24	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08		07:01 16:34
25	05:47 20:29	06:19 19:49	06:51 18:56	06:25 17:07		07:03 16:34
26	05:48 20:28	06:20 19:47	18:30 (AB03) 18:44 (AB03)	06:52 18:54	06:26 17:05	07:04 16:34
27	05:49 20:27	06:21 19:45	18:27 (AB03) 18:47 (AB03)	06:53 18:52	06:27 17:04	07:05 16:33
28	05:50 20:26	06:22 19:44	18:24 (AB03) 18:49 (AB03)	06:54 18:50	06:28 17:02	07:06 16:33
29	05:51 20:25	06:23 19:42	18:22 (AB03) 18:51 (AB03)	06:56 18:49	06:30 17:01	07:07 16:32
30	05:52 20:24	06:24 19:40	18:20 (AB03) 18:52 (AB03)	06:57 18:47	06:31 17:00	07:08 16:32
31	05:53 20:23	06:25 19:39	18:19 (AB03) 18:53 (AB03)	06:58 16:58	06:32 16:58	07:30 16:39
Potential sun hours	462	430	375	344	296	285
Total, worst case		154	829		108	
Sun reduction		0,42	0,46		0,52	
Oper. time red.		0,88	0,88		0,88	
Wind dir. red.		0,65	0,65		0,61	
Total reduction		0,24	0,26		0,28	
Total, real		37	220		30	

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: WF Abruzzo shadow flickering real caseShadow receptor: R039 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (89)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:40	15:16 (AB03) 15:44 (AB03)	07:16 17:16	06:39 17:51	06:46 19:26	
2	07:30 16:41	15:17 (AB03) 15:45 (AB03)	07:15 17:17	06:37 17:52	06:45 19:28	
3	07:30 16:42	15:18 (AB03) 15:46 (AB03)	07:14 17:18	06:35 17:53	06:43 19:29	
4	07:30 16:43	15:19 (AB03) 15:47 (AB03)	07:13 17:19	06:34 17:54	06:41 19:30	
5	07:30 16:44	15:20 (AB03) 15:49 (AB03)	07:12 17:21	06:32 17:56	06:40 19:31	
6	07:30 16:45	15:21 (AB03) 15:50 (AB03)	07:10 17:22	06:31 17:57	06:38 19:32	
7	07:30 16:46	15:22 (AB03) 15:52 (AB03)	07:09 17:23	06:29 17:58	06:36 19:33	
8	07:30 16:47	15:23 (AB03) 15:52 (AB03)	07:08 17:25	06:27 17:59	06:34 19:34	
9	07:30 16:48	15:24 (AB03) 15:54 (AB03)	07:07 17:26	06:26 18:00	06:33 19:35	
10	07:30 16:49	15:26 (AB03) 15:56 (AB03)	07:06 17:27	06:24 18:02	06:31 19:36	
11	07:29 16:50	15:27 (AB03) 15:57 (AB03)	07:04 17:28	06:22 18:03	06:30 19:38	
12	07:29 16:51	15:28 (AB03) 15:58 (AB03)	07:03 17:30	06:21 18:04	06:28 19:39	
13	07:29 16:52	15:30 (AB03) 16:00 (AB03)	07:02 17:31	06:19 18:05	06:26 19:40	
14	07:28 16:53	15:31 (AB03) 16:01 (AB03)	07:01 17:32	06:17 18:06	06:25 19:41	
15	07:28 16:54	15:34 (AB03) 16:00 (AB03)	06:59 17:34	06:16 18:07	06:23 19:42	
16	07:28 16:56	15:36 (AB03) 15:58 (AB03)	06:58 17:35	06:14 18:08	06:21 19:43	
17	07:27 16:57	15:40 (AB03) 15:56 (AB03)	06:57 17:36	06:12 18:10	06:20 19:44	
18	07:27 16:58	15:44 (AB03) 15:51 (AB03)	06:55 17:37	06:10 18:11	06:18 19:45	
19	07:26 16:59		06:54 17:39	06:09 18:12	06:17 19:46	
20	07:26 17:00		06:52 17:40	06:07 18:13	06:15 19:48	
21	07:25 17:02		06:51 17:41	06:05 18:14	06:14 19:49	
22	07:24 17:03		06:49 17:42	06:04 18:15	06:12 19:50	
23	07:24 17:04		06:48 17:44	06:02 18:16	06:11 19:51	
24	07:23 17:05		06:46 17:45	06:00 18:18	06:09 19:52	
25	07:22 17:07		06:45 17:46	05:58 18:19	06:08 19:53	
26	07:21 17:08		06:43 17:47	05:57 18:20	06:06 19:54	
27	07:20 17:09		06:42 17:48	05:55 18:21	06:05 19:55	19:31 (AB01)
28	07:20 17:10		06:40 17:50	05:53 18:22	06:03 19:56	19:32 (AB01)
29	07:19 17:12			06:51 19:23	06:02 19:58	19:29 (AB01)
30	07:18 17:13			06:50 19:24	06:00 19:59	19:34 (AB01)
31	07:17 17:14			06:48 19:25		19:27 (AB01)
Potential sun hours	295	296	369	400	451	456
Total, worst case	480			22	374	
Sun reduction	0,61			0,44	0,40	
Oper. time red.	0,88			0,88	0,88	
Wind dir. red.	0,50			0,70	0,70	
Total reduction	0,28			0,28	0,25	
Total, real	133			6	95	

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: WF Abruzzo shadow flickering real caseShadow receptor: R039 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (89)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December
1	05:29 20:42	05:54 20:22	19:35 (AB01) 06:26	06:58 18:45	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:21	19:34 (AB01) 06:27	06:59 18:43	06:35 16:56	07:10 16:31
3	05:30 20:41	05:56 20:19	19:34 (AB01) 06:28	07:00 18:42	06:36 16:55	07:12 16:31
4	05:31 20:41	05:57 20:18	19:34 (AB01) 06:29	07:01 18:40	06:37 16:53	07:13 16:31
5	05:32 20:41	05:58 20:17	19:33 (AB01) 06:30	07:02 18:38	06:38 16:52	07:14 16:31
6	05:32 20:40	05:59 20:16	19:33 (AB01) 06:31	07:03 18:37	06:40 16:51	07:15 16:30
7	05:33 20:40	06:00 20:15	19:33 (AB01) 06:33	07:04 18:35	06:41 16:50	07:16 16:30
8	05:33 20:40	06:01 20:13	19:33 (AB01) 06:34	07:05 18:33	06:42 16:49	07:16 16:30
9	05:34 20:39	06:02 20:12	19:33 (AB01) 06:35	07:06 18:32	06:43 16:48	07:17 16:30
10	05:35 20:39	06:03 20:11	19:33 (AB01) 06:36	07:08 18:30	06:45 16:46	07:18 16:30
11	05:35 20:39	06:04 20:09	19:33 (AB01) 06:37	07:09 18:28	06:46 16:45	07:19 16:30
12	05:36 20:38	06:05 20:08	19:34 (AB01) 06:38	07:10 18:27	06:47 16:44	07:20 16:30
13	05:37 20:38	06:06 20:07	19:34 (AB01) 06:39	07:11 18:25	06:48 16:43	07:21 16:30
14	05:38 20:37	06:07 20:05	19:35 (AB01) 06:40	07:12 18:23	06:49 16:42	07:22 16:31
15	05:39 20:36	06:09 20:04	19:36 (AB01) 06:41	07:13 18:22	06:51 16:42	07:22 16:31
16	05:39 20:36	06:10 20:02	19:40 (AB01) 06:42	07:14 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	19:39 (AB01) 06:43	07:16 18:19	06:53 16:40	07:24 16:31
18	05:41 20:34	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:37	07:26 16:32
21	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:12	06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:33
23	05:45 20:31	19:44 (AB01) 06:17	06:49 18:59	07:23 18:10	07:00 16:35	07:27 16:34
24	05:46 20:30	7 19:51 (AB01) 06:18	06:50 18:57	07:24 18:08	07:02 16:35	15:22 (AB03) 16:34
25	05:47 20:29	12 19:54 (AB01) 06:19	06:51 18:56	07:03 17:07	6 15:28 (AB03) 16:34	15:18 (AB03) 16:35
26	05:48 20:28	15 19:55 (AB01) 06:20	06:52 18:54	07:04 17:05	16 15:34 (AB03) 16:34	15:15 (AB03) 16:36
27	05:49 20:27	18 19:57 (AB01) 06:21	06:53 18:52	07:05 17:04	22 15:37 (AB03) 16:33	15:13 (AB03) 16:36
28	05:50 20:26	20 19:58 (AB01) 06:22	06:54 18:50	07:06 17:02	26 15:39 (AB03) 16:33	15:12 (AB03) 16:37
29	05:51 20:25	22 19:59 (AB01) 06:23	06:56 18:49	07:07 17:01	29 15:41 (AB03) 16:32	15:11 (AB03) 16:38
30	05:52 20:24	24 19:36 (AB01) 06:24	06:57 18:47	07:08 17:00	30 15:40 (AB03) 16:32	15:09 (AB03) 16:38
31	05:53 20:23	24 19:35 (AB01) 06:25	06:58 18:45	07:09 16:58	30 15:39 (AB03) 16:32	15:08 (AB03) 16:39
Potential sun hours	462	430	375	344	296	285
Total, worst case	166	236			159	856
Sun reduction	0,39	0,42			0,59	0,63
Oper. time red.	0,88	0,88			0,88	0,88
Wind dir. red.	0,70	0,70			0,50	0,50
Total reduction	0,25	0,27			0,27	0,29
Total, real	41	63			42	245

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: WF Abruzzo shadow flickering real caseShadow receptor: R040 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (90°)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:40	15:13 (AB03) 15:45 (AB03)	07:16 17:16	06:39 17:51	06:46 19:26	
2	07:30 16:41	15:14 (AB03) 15:44 (AB03)	07:15 17:17	06:37 17:52	06:45 19:28	
3	07:30 16:42	15:16 (AB03) 15:44 (AB03)	07:14 17:18	06:35 17:53	06:43 19:29	
4	07:30 16:43	15:17 (AB03) 15:44 (AB03)	07:13 17:19	06:34 17:54	06:41 19:30	
5	07:30 16:44	15:19 (AB03) 15:43 (AB03)	07:12 17:21	06:32 17:56	06:40 19:31	
6	07:30 16:45	15:21 (AB03) 15:42 (AB03)	07:10 17:22	06:31 17:57	06:38 19:32	
7	07:30 16:46	15:23 (AB03) 15:41 (AB03)	07:09 17:23	06:29 17:58	06:36 19:33	
8	07:30 16:47	15:25 (AB03) 15:38 (AB03)	07:08 17:25	06:27 17:59	06:34 19:34	
9	07:30 16:48		07:07 17:26	06:26 18:00	06:33 19:35	
10	07:30 16:49		07:06 17:27	06:24 18:02	06:31 19:36	
11	07:29 16:50		07:04 17:28	06:22 18:03	06:30 19:38	
12	07:29 16:51		07:03 17:30	06:21 18:04	06:28 19:39	
13	07:29 16:52		07:02 17:31	06:19 18:05	06:26 19:40	
14	07:28 16:53		07:01 17:32	06:17 18:06	06:25 19:41	
15	07:28 16:54		06:59 17:34	06:16 18:07	06:23 19:42	
16	07:28 16:56		06:58 17:35	06:14 18:08	06:21 19:43	
17	07:27 16:57		06:57 17:36	06:12 18:10	06:20 19:44	
18	07:27 16:58		06:55 17:37	06:10 18:11	06:18 19:45	
19	07:26 16:59		06:54 17:39	06:09 18:12	06:17 19:46	
20	07:26 17:00		06:52 17:40	06:07 18:13	06:15 19:48	
21	07:25 17:02		06:51 17:41	06:05 18:14	06:14 19:49	
22	07:24 17:03		06:49 17:42	06:04 18:15	06:12 19:50	
23	07:24 17:04		06:48 17:44	06:02 18:16	06:11 19:51	
24	07:23 17:05		06:46 17:45	06:00 18:18	06:09 19:52	
25	07:22 17:07		06:45 17:46	05:58 18:19	06:08 19:53	
26	07:21 17:08		06:43 17:47	05:57 18:20	06:06 19:54	
27	07:20 17:09		06:42 17:48	05:55 18:21	06:05 19:55	19:30 (AB01)
28	07:20 17:10		06:40 17:50	05:53 18:22	06:03 19:56	2 19:32 (AB01)
29	07:19 17:12			06:51 19:23	06:02 19:58	5 19:34 (AB01)
30	07:18 17:13			06:50 19:24	06:00 19:59	8 19:34 (AB01)
31	07:17 17:14			06:48 19:25	06:00 20:00	9 19:26 (AB01)
Potential sun hours	295	296	369	400	451	456
Total, worst case	193			24	406	
Sun reduction	0,61			0,44	0,40	
Oper. time red.	0,88			0,88	0,88	
Wind dir. red.	0,50			0,70	0,70	
Total reduction	0,28			0,28	0,26	
Total, real	54			7	104	

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: WF Abruzzo shadow flickering real caseShadow receptor: R040 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (90°)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December	
1	05:29 20:42	05:54	19:34 (AB01)	06:26	06:58	06:33	07:09
2	05:30 20:41	05:55	19:33 (AB01)	06:27	06:59	06:35	07:10
3	05:30 20:41	05:56	19:33 (AB01)	06:28	07:00	06:36	07:12
4	05:31 20:41	05:57	19:33 (AB01)	06:29	07:01	06:37	07:13
5	05:32 20:41	05:58	19:33 (AB01)	06:30	07:02	06:38	07:14
6	05:32 20:41	05:59	19:33 (AB01)	06:31	07:03	06:40	07:15
7	05:33 20:40	06:00	19:32 (AB01)	06:33	07:04	06:41	07:16
8	05:33 20:40	06:01	19:33 (AB01)	06:34	07:05	06:42	07:16
9	05:34 20:39	06:02	19:33 (AB01)	06:35	07:06	06:43	07:17
10	05:35 20:39	06:03	19:32 (AB01)	06:36	07:08	06:45	07:18
11	05:35 20:39	06:04	19:32 (AB01)	06:37	07:09	06:46	07:19
12	05:36 20:38	06:05	19:33 (AB01)	06:38	07:10	06:47	07:20
13	05:37 20:38	06:06	19:34 (AB01)	06:39	07:11	06:48	07:21
14	05:38 20:37	06:07	19:34 (AB01)	06:40	07:12	06:49	07:22
15	05:39 20:36	06:09	19:36 (AB01)	06:41	07:13	06:51	07:22
16	05:39 20:36	06:10	19:37 (AB01)	06:42	07:14	06:52	07:23
17	05:40 20:35	06:11	19:39 (AB01)	06:43	07:16	06:53	07:24
18	05:41 20:34	06:12	19:41 (AB01)	06:44	07:17	06:54	07:24
19	05:42 20:34	06:13	19:41 (AB01)	06:45	07:18	06:56	07:25
20	05:43 20:33	06:14	19:40 (AB01)	06:46	07:19	06:57	07:26
21	05:44 20:32	06:15	19:38 (AB01)	06:47	07:20	06:58	07:26
22	05:45 20:31	06:16	19:44 (AB01)	06:48	07:21	06:59	07:27
23	05:45 20:31	06:17	19:41 (AB01)	06:49	07:23	07:00	07:27
24	05:46 20:30	06:18	19:53 (AB01)	06:50	07:24	07:02	07:28
25	05:47 20:29	06:19	19:55 (AB01)	06:51	07:25	07:03	07:28
26	05:48 20:28	06:20	19:38 (AB01)	06:19	06:51	07:03	07:28
27	05:49 20:27	06:21	19:56 (AB01)	06:52	07:26	07:04	07:28
28	05:50 20:26	06:22	19:37 (AB01)	06:20	06:52	07:04	07:28
29	05:51 20:25	06:23	19:57 (AB01)	06:53	07:27	07:05	07:29
30	05:52 20:24	06:24	19:38 (AB01)	06:21	06:53	07:05	07:29
31	05:53 20:23	06:25	19:58 (AB01)	06:54	07:28	07:06	07:29
Potential sun hours	462	430		375	344	296	285
Total, worst case	190	246					920
Sun reduction	0,39	0,42					0,63
Oper. time red.	0,88	0,88					0,88
Wind dir. red.	0,70	0,70					0,50
Total reduction	0,25	0,27					0,29
Total, real	47	66					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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Project:

WF Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it
Calculated:
15/11/2023 18:37/3.5.587

SHADOW - Calendar

Calculation: WF Abruzzo shadow flikering real case Shadow receptor: R046 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (91)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

Table with columns for months (January to December) and rows for specific times of day. Includes summary rows for Potential sun hours, Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, and Total, real.

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

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



## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R047 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (92)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:26	17:56 (AB01) 05:59	05:29 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	17:56 (AB01) 05:58	05:29 20:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	17:57 (AB01) 05:56	05:28 20:32
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	17:57 (AB01) 05:55	05:28 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	17:57 (AB01) 05:54	05:27 20:33
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	17:58 (AB01) 05:53	05:27 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	17:59 (AB01) 05:51	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	17:24 (AB01) 19:34	06:35 19:34	05:26 20:35
9	07:30 16:48	07:07 17:26	06:26 18:00	17:20 (AB01) 19:35	06:33 19:35	05:26 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	17:17 (AB01) 19:36	06:31 19:36	05:26 20:37
11	07:29 16:50	07:05 17:28	06:22 18:03	17:14 (AB01) 19:38	06:30 19:38	05:26 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	17:13 (AB01) 19:39	06:28 19:39	05:26 20:38
13	07:29 16:52	07:02 17:31	06:19 18:05	17:11 (AB01) 19:40	06:26 19:40	05:26 20:38
14	07:29 16:53	07:01 17:32	06:17 18:06	17:09 (AB01) 19:41	06:25 19:41	05:26 20:39
15	07:28 16:54	06:59 17:34	06:16 18:07	17:07 (AB01) 19:42	06:23 19:42	05:26 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	17:06 (AB01) 19:43	06:21 19:43	05:26 20:39
17	07:27 16:57	06:57 17:36	06:12 18:10	17:05 (AB01) 19:44	06:20 19:44	05:26 20:40
18	07:27 16:58	06:55 17:37	06:10 18:11	17:03 (AB01) 19:45	06:18 19:45	05:26 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	17:03 (AB01) 19:46	06:17 19:46	05:26 20:40
20	07:26 17:00	06:52 17:40	06:07 18:13	17:02 (AB01) 19:48	06:15 19:48	05:26 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	17:00 (AB01) 19:49	06:14 19:49	05:26 20:41
22	07:24 17:03	06:49 17:42	06:04 18:15	16:59 (AB01) 19:50	06:12 19:50	05:26 20:41
23	07:24 17:04	06:48 17:44	06:02 18:16	16:59 (AB01) 19:51	06:11 19:51	05:26 20:41
24	07:23 17:05	06:46 17:45	06:00 18:18	16:59 (AB01) 19:52	06:09 19:52	05:27 20:41
25	07:22 17:07	06:45 17:46	05:58 18:19	16:58 (AB01) 19:53	06:08 19:53	05:27 20:42
26	07:21 17:08	06:43 17:47	05:57 18:20	16:57 (AB01) 19:54	06:06 19:54	05:27 20:42
27	07:20 17:09	06:42 17:48	05:55 18:21	16:58 (AB01) 19:55	06:05 19:55	05:28 20:42
28	07:20 17:10	06:40 17:50	05:53 18:22	16:57 (AB01) 19:56	06:03 19:56	05:28 20:42
29	07:19 17:12	06:51 19:23	06:51 19:23	17:56 (AB01) 19:58	06:02 19:58	05:28 20:42
30	07:18 17:13	06:50 19:24	06:50 19:24	17:57 (AB01) 19:59	06:01 19:59	05:29 20:42
31	07:17 17:14	06:48 19:25	06:48 19:25	17:57 (AB01) 18:44 (AB01)	05:30 20:30	05:29 20:42
Potential sun hours	295	296	369	400	451	456
Total, worst case			751	798		
Sun reduction			0,49	0,44		
Oper. time red.			0,88	0,88		
Wind dir. red.			0,64	0,64		
Total reduction			0,27	0,24		
Total, real			204	194		

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: WF Abruzzo shadow flickering real caseShadow receptor: R047 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (92)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December		
1	05:29 20:42	05:54 20:22	06:26 19:37	18:00 (AB01) 18:50 (AB01)	06:58 18:45	17:51 (AB01) 18:11 (AB01)	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:21	06:27 19:36	17:59 (AB01) 18:49 (AB01)	06:59 18:43	17:52 (AB01) 18:09 (AB01)	06:35 16:56	07:11 16:31
3	05:30 20:41	05:56 20:19	06:28 19:34	17:57 (AB01) 18:48 (AB01)	07:00 18:42	17:54 (AB01) 18:08 (AB01)	06:36 16:55	07:12 16:31
4	05:31 20:41	05:57 20:18	06:29 19:32	17:56 (AB01) 18:46 (AB01)	07:01 18:40	17:56 (AB01) 18:06 (AB01)	06:37 16:53	07:13 16:31
5	05:32 20:41	05:58 20:17	06:30 19:30	17:55 (AB01) 18:45 (AB01)	07:02 18:38	17:59 (AB01) 18:06 (AB01)	06:38 16:52	07:14 16:31
6	05:32 20:41	05:59 20:16	06:32 19:29	17:53 (AB01) 18:43 (AB01)	07:03 18:37	18:03 (AB01) 18:05 (AB01)	06:40 16:51	07:15 16:30
7	05:33 20:40	06:00 20:15	06:33 19:27	17:52 (AB01) 18:42 (AB01)	07:04 18:35	18:04 (AB01) 18:05 (AB01)	06:41 16:50	07:16 16:30
8	05:33 20:40	06:01 20:13	06:34 19:25	17:51 (AB01) 18:41 (AB01)	07:05 18:33	18:04 (AB01) 18:05 (AB01)	06:42 16:49	07:17 16:30
9	05:34 20:40	06:02 20:12	06:35 19:24	17:50 (AB01) 18:39 (AB01)	07:07 18:32	18:04 (AB01) 18:05 (AB01)	06:43 16:48	07:17 16:30
10	05:35 20:39	06:03 20:11	06:36 19:22	17:50 (AB01) 18:38 (AB01)	07:08 18:30	18:04 (AB01) 18:05 (AB01)	06:45 16:46	07:18 16:30
11	05:36 20:39	06:04 20:09	06:37 19:20	17:49 (AB01) 18:36 (AB01)	07:09 18:28	18:04 (AB01) 18:05 (AB01)	06:46 16:45	07:19 16:30
12	05:36 20:38	06:05 20:08	06:38 19:18	17:48 (AB01) 18:35 (AB01)	07:10 18:27	18:04 (AB01) 18:05 (AB01)	06:47 16:44	07:20 16:30
13	05:37 20:38	06:06 20:07	06:39 19:17	17:47 (AB01) 18:34 (AB01)	07:11 18:25	18:04 (AB01) 18:05 (AB01)	06:48 16:43	07:21 16:30
14	05:38 20:37	06:08 20:05	06:40 19:15	17:47 (AB01) 18:32 (AB01)	07:12 18:23	18:04 (AB01) 18:05 (AB01)	06:49 16:43	07:22 16:31
15	05:39 20:37	06:09 20:04	06:41 19:13	17:46 (AB01) 18:31 (AB01)	07:13 18:22	18:04 (AB01) 18:05 (AB01)	06:51 16:42	07:22 16:31
16	05:39 20:36	06:10 20:02	06:42 19:11	17:46 (AB01) 18:29 (AB01)	07:14 18:20	18:04 (AB01) 18:05 (AB01)	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	06:43 19:10	17:46 (AB01) 18:29 (AB01)	07:16 18:19	18:04 (AB01) 18:05 (AB01)	06:53 16:40	07:24 16:31
18	05:41 20:35	06:12 19:59	06:44 19:08	17:46 (AB01) 18:28 (AB01)	07:17 18:17	18:04 (AB01) 18:05 (AB01)	06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	17:46 (AB01) 18:26 (AB01)	07:18 18:16	18:04 (AB01) 18:05 (AB01)	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	06:46 19:04	17:46 (AB01) 18:25 (AB01)	07:19 18:14	18:04 (AB01) 18:05 (AB01)	06:57 16:37	07:26 16:32
21	05:44 20:32	06:15 19:55	06:47 19:03	17:46 (AB01) 18:23 (AB01)	07:20 18:13	18:04 (AB01) 18:05 (AB01)	06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 19:53	06:48 19:01	17:46 (AB01) 18:22 (AB01)	07:21 18:11	18:04 (AB01) 18:05 (AB01)	06:59 16:36	07:27 16:33
23	05:45 20:31	06:17 19:52	06:49 18:59	17:46 (AB01) 18:21 (AB01)	07:23 18:10	18:04 (AB01) 18:05 (AB01)	07:00 16:35	07:27 16:34
24	05:46 20:30	06:18 19:50	06:50 18:57	17:46 (AB01) 18:20 (AB01)	07:24 18:08	18:04 (AB01) 18:05 (AB01)	07:02 16:35	07:28 16:34
25	05:47 20:29	06:19 19:49	06:51 18:56	17:46 (AB01) 18:19 (AB01)	06:25 17:07	18:04 (AB01) 18:05 (AB01)	07:03 16:34	07:28 16:35
26	05:48 20:28	06:20 19:47	06:52 18:54	17:47 (AB01) 18:18 (AB01)	06:26 17:05	18:04 (AB01) 18:05 (AB01)	07:04 16:34	07:29 16:36
27	05:49 20:27	06:21 19:45	06:53 18:52	17:47 (AB01) 18:16 (AB01)	06:27 17:04	18:04 (AB01) 18:05 (AB01)	07:05 16:33	07:29 16:36
28	05:50 20:26	06:22 19:44	06:55 18:50	17:48 (AB01) 18:15 (AB01)	06:29 17:02	18:04 (AB01) 18:05 (AB01)	07:06 16:33	07:29 16:37
29	05:51 20:25	06:23 19:42	06:56 18:49	17:49 (AB01) 18:13 (AB01)	06:30 17:01	18:04 (AB01) 18:05 (AB01)	07:07 16:32	07:29 16:38
30	05:52 20:24	06:24 19:41	06:57 18:48	17:50 (AB01) 18:12 (AB01)	06:31 17:00	18:04 (AB01) 18:05 (AB01)	07:08 16:32	07:30 16:38
31	05:53 20:23	06:25 19:39	06:58 18:47	17:51 (AB01) 18:11 (AB01)	06:32 16:58	18:04 (AB01) 18:05 (AB01)	07:09 16:31	07:30 16:39
Potential sun hours	462	430	375	344	296	285		
Total, worst case		256	1244	70				
Sun reduction		0,42	0,46	0,52				
Oper. time red.		0,88	0,88	0,88				
Wind dir. red.		0,64	0,64	0,64				
Total reduction		0,23	0,26	0,29				
Total, real		60	322	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: WF Abruzzo shadow flikering real caseShadow receptor: R049 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (93)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:30 16:40	07:16 17:16	06:39 17:51	17:06 (AB01) 17:07 (AB01)	06:46 19:26	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	17:33 (AB01) 17:59 (AB01)	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	17:03 (AB01) 17:08 (AB01)	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	17:33 (AB01) 17:57 (AB01)	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:34 17:53	17:02 (AB01) 17:10 (AB01)	06:43 19:29	05:56 20:02	05:28 20:32	05:30 20:41	05:56 20:19	06:28 19:34	17:33 (AB01) 17:55 (AB01)	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	17:00 (AB01) 17:11 (AB01)	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:29 19:32	17:33 (AB01) 17:53 (AB01)	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	16:59 (AB01) 17:11 (AB01)	06:40 19:31	05:54 20:04	05:27 20:33	05:32 20:41	05:58 20:17	06:30 19:30	17:34 (AB01) 17:53 (AB01)	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	16:58 (AB01) 17:13 (AB01)	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	17:34 (AB01) 17:51 (AB01)	06:40 16:51	07:15 16:30
7	07:30 16:46	07:09 17:23	06:29 17:58	16:57 (AB01) 17:14 (AB01)	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	17:34 (AB01) 17:49 (AB01)	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	16:56 (AB01) 17:15 (AB01)	06:35 19:34	05:50 20:07	05:26 20:35	05:33 20:40	06:01 20:13	06:34 19:25	17:34 (AB01) 17:48 (AB01)	06:42 16:51	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	16:56 (AB01) 17:16 (AB01)	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	17:35 (AB01) 17:46 (AB01)	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	16:55 (AB01) 17:17 (AB01)	06:31 19:36	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	17:35 (AB01) 17:44 (AB01)	06:45 16:46	07:18 16:30
11	07:29 16:50	07:05 17:28	06:22 18:03	16:54 (AB01) 17:18 (AB01)	06:30 19:38	05:47 20:11	05:26 20:37	05:35 20:39	06:04 20:09	06:37 19:20	17:36 (AB01) 17:43 (AB01)	06:46 16:45	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	16:55 (AB01) 17:19 (AB01)	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:05 20:08	06:38 19:18	17:39 (AB01) 17:42 (AB01)	06:47 16:44	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	16:54 (AB01) 17:20 (AB01)	06:26 19:40	05:44 20:13	05:26 20:38	05:37 20:38	06:06 20:07	06:39 19:17	17:40 (AB01) 17:45 (AB01)	06:48 16:43	07:21 16:30
14	07:29 16:53	07:01 17:32	06:17 18:06	16:54 (AB01) 17:21 (AB01)	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:07 20:05	06:40 19:15	17:45 (AB01) 17:48 (AB01)	06:49 16:42	07:22 16:31
15	07:28 16:54	06:59 17:34	06:16 18:07	16:54 (AB01) 17:22 (AB01)	06:23 19:42	05:42 20:15	05:25 20:39	05:39 20:37	06:09 20:04	06:41 19:13	17:50 (AB01) 17:53 (AB01)	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	16:54 (AB01) 17:23 (AB01)	06:21 19:43	05:41 20:16	05:25 20:39	05:39 20:36	06:10 20:02	06:42 19:11	17:53 (AB01) 18:00 (AB01)	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	16:54 (AB01) 17:24 (AB01)	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	18:01 (AB01) 18:04 (AB01)	06:53 16:40	07:24 16:31
18	07:27 16:58	06:55 17:37	06:10 18:11	16:55 (AB01) 17:25 (AB01)	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	18:09 (AB01) 18:12 (AB01)	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	16:56 (AB01) 17:27 (AB01)	06:17 19:46	05:38 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	18:11 (AB01) 18:14 (AB01)	06:56 16:38	07:25 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	16:56 (AB01) 17:27 (AB01)	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	18:13 (AB01) 18:16 (AB01)	06:57 16:37	07:26 16:32
21	07:25 17:02	06:51 17:41	06:05 18:14	16:57 (AB01) 17:28 (AB01)	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	18:15 (AB01) 18:18 (AB01)	06:58 16:36	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	16:58 (AB01) 17:29 (AB01)	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	18:17 (AB01) 18:20 (AB01)	06:59 16:35	07:27 16:33
23	07:24 17:04	06:48 17:44	06:02 18:16	17:00 (AB01) 17:27 (AB01)	06:11 19:51	05:35 20:23	05:26 20:41	05:45 20:31	06:17 19:52	06:49 18:59	18:18 (AB01) 18:21 (AB01)	07:00 16:34	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	17:02 (AB01) 17:25 (AB01)	06:09 19:52	05:34 20:24	05:27 20:41	05:46 20:30	06:18 19:50	06:50 18:57	18:22 (AB01) 18:25 (AB01)	07:01 16:35	07:28 16:34
25	07:22 17:07	06:45 17:46	05:58 18:19	17:04 (AB01) 17:21 (AB01)	06:08 19:53	05:33 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	18:26 (AB01) 18:29 (AB01)	07:02 16:35	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	17:09 (AB01) 17:16 (AB01)	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	18:30 (AB01) 18:33 (AB01)	07:03 16:34	07:29 16:35
27	07:20 17:09	06:42 17:48	05:55 18:21	17:10 (AB01) 17:17 (AB01)	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:53 18:52	18:34 (AB01) 18:37 (AB01)	07:04 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	17:11 (AB01) 17:18 (AB01)	06:03 19:56	05:31 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	18:38 (AB01) 18:41 (AB01)	07:05 16:33	07:29 16:37
29	07:19 17:12	06:39 17:53	05:51 18:23	17:12 (AB01) 17:19 (AB01)	06:02 19:57	05:31 20:28	05:28 20:42	05:51 20:25	06:23 19:42	06:56 18:49	18:42 (AB01) 18:45 (AB01)	07:06 16:32	07:29 16:38
30	07:18 17:13	06:38 17:54	05:50 18:24	17:13 (AB01) 17:20 (AB01)	06:01 19:58	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	18:46 (AB01) 18:49 (AB01)	07:07 16:32	07:30 16:38
31	07:17 17:14	06:37 17:55	05:49 18:25	17:14 (AB01) 17:21 (AB01)	06:00 19:59	05:29 20:30	05:28 20:42	05:53 20:23	06:25 19:39	06:58 18:36	18:50 (AB01) 18:53 (AB01)	07:08 16:32	07:30 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285	
Total, worst case			546						357	188			
Sun reduction			0,49						0,46	0,52			
Oper. time red.			0,88						0,88	0,88			
Wind dir. red.			0,60						0,60	0,60			
Total reduction			0,26						0,24	0,27			
Total, real			139						87	51			

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: WF Abruzzo shadow flikering real caseShadow receptor: R054 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (94) Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

#### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	06:55 07:17 (AB03)	07:10 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	06:57 07:18 (AB03)	07:11 16:31
3	07:30 16:42	07:14 17:18	06:36 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	06:58 07:17 (AB03)	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	06:59 07:15 (AB03)	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:39 19:31	05:54 20:04	05:27 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	06:31 07:02 (AB03)	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	06:32 07:03 (AB03)	07:15 16:30
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	06:33 07:04 (AB03)	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	06:34 07:05 (AB03)	07:17 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:09	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	06:35 07:07 (AB03)	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	06:36 07:08 (AB03)	07:18 16:30
11	07:30 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:46	06:37 07:09 (AB03)	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	06:38 07:10 (AB03)	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:44 20:13	05:26 20:38	05:37 20:38	06:06 20:07	06:39 19:17	07:11 18:25	06:48 16:44	06:39 07:11 (AB03)	07:21 16:31
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:50 16:43	06:40 07:12 (AB03)	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	06:41 07:13 (AB03)	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	06:42 07:14 (AB03)	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	06:43 07:16 (AB03)	07:24 16:31
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	06:44 07:17 (AB03)	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:47	05:38 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	06:45 07:18 (AB03)	07:25 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	06:46 07:19 (AB03)	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	06:47 07:20 (AB03)	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:32	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	06:48 07:21 (AB03)	07:27 16:33
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:26 20:41	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35	06:49 07:23 (AB03)	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:42	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	06:50 07:24 (AB03)	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:25	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	06:51 07:25 (AB03)	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	06:52 07:26 (AB03)	07:29 16:36
27	07:21 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	07:27 17:04	07:05 16:33	06:53 07:27 (AB03)	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:31 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:28 17:02	07:06 16:33	06:54 07:28 (AB03)	07:29 16:37
29	07:19 17:12	06:39 17:50	05:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:30 17:01	07:07 16:32	06:55 07:29 (AB03)	07:30 16:38
30	07:18 17:13	06:38 17:51	05:50 19:24	06:01 19:59	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	07:31 17:00	07:08 16:32	06:56 07:30 (AB03)	07:30 16:39
31	07:17 17:14	06:37 17:52	05:49 19:25	06:00 19:59	05:30 20:30	05:29 20:42	05:53 20:23	06:25 19:39	06:32 16:58	07:32 17:00	07:09 16:33	06:57 07:31 (AB03)	07:30 16:39
Potential sun hours	295	296	391	400	451	456	462	430	375	344	296	285	285
Total, worst case			391		451	456	462	430	375	344	296	285	285
Sun reduction			0,55								114	0,59	
Oper. time red.			0,88								0,88	0,88	
Wind dir. red.			0,72								0,72	0,72	
Total reduction			0,35								0,37	0,37	
Total, real			136						93		42		

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

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

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R056 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (95) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:30	07:16	06:39	07:00 (AB03)	06:46	05:59	05:29	05:29	05:54	06:26	06:58	06:33	07:09	
	16:40	17:16	17:51	28 07:28 (AB03)	19:27	20:00	20:30	20:42	20:22	19:37	18:45	16:57	16:32	
2	07:30	07:15	06:37	07:00 (AB03)	06:45	05:58	05:29	05:30	05:55	06:27	06:59	06:35	07:11	
	16:41	17:17	17:52	27 07:27 (AB03)	19:28	20:01	20:31	20:41	20:21	19:36	18:44	16:56	16:31	
3	07:30	07:14	06:36	07:01 (AB03)	06:43	05:57	05:28	05:30	05:56	06:28	07:00	06:36	07:12	
	16:42	17:18	17:53	26 07:27 (AB03)	19:29	20:02	20:32	20:41	20:19	19:34	18:42	16:55	16:31	
4	07:30	07:13	06:34	07:01 (AB03)	06:41	05:55	05:28	05:31	05:57	06:29	07:01	06:37	07:13	
	16:43	17:19	17:55	25 07:26 (AB03)	19:30	20:03	20:33	20:41	20:18	19:32	18:40	16:53	16:31	
5	07:30	07:12	06:32	07:02 (AB03)	06:40	05:54	05:27	05:32	05:58	06:31	07:02	06:38	07:14	
	16:44	17:21	17:56	22 07:24 (AB03)	19:31	20:04	20:33	20:41	20:17	19:31	18:38	16:52	16:31	
6	07:30	07:11	06:31	07:04 (AB03)	06:38	05:53	05:27	05:32	05:59	06:32	07:03	07:43 (AB03)	06:40	07:15
	16:45	17:22	17:57	19 07:23 (AB03)	19:32	20:05	20:34	20:41	20:16	19:29	18:37	13 07:56 (AB03)	16:51	16:30
7	07:30	07:09	06:29	07:05 (AB03)	06:36	05:51	05:27	05:33	06:00	06:33	07:04	07:40 (AB03)	06:41	07:16
	16:46	17:23	17:58	15 07:20 (AB03)	19:33	20:06	20:35	20:40	20:15	19:27	18:35	18 07:58 (AB03)	16:50	16:30
8	07:30	07:08	06:27	07:08 (AB03)	06:35	05:50	05:27	05:33	06:01	06:34	07:05	07:38 (AB03)	06:42	07:17
	16:47	17:25	17:59	8 07:16 (AB03)	19:34	20:07	20:35	20:40	20:13	19:25	18:33	21 07:59 (AB03)	16:49	16:30
9	07:30	07:07	06:26		06:33	05:49	05:26	05:34	06:02	06:35	07:07	07:37 (AB03)	06:43	07:17
	16:48	17:26	18:00		19:35	20:09	20:36	20:40	20:12	19:24	18:32	23 08:00 (AB03)	16:48	16:30
10	07:30	07:06	06:24		06:31	05:48	05:26	05:35	06:03	06:36	07:08	07:35 (AB03)	06:45	07:18
	16:49	17:27	18:02		19:37	20:10	20:37	20:39	20:11	19:22	18:30	25 08:00 (AB03)	16:47	16:30
11	07:30	07:05	06:22		06:30	05:47	05:26	05:36	06:04	06:37	07:09	07:34 (AB03)	06:46	07:19
	16:50	17:29	18:03		19:38	20:11	20:37	20:39	20:09	19:20	18:28	27 08:01 (AB03)	16:46	16:30
12	07:29	07:03	06:21		06:28	05:46	05:26	05:36	06:05	06:38	07:10	07:34 (AB03)	06:47	07:20
	16:51	17:30	18:04		19:39	20:12	20:38	20:38	20:08	19:18	18:27	28 08:02 (AB03)	16:45	16:30
13	07:29	07:02	06:19		06:26	05:45	05:26	05:37	06:07	06:39	07:11	07:34 (AB03)	06:48	07:21
	16:52	17:31	18:05		19:40	20:13	20:38	20:38	20:07	19:17	18:25	28 08:02 (AB03)	16:44	16:31
14	07:29	07:01	06:17		06:25	05:43	05:26	05:38	06:08	06:40	07:12	07:33 (AB03)	06:50	07:22
	16:53	17:32	18:06		19:41	20:14	20:39	20:37	20:05	19:15	18:24	28 08:01 (AB03)	16:43	16:31
15	07:28	06:59	06:16		06:23	05:42	05:26	05:39	06:09	06:41	07:13	07:34 (AB03)	06:51	07:22
	16:55	17:34	18:07		19:42	20:15	20:39	20:37	20:04	19:13	18:22	27 08:01 (AB03)	16:42	16:31
16	07:28	06:58	06:14		06:22	05:41	05:26	05:39	06:10	06:42	07:14	07:35 (AB03)	06:52	07:23
	16:56	17:35	18:09		19:43	20:16	20:39	20:36	20:02	19:11	18:20	25 08:00 (AB03)	16:41	16:31
17	07:27	06:57	06:12		06:20	05:40	05:26	05:40	06:11	06:43	07:16	07:37 (AB03)	06:53	07:24
	16:57	17:36	18:10		19:44	20:17	20:40	20:35	20:01	19:10	18:19	24 08:01 (AB03)	16:40	16:31
18	07:27	06:55	06:10	07:15 (AB03)	06:18	05:39	05:26	05:41	06:12	06:44	07:17	07:38 (AB03)	06:54	07:24
	16:58	17:37	18:11	4 07:19 (AB03)	19:45	20:18	20:40	20:35	19:59	19:08	18:17	22 08:00 (AB03)	16:39	16:32
19	07:26	06:54	06:09	07:13 (AB03)	06:17	05:38	05:26	05:42	06:13	06:45	07:18	07:39 (AB03)	06:56	07:25
	16:59	17:39	18:12	9 07:22 (AB03)	19:47	20:19	20:40	20:34	19:58	19:06	18:16	20 07:59 (AB03)	16:38	16:32
20	07:26	06:52	06:07	07:12 (AB03)	06:15	05:38	05:26	05:43	06:14	06:46	07:19	07:40 (AB03)	06:57	07:26
	17:00	17:40	18:13	13 07:25 (AB03)	19:48	20:20	20:41	20:33	19:56	19:04	18:14	17 07:57 (AB03)	16:38	16:33
21	07:25	06:51	06:05	07:10 (AB03)	06:14	05:37	05:26	05:44	06:15	06:47	07:20	07:41 (AB03)	06:58	07:26
	17:02	17:41	18:14	16 07:26 (AB03)	19:49	20:21	20:41	20:32	19:55	19:03	18:13	15 07:56 (AB03)	16:37	16:33
22	07:24	06:49	06:04	07:09 (AB03)	06:12	05:36	05:26	05:45	06:16	06:48	07:21	07:43 (AB03)	06:59	07:27
	17:03	17:42	18:15	18 07:27 (AB03)	19:50	20:22	20:41	20:32	19:53	19:01	18:11	12 07:55 (AB03)	16:36	16:33
23	07:24	06:48	06:02	07:07 (AB03)	06:11	05:35	05:26	05:46	06:17	06:49	07:23	07:44 (AB03)	07:00	07:27
	17:04	17:44	18:16	20 07:27 (AB03)	19:51	20:23	20:41	20:31	19:52	18:59	18:10	8 07:52 (AB03)	16:35	16:34
24	07:23	06:46	06:00	07:06 (AB03)	06:09	05:34	05:27	05:46	06:18	06:50	07:24	07:45 (AB03)	07:02	07:28
	17:05	17:45	18:18	22 07:28 (AB03)	19:52	20:24	20:42	20:30	19:50	18:57	18:08	2 07:47 (AB03)	16:35	16:35
25	07:22	06:45	05:58	07:04 (AB03)	06:08	05:34	05:27	05:47	06:19	06:51	06:25		07:03	07:28
	17:07	17:46	18:19	24 07:28 (AB03)	19:53	20:25	20:42	20:29	19:49	18:56	17:07		16:34	16:35
26	07:21	06:43	05:57	07:03 (AB03)	06:06	05:33	05:27	05:48	06:20	06:52	06:26		07:04	07:29
	17:08	17:47	18:20	26 07:29 (AB03)	19:54	20:25	20:42	20:28	19:47	18:54	17:05		16:34	16:36
27	07:21	06:42	05:55	07:01 (AB03)	06:05	05:32	05:28	05:49	06:21	06:54	06:27		07:05	07:29
	17:09	17:49	18:21	28 07:29 (AB03)	19:55	20:26	20:42	20:27	19:45	18:52	17:04		16:33	16:36
28	07:20	06:40	05:53	07:01 (AB03)	06:03	05:31	05:28	05:50	06:22	06:55	06:29		07:06	07:29
	17:10	17:50	18:22	28 07:29 (AB03)	19:56	20:27	20:42	20:26	19:44	18:50	17:02		16:33	16:37
29	07:19		06:52		06:02	05:31	05:29	05:51	06:23	06:56	06:30		07:07	07:30
	17:12		19:23		19:58	20:28	20:42	20:25	19:42	18:49	17:01		16:32	16:38
30	07:18		06:50		06:01	05:30	05:29	05:52	06:24	06:57	06:31		07:08	07:30
	17:13		19:24		19:59	20:29	20:42	20:24	19:41	18:47	17:00		16:32	16:39
31	07:17		06:48			05:30		05:53	06:25		06:32		07:30	
	17:14		19:25			20:30		20:23	19:39		16:58		16:39	
Potential sun hours	295	296	369	400	451	456	462	430	375	344		296	285	
Total, worst case		208	170								383			
Sun reduction		0,55	0,49								0,52			
Oper. time red.		0,88	0,88								0,88			
Wind dir. red.		0,69	0,69								0,69			
Total reduction		0,33	0,30								0,32			
Total, real		69	50								121			

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: WF Abruzzo shadow flikering real caseShadow receptor: R057 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (96) Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June	July	August	September	October	November	December															
1	07:30   07:16	06:39	06:58 (AB03)	06:46	05:59	05:29	05:29	05:54	06:26	06:58	07:41 (AB03)	06:33	07:09														
2	16:40   17:16	17:51	23 07:21 (AB03)	19:27	20:00	20:30	20:42	20:22	19:37	18:45	6 07:47 (AB03)	16:57	16:32														
3	07:30   07:15	06:37	06:56 (AB03)	06:45	05:58	05:29	05:30	05:55	06:27	06:59	07:36 (AB03)	06:35	07:11														
4	16:41   17:17	17:52	25 07:21 (AB03)	19:28	20:01	20:31	20:41	20:21	19:36	18:44	14 07:50 (AB03)	16:56	16:31														
5	07:30   07:14	06:36	06:55 (AB03)	06:43	05:57	05:28	05:30	05:56	06:28	07:00	07:34 (AB03)	06:36	07:12														
6	16:42   17:18	17:53	26 07:21 (AB03)	19:29	20:02	20:32	20:41	20:19	19:34	18:42	18 07:52 (AB03)	16:55	16:31														
7	07:30   07:13	06:34	06:53 (AB03)	06:41	05:55	05:28	05:31	05:57	06:30	07:01	07:32 (AB03)	06:37	07:13														
8	16:43   17:19	17:55	28 07:21 (AB03)	19:30	20:03	20:33	20:41	20:18	19:32	18:40	21 07:53 (AB03)	16:53	16:31														
9	07:30   07:12	06:32	06:52 (AB03)	06:40	05:54	05:27	05:32	05:58	06:31	07:02	07:31 (AB03)	06:38	07:14														
10	16:44   17:21	17:56	28 07:20 (AB03)	19:31	20:04	20:33	20:41	20:17	19:31	18:38	24 07:55 (AB03)	16:52	16:31														
11	07:30   07:11	06:31	06:53 (AB03)	06:38	05:53	05:27	05:32	05:59	06:32	07:03	07:30 (AB03)	06:40	07:15														
12	16:45   17:22	17:57	27 07:20 (AB03)	19:32	20:05	20:34	20:41	20:16	19:29	18:37	25 07:55 (AB03)	16:51	16:30														
13	07:30   07:09	06:29	06:53 (AB03)	06:36	05:51	05:27	05:33	06:00	06:33	07:04	07:29 (AB03)	06:41	07:16														
14	16:46   17:23	17:58	26 07:19 (AB03)	19:33	20:06	20:35	20:40	20:15	19:27	18:35	27 07:56 (AB03)	16:50	16:30														
15	07:30   07:08	06:27	06:53 (AB03)	06:35	05:50	05:27	05:33	06:01	06:34	07:05	07:28 (AB03)	06:42	07:17														
16	16:47   17:25	17:59	25 07:18 (AB03)	19:34	20:07	20:35	20:40	20:13	19:25	18:33	28 07:56 (AB03)	16:49	16:30														
17	07:30   07:07	06:26	06:55 (AB03)	06:33	05:49	05:26	05:34	06:02	06:35	07:07	07:28 (AB03)	06:43	07:17														
18	16:48   17:26	18:00	22 07:17 (AB03)	19:35	20:09	20:36	20:40	20:12	19:24	18:32	27 07:55 (AB03)	16:48	16:30														
19	07:30   07:06	06:24	06:55 (AB03)	06:31	05:48	05:26	05:35	06:03	06:36	07:08	07:28 (AB03)	06:45	07:18														
20	16:49   17:27	18:02	20 07:15 (AB03)	19:37	20:10	20:37	20:39	20:11	19:22	18:30	27 07:55 (AB03)	16:47	16:30														
21	07:30   07:05	06:22	06:57 (AB03)	06:30	05:47	05:26	05:36	06:04	06:37	07:09	07:29 (AB03)	06:46	07:19														
22	16:50   17:29	18:03	16 07:13 (AB03)	19:38	20:11	20:37	20:39	20:09	19:20	18:28	26 07:55 (AB03)	16:46	16:30														
23	07:29   07:03	06:21	07:00 (AB03)	06:28	05:46	05:26	05:36	06:05	06:38	07:10	07:31 (AB03)	06:47	07:20														
24	16:51   17:30	18:04	10 07:10 (AB03)	19:39	20:12	20:38	20:38	20:08	19:18	18:27	24 07:55 (AB03)	16:45	16:30														
25	07:29   07:02	06:19		06:26	05:45	05:26	05:37	06:07	06:39	07:11	07:32 (AB03)	06:48	07:21														
26	16:52   17:31	18:05		19:40	20:13	20:38	20:38	20:07	19:17	18:25	22 07:54 (AB03)	16:44	16:31														
27	07:29   07:01	06:17		06:25	05:43	05:26	05:38	06:08	06:40	07:12	07:33 (AB03)	06:50	07:22														
28	16:53   17:32	18:06		19:41	20:14	20:39	20:37	20:05	19:15	18:24	20 07:53 (AB03)	16:43	16:31														
29	07:28   06:59	06:16		06:23	05:42	05:26	05:39	06:09	06:41	07:13	07:34 (AB03)	06:51	07:22														
30	16:55   17:34	18:07		19:42	20:15	20:39	20:37	20:04	19:13	18:22	18 07:52 (AB03)	16:42	16:31														
31	07:28   06:58	06:14		06:22	05:41	05:26	05:39	06:10	06:42	07:14	07:35 (AB03)	06:52	07:23														
32	16:56   17:35	18:09		19:43	20:16	20:39	20:36	20:02	19:11	18:20	15 07:50 (AB03)	16:41	16:31														
33	07:27   06:57	06:12		06:20	05:40	05:26	05:40	06:11	06:43	07:16	07:37 (AB03)	06:53	07:24														
34	16:57   17:36	18:10		19:44	20:17	20:40	20:35	20:01	19:10	18:19	12 07:49 (AB03)	16:40	16:31														
35	07:27   06:55	06:10		06:18	05:39	05:26	05:41	06:12	06:44	07:17	07:38 (AB03)	06:54	07:24														
36	16:58   17:37	18:11		19:45	20:18	20:40	20:35	19:59	19:08	18:17	8 07:46 (AB03)	16:39	16:32														
37	07:26   06:54	06:09		06:17	05:39	05:26	05:42	06:13	06:45	07:18	07:39 (AB03)	06:56	07:25														
38	16:59   17:39	18:12		19:47	20:19	20:40	20:34	19:58	19:06	18:16	3 07:42 (AB03)	16:38	16:32														
39	07:26   06:52	06:07		06:15	05:38	05:26	05:43	06:14	06:46	07:19		06:57	07:26														
40	17:00   17:40	18:13		19:48	20:20	20:41	20:33	19:56	19:04	18:14		16:38	16:33														
41	07:25   06:51	06:05		06:14	05:37	05:26	05:44	06:15	06:47	07:20		06:58	07:26														
42	17:02   17:41	18:14		19:49	20:21	20:41	20:32	19:55	19:03	18:13		16:37	16:33														
43	07:24   06:49	06:04		06:12	05:36	05:26	05:45	06:16	06:48	07:21		06:59	07:27														
44	17:03   17:42	18:15		19:50	20:22	20:41	20:32	19:53	19:01	18:11		16:36	16:33														
45	07:24   06:48	06:02	07:07 (AB03)	06:02	06:11	05:35	05:26	05:46	06:17	06:49	07:23	07:00	07:27														
46	17:04   17:44	18:16	5 07:12 (AB03)	18:16	19:51	20:23	20:41	20:31	19:52	18:59	18:10	16:35	16:34														
47	07:23   06:46	06:06	07:06 (AB03)	06:00	06:09	05:34	05:27	05:46	06:18	06:50	07:24	07:02	07:28														
48	17:05   17:45	18:18	10 07:16 (AB03)	18:18	19:52	20:24	20:42	20:30	19:50	18:57	18:08	16:35	16:35														
49	07:22   06:45	06:04	07:04 (AB03)	05:58	06:08	05:34	05:27	05:47	06:19	06:51	06:25	07:03	07:28														
50	17:07   17:46	18:19	13 07:17 (AB03)	18:19	19:53	20:25	20:42	20:29	19:49	18:56	17:07	16:34	16:35														
51	07:21   06:43	06:03	07:03 (AB03)	05:57	06:06	05:33	05:27	05:48	06:20	06:52	06:26	07:04	07:29														
52	17:08   17:47	18:20	16 07:19 (AB03)	18:20	19:54	20:25	20:42	20:28	19:47	18:54	17:05	16:34	16:36														
53	07:21   06:42	06:05	07:01 (AB03)	05:55	06:05	05:32	05:28	05:49	06:21	06:54	06:27	07:05	07:29														
54	17:09   17:49	18:21	19 07:20 (AB03)	18:21	19:55	20:26	20:42	20:27	19:45	18:52	17:04	16:33	16:36														
55	07:20   06:40	06:03	07:00 (AB03)	05:53	06:03	05:31	05:28	05:50	06:22	06:55	06:29	07:06	07:29														
56	17:10   17:50	18:22	21 07:21 (AB03)	18:22	19:56	20:27	20:42	20:26	19:44	18:50	17:02	16:33	16:37														
57	07:19   06:43	06:02		06:02	05:31	05:29	05:51	06:23	06:56	06:30		07:07	07:30														
58	17:12   17:52	18:24		19:57	20:28	20:42	20:25	19:42	18:49	17:01		16:32	16:38														
59	07:18   06:47	06:05		06:01	05:30	05:29	05:52	06:24	06:57	06:31		07:08	07:30														
60	17:13   17:53	18:25		19:58	20:29	20:42	20:24	19:41	18:47	17:00		16:32	16:39														
61	07:17   06:48	06:04		06:00	05:30	05:29	05:53	06:25	06:32	06:32		07:30	07:30														
62	17:14   17:54	18:26		19:59	20:30	20:42	20:23	19:39	18:45	16:58		16:39	16:39														
63	Potential sun hours	295		296		369		400		451		456		462		430		375		344		365		296		285	
64	Total, worst case			84		276															365						285
65	Sun reduction			0,55		0,49															0,52						0,52
66	Oper. time red.			0,88		0,88															0,88						0,88
67	Wind dir. red.			0,68		0,68															0,68						0,68
68	Total reduction			0,33		0,29															0,31						0,31
69	Total, real			28		81															114						114

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: WF Abruzzo shadow flickering real caseShadow receptor: R061 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (97)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	
1	07:30 16:40	07:16 17:15	06:39 17:51	06:46 19:26	18:26 (AB03) 19:02 (AB03)	05:59 20:00	
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	18:25 (AB03) 19:03 (AB03)	05:29 20:31	
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	18:25 (AB03) 19:04 (AB03)	05:28 20:32	
4	07:30 16:43	07:13 17:19	06:34 17:54	17:32 (AB04) 17:33 (AB04)	06:41 19:30	18:24 (AB03) 19:04 (AB03)	05:55 20:03
5	07:30 16:44	07:12 17:21	06:32 17:56	17:30 (AB04) 17:34 (AB04)	06:40 19:31	18:23 (AB03) 19:05 (AB03)	05:54 20:04
6	07:30 16:45	07:10 17:22	06:31 17:57	17:30 (AB04) 17:36 (AB04)	06:38 19:32	18:23 (AB03) 19:05 (AB03)	05:53 20:05
7	07:30 16:46	07:09 17:23	06:29 17:58	17:29 (AB04) 17:37 (AB04)	06:36 19:33	18:23 (AB03) 19:05 (AB03)	05:51 20:06
8	07:30 16:47	07:08 17:25	06:27 17:59	17:28 (AB04) 17:37 (AB04)	06:34 19:34	18:22 (AB03) 19:04 (AB03)	05:50 20:07
9	07:30 16:48	07:07 17:26	06:26 18:00	17:29 (AB04) 17:39 (AB04)	06:33 19:35	18:23 (AB03) 19:04 (AB03)	05:49 20:08
10	07:30 16:49	07:06 17:27	06:24 18:02	17:29 (AB04) 17:40 (AB04)	06:31 19:36	18:23 (AB03) 19:03 (AB03)	05:48 20:09
11	07:29 16:50	07:04 17:28	06:22 18:03	17:29 (AB04) 17:41 (AB04)	06:30 19:38	18:23 (AB03) 19:02 (AB03)	05:47 20:11
12	07:29 16:51	07:03 17:30	06:21 18:04	17:30 (AB04) 17:43 (AB04)	06:28 19:39	18:24 (AB03) 19:01 (AB03)	05:45 20:12
13	07:29 16:52	07:02 17:31	06:19 18:05	17:31 (AB04) 17:44 (AB04)	06:26 19:40	18:24 (AB03) 19:00 (AB03)	05:44 20:13
14	07:28 16:53	07:01 17:32	06:17 18:06	17:32 (AB04) 17:43 (AB04)	06:25 19:41	18:24 (AB03) 18:58 (AB03)	05:43 20:14
15	07:28 16:54	06:59 17:34	06:15 18:07	06:23 19:42	18:26 (AB03) 18:58 (AB03)	05:42 20:15	05:25 20:39
16	07:28 16:56	06:58 17:35	06:14 18:08	06:21 19:43	18:26 (AB03) 18:56 (AB03)	05:41 20:16	05:25 20:39
17	07:27 16:57	06:56 17:36	06:12 18:10	06:20 19:44	18:28 (AB03) 18:54 (AB03)	05:40 20:17	05:26 20:40
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	18:29 (AB03) 18:52 (AB03)	05:39 20:18	05:26 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	18:32 (AB03) 18:50 (AB03)	05:38 20:19	05:26 20:40
20	07:25 17:00	06:52 17:40	06:07 18:13	06:15 19:48	18:36 (AB03) 18:45 (AB03)	05:37 20:20	05:26 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:26 20:41
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:26 20:41
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:26 20:41	05:26 20:41
24	07:23 17:05	06:46 17:45	06:00 18:17	17:42 (AB03) 17:54 (AB03)	06:09 19:52	05:34 20:23	05:27 20:41
25	07:22 17:07	06:45 17:46	05:58 18:19	17:37 (AB03) 17:57 (AB03)	06:08 19:53	05:33 20:24	05:27 20:42
26	07:21 17:08	06:43 17:47	05:57 18:20	17:34 (AB03) 17:58 (AB03)	06:06 19:54	05:33 20:25	05:27 20:42
27	07:20 17:09	06:42 17:48	05:55 18:21	17:33 (AB03) 18:00 (AB03)	06:05 19:55	05:32 20:26	05:28 20:42
28	07:20 17:10	06:40 17:50	05:53 18:22	17:31 (AB03) 18:00 (AB03)	06:03 19:56	05:31 20:27	05:28 20:42
29	07:19 17:12	06:40 19:23	06:51 19:23	18:29 (AB03) 19:00 (AB03)	06:02 19:57	05:31 20:28	05:28 20:42
30	07:18 17:13	06:40 19:24	06:50 19:24	18:27 (AB03) 19:01 (AB03)	06:00 19:59	05:30 20:29	05:29 20:42
31	07:17 17:14	06:48 19:25	06:48 19:25	18:27 (AB03) 19:02 (AB03)	05:30 20:30	05:30 20:30	05:29 20:42
Potential sun hours	295	296	369	400	451	456	
Total, worst case			310	686			
Sun reduction			0,49	0,44			
Oper. time red.			0,88	0,88			
Wind dir. red.			0,64	0,66			
Total reduction			0,27	0,25			
Total, real			85	172			

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: WF Abruzzo shadow flickering real caseShadow receptor: R061 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (97)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December		
1	05:29 20:41	05:54 20:22	06:26 19:37	18:22 (AB03) 19:01 (AB03)	06:58 18:45	18:09 (AB04) 18:22 (AB04)	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:20	06:27 19:35	18:21 (AB03) 19:01 (AB03)	06:59 18:43	18:08 (AB04) 18:20 (AB04)	06:35 16:56	07:10 16:31
3	05:30 20:41	05:56 20:19	06:28 19:34	18:20 (AB03) 19:01 (AB03)	07:00 18:42	18:07 (AB04) 18:18 (AB04)	06:36 16:55	07:11 16:31
4	05:31 20:41	05:57 20:18	06:29 19:32	18:19 (AB03) 19:01 (AB03)	07:01 18:40	18:06 (AB04) 18:17 (AB04)	06:37 16:53	07:13 16:31
5	05:32 20:41	05:58 20:17	06:30 19:30	18:19 (AB03) 19:01 (AB03)	07:02 18:38	18:05 (AB04) 18:15 (AB04)	06:38 16:52	07:14 16:31
6	05:32 20:40	05:59 20:16	06:31 19:29	18:18 (AB03) 19:00 (AB03)	07:03 18:37	18:06 (AB04) 18:14 (AB04)	06:40 16:51	07:15 16:30
7	05:33 20:40	06:00 20:14	06:33 19:27	18:18 (AB03) 19:00 (AB03)	07:04 18:35	18:06 (AB04) 18:12 (AB04)	06:41 16:50	07:15 16:30
8	05:33 20:40	06:01 20:13	06:34 19:25	18:18 (AB03) 18:59 (AB03)	07:05 18:33	18:06 (AB04) 18:10 (AB04)	06:42 16:49	07:16 16:30
9	05:34 20:39	06:02 20:12	06:35 19:24	18:18 (AB03) 18:57 (AB03)	07:06 18:32	18:06 (AB04) 18:08 (AB04)	06:43 16:48	07:17 16:30
10	05:35 20:39	06:03 20:11	06:36 19:22	18:18 (AB03) 18:56 (AB03)	07:08 18:30		06:44 16:46	07:18 16:30
11	05:35 20:39	06:04 20:09	06:37 19:20	18:18 (AB03) 18:55 (AB03)	07:09 18:28		06:46 16:45	07:19 16:30
12	05:36 20:38	06:05 20:08	06:38 19:18	18:18 (AB03) 18:53 (AB03)	07:10 18:27		06:47 16:44	07:20 16:30
13	05:37 20:38	06:06 20:07	06:39 19:17	18:18 (AB03) 18:52 (AB03)	07:11 18:25		06:48 16:43	07:21 16:30
14	05:38 20:37	06:07 20:05	06:40 19:15	18:19 (AB03) 18:51 (AB03)	07:12 18:23		06:49 16:42	07:22 16:31
15	05:39 20:36	06:09 20:04	06:41 19:13	18:20 (AB03) 18:50 (AB03)	07:13 18:22		06:51 16:42	07:22 16:31
16	05:39 20:36	06:10 20:02	06:42 19:11	18:21 (AB03) 18:48 (AB03)	07:14 18:20		06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	06:43 19:10	18:22 (AB03) 18:47 (AB03)	07:15 18:19		06:53 16:40	07:24 16:31
18	05:41 20:34	06:12 19:59	06:44 19:08	18:24 (AB03) 18:45 (AB03)	07:17 18:17		06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	18:27 (AB03) 18:42 (AB03)	07:18 18:16		06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	06:46 19:04		07:19 18:14		06:57 16:37	07:26 16:32
21	05:44 20:32	06:15 19:55	06:47 19:03		07:20 18:12		06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 19:53	06:48 19:01		07:21 18:11		06:59 16:36	07:27 16:33
23	05:45 20:31	06:17 19:52	18:39 (AB03) 18:49 (AB03)	06:49 18:59	07:22 18:09		07:00 16:35	07:27 16:34
24	05:46 20:30	06:18 19:50	18:35 (AB03) 18:53 (AB03)	06:50 18:57	07:24 18:08		07:01 16:35	07:28 16:34
25	05:47 20:29	06:19 19:49	18:32 (AB03) 18:55 (AB03)	06:51 18:56	06:25 17:07		07:03 16:34	07:28 16:35
26	05:48 20:28	06:20 19:47	18:30 (AB03) 18:56 (AB03)	06:52 18:54	06:26 17:05		07:04 16:34	07:28 16:36
27	05:49 20:27	06:21 19:45	18:28 (AB03) 18:58 (AB03)	06:53 18:52	06:27 17:04		07:05 16:33	07:29 16:36
28	05:50 20:26	06:22 19:44	18:26 (AB03) 18:59 (AB03)	06:54 18:50	06:28 17:02		07:06 16:33	07:29 16:37
29	05:51 20:25	06:23 19:42	18:25 (AB03) 18:59 (AB03)	06:56 18:49	18:14 (AB04) 18:23 (AB04)	06:30 17:01	07:07 16:32	07:29 16:38
30	05:52 20:24	06:24 19:40	18:24 (AB03) 19:00 (AB03)	06:57 18:47	18:11 (AB04) 18:24 (AB04)	06:31 17:00	07:08 16:32	07:30 16:38
31	05:53 20:23	06:25 19:39	18:23 (AB03) 19:00 (AB03)		06:32 16:58			07:30 16:39
Potential sun hours	462	430	375	344		296		285
Total, worst case		247	684		77			
Sun reduction		0,42	0,46		0,52			
Oper. time red.		0,88	0,88		0,88			
Wind dir. red.		0,66	0,66		0,61			
Total reduction		0,24	0,27		0,28			
Total, real		60	183		22			

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: WF Abruzzo shadow flickering real caseShadow receptor: R065 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (98)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30	15:40 (AB01)   07:16	15:50 (AB01)   06:39	06:46	05:59	05:29
	16:40	9 15:49 (AB01)   17:16	34 16:24 (AB01)   17:51	19:26	20:00	20:30
2	07:30	15:40 (AB01)   07:15	15:51 (AB01)   06:37	06:45	05:58	05:29
	16:41	10 15:50 (AB01)   17:17	35 16:26 (AB01)   17:52	19:28	20:01	20:31
3	07:30	15:40 (AB01)   07:14	15:52 (AB01)   06:35	06:43	05:56	05:28
	16:42	11 15:51 (AB01)   17:18	35 16:27 (AB01)   17:53	19:29	20:02	20:32
4	07:30	15:41 (AB01)   07:13	15:53 (AB01)   06:34	06:41	05:55	05:28
	16:43	11 15:52 (AB01)   17:19	36 16:29 (AB01)   17:55	19:30	20:03	20:33
5	07:30	15:41 (AB01)   07:12	15:55 (AB01)   06:32	06:40	05:54	05:27
	16:44	12 15:53 (AB01)   17:21	35 16:30 (AB01)   17:56	19:31	20:04	20:33
6	07:30	15:41 (AB01)   07:11	15:56 (AB01)   06:31	06:38	05:53	05:27
	16:45	13 15:54 (AB01)   17:22	36 16:32 (AB01)   17:57	19:32	20:05	20:34
7	07:30	15:42 (AB01)   07:09	15:57 (AB01)   06:29	06:36	05:51	05:27
	16:46	13 15:55 (AB01)   17:23	35 16:32 (AB01)   17:58	19:33	20:06	20:35
8	07:30	15:42 (AB01)   07:08	15:58 (AB01)   06:27	06:35	05:50	05:26
	16:47	14 15:56 (AB01)   17:25	36 16:34 (AB01)   17:59	19:34	20:07	20:35
9	07:30	15:42 (AB01)   07:07	16:00 (AB01)   06:26	06:33	05:49	05:26
	16:48	14 15:56 (AB01)   17:26	35 16:35 (AB01)   18:00	19:35	20:08	20:36
10	07:30	15:42 (AB01)   07:06	16:03 (AB01)   06:24	06:31	05:48	05:26
	16:49	16 15:58 (AB01)   17:27	30 16:33 (AB01)   18:02	19:36	20:10	20:37
11	07:29	15:43 (AB01)   07:05	16:04 (AB01)   06:22	06:30	05:47	05:26
	16:50	16 15:59 (AB01)   17:28	26 16:30 (AB01)   18:03	19:38	20:11	20:37
12	07:29	15:42 (AB01)   07:03	16:08 (AB01)   06:21	06:28	05:46	05:26
	16:51	18 16:00 (AB01)   17:30	20 16:28 (AB01)   18:04	19:39	20:12	20:38
13	07:29	15:43 (AB01)   07:02	16:13 (AB01)   06:19	06:26	05:44	05:26
	16:52	18 16:01 (AB01)   17:31	10 16:23 (AB01)   18:05	19:40	20:13	20:38
14	07:29	15:43 (AB01)   07:01	06:17	06:25	05:43	05:26
	16:53	19 16:02 (AB01)   17:32	18:06	19:41	20:14	20:39
15	07:28	15:43 (AB01)   06:59	06:16	06:23	05:42	05:25
	16:54	20 16:03 (AB01)   17:34	18:07	19:42	20:15	20:39
16	07:28	15:43 (AB01)   06:58	06:14	06:21	05:41	05:25
	16:56	21 16:04 (AB01)   17:35	18:09	19:43	20:16	20:39
17	07:27	15:44 (AB01)   06:57	06:12	06:20	05:40	05:26
	16:57	22 16:06 (AB01)   17:36	18:10	19:44	20:17	20:40
18	07:27	15:44 (AB01)   06:55	06:10	06:18	05:39	05:26
	16:58	23 16:07 (AB01)   17:37	18:11	19:45	20:18	20:40
19	07:26	15:45 (AB01)   06:54	06:09	06:17	05:38	05:26
	16:59	23 16:08 (AB01)   17:39	18:12	19:46	20:19	20:40
20	07:26	15:45 (AB01)   06:52	06:07	06:15	05:38	05:26
	17:00	24 16:09 (AB01)   17:40	18:13	19:48	20:20	20:41
21	07:25	15:45 (AB01)   06:51	06:05	06:14	05:37	05:26
	17:02	25 16:10 (AB01)   17:41	18:14	19:49	20:21	20:41
22	07:24	15:45 (AB01)   06:49	06:04	06:12	05:36	05:26
	17:03	26 16:11 (AB01)   17:42	18:15	19:50	20:22	20:41
23	07:24	15:46 (AB01)   06:48	06:02	06:11	05:35	05:26
	17:04	27 16:13 (AB01)   17:44	18:16	19:51	20:23	20:41
24	07:23	15:46 (AB01)   06:46	06:00	06:09	05:34	05:27
	17:05	29 16:15 (AB01)   17:45	18:18	19:52	20:24	20:41
25	07:22	15:46 (AB01)   06:45	05:58	06:08	05:33	05:27
	17:07	30 16:16 (AB01)   17:46	18:19	19:53	20:24	20:42
26	07:21	15:47 (AB01)   06:43	05:57	06:06	05:33	05:27
	17:08	30 16:17 (AB01)   17:47	18:20	19:54	20:25	20:42
27	07:20	15:47 (AB01)   06:42	05:55	06:05	05:32	05:28
	17:09	31 16:18 (AB01)   17:48	18:21	19:55	20:26	20:42
28	07:20	15:48 (AB01)   06:40	05:53	06:03	05:31	05:28
	17:10	31 16:19 (AB01)   17:50	18:22	19:56	20:27	20:42
29	07:19	15:48 (AB01)	06:51	06:02	05:31	05:28
	17:12	32 16:20 (AB01)	19:23	19:58	20:28	20:42
30	07:18	15:49 (AB01)	06:50	06:01	05:30	05:29
	17:13	33 16:22 (AB01)	19:24	19:59	20:29	20:42
31	07:17	15:50 (AB01)	06:48		05:30	
	17:14	33 16:23 (AB01)	19:25		20:30	
Potential sun hours	295	296	369	400	451	456
Total, worst case	654	403				
Sun reduction	0,61	0,55				
Oper. time red.	0,88	0,88				
Wind dir. red.	0,54	0,54				
Total reduction	0,29	0,26				
Total, real	189	105				

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: WF Abruzzo shadow flickering real caseShadow receptor: R065 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (98)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December	
1	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	15:31 (AB01) 07:09 16:32	15:25 (AB01) 15:41 (AB01)
2	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:43	06:35 16:56	15:30 (AB01) 16:05 (AB01) 16:31	15:25 (AB01) 15:41 (AB01)
3	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	15:28 (AB01) 16:03 (AB01) 16:31	15:26 (AB01) 15:40 (AB01)
4	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	15:26 (AB01) 16:02 (AB01) 16:31	15:26 (AB01) 15:40 (AB01)
5	05:32 20:41	05:58 20:17	06:30 19:30	07:02 18:38	06:38 16:52	15:26 (AB01) 16:01 (AB01) 16:31	15:27 (AB01) 15:40 (AB01)
6	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	15:24 (AB01) 16:00 (AB01) 16:30	15:27 (AB01) 15:40 (AB01)
7	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	15:23 (AB01) 16:00 (AB01) 16:30	15:28 (AB01) 15:40 (AB01)
8	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	15:23 (AB01) 15:58 (AB01) 16:30	15:29 (AB01) 15:40 (AB01)
9	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	15:22 (AB01) 15:56 (AB01) 16:30	15:29 (AB01) 15:40 (AB01)
10	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:46	15:21 (AB01) 15:55 (AB01) 16:30	15:30 (AB01) 15:40 (AB01)
11	05:35 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:45	15:21 (AB01) 15:55 (AB01) 16:30	15:30 (AB01) 15:39 (AB01)
12	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	15:21 (AB01) 15:54 (AB01) 16:30	15:31 (AB01) 15:39 (AB01)
13	05:37 20:38	06:06 20:07	06:39 19:17	07:11 18:25	06:48 16:43	15:20 (AB01) 15:52 (AB01) 16:30	15:31 (AB01) 15:40 (AB01)
14	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:23	06:50 16:42	15:21 (AB01) 15:52 (AB01) 16:31	15:32 (AB01) 15:40 (AB01)
15	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	15:20 (AB01) 15:51 (AB01) 16:31	15:33 (AB01) 15:41 (AB01)
16	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	15:20 (AB01) 15:50 (AB01) 16:31	15:33 (AB01) 15:40 (AB01)
17	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	15:20 (AB01) 15:50 (AB01) 16:31	15:34 (AB01) 15:41 (AB01)
18	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	15:20 (AB01) 15:48 (AB01) 16:32	15:35 (AB01) 15:41 (AB01)
19	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	15:20 (AB01) 15:47 (AB01) 16:32	15:35 (AB01) 15:41 (AB01)
20	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:37	15:20 (AB01) 15:46 (AB01) 16:32	15:36 (AB01) 15:42 (AB01)
21	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	15:21 (AB01) 15:46 (AB01) 16:33	15:36 (AB01) 15:42 (AB01)
22	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	15:21 (AB01) 15:45 (AB01) 16:33	15:37 (AB01) 15:43 (AB01)
23	05:45 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35	15:21 (AB01) 15:45 (AB01) 16:34	15:37 (AB01) 15:43 (AB01)
24	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	15:21 (AB01) 15:44 (AB01) 16:34	15:37 (AB01) 15:43 (AB01)
25	05:47 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	15:22 (AB01) 15:44 (AB01) 16:35	15:38 (AB01) 15:44 (AB01)
26	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34	15:22 (AB01) 15:43 (AB01) 16:36	15:38 (AB01) 15:45 (AB01)
27	05:49 20:27	06:21 19:45	06:53 18:52	06:27 17:04	07:05 16:33	15:22 (AB01) 15:42 (AB01) 16:36	15:38 (AB01) 15:45 (AB01)
28	05:50 20:26	06:22 19:44	06:55 18:50	06:29 17:02	07:06 16:33	15:23 (AB01) 15:42 (AB01) 16:37	15:39 (AB01) 15:46 (AB01)
29	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	15:41 (AB01) 16:32	15:23 (AB01) 15:41 (AB01) 16:38	15:39 (AB01) 15:47 (AB01)
30	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00	15:37 (AB01) 16:32	15:24 (AB01) 15:42 (AB01) 16:38	15:39 (AB01) 15:47 (AB01)
31	05:53 20:23	06:25 19:39	06:58 18:45	06:32 17:00	15:33 (AB01) 16:01 (AB01)	15:24 (AB01) 15:42 (AB01) 16:39	15:40 (AB01) 15:48 (AB01)
Potential sun hours	462	430	375	344	296	285	
Total, worst case				62	862		279
Sun reduction				0,52	0,59		0,63
Oper. time red.				0,88	0,88		0,88
Wind dir. red.				0,54	0,54		0,54
Total reduction				0,25	0,28		0,30
Total, real				15	241		84

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: WF Abruzzo shadow flickering real caseShadow receptor: R066 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (99)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

January		February	March	April	May	June	July	August	September	October	November	December	
1	07:30 16:40	15:21 (AB01) 16:01 (AB01)	07:16 17:15	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	07:09 16:32	
2	07:30 16:41	15:21 (AB01) 16:01 (AB01)	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:43	07:11 16:31	
3	07:30 16:42	15:22 (AB01) 16:02 (AB01)	07:14 17:18	06:35 17:53	06:43 19:29	05:56 20:02	05:28 20:32	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	07:00 16:55	
4	07:30 16:43	15:23 (AB01) 16:03 (AB01)	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	
5	07:30 16:44	15:23 (AB01) 16:04 (AB01)	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:27 20:33	05:32 20:41	05:58 20:17	06:30 19:30	07:02 18:38	06:38 16:52	
6	07:30 16:45	15:24 (AB01) 16:05 (AB01)	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	
7	07:30 16:46	15:25 (AB01) 16:06 (AB01)	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	
8	07:30 16:47	15:26 (AB01) 16:07 (AB01)	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:26 20:35	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	
9	07:30 16:48	15:26 (AB01) 16:07 (AB01)	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	
10	07:30 16:49	15:27 (AB01) 16:09 (AB01)	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:46	
11	07:29 16:50	15:28 (AB01) 16:10 (AB01)	07:05 17:28	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:35 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:45	
12	07:29 16:51	15:28 (AB01) 16:10 (AB01)	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	
13	07:29 16:52	15:29 (AB01) 16:12 (AB01)	07:02 17:31	06:19 18:05	06:26 19:40	05:44 20:13	05:26 20:38	05:37 20:38	06:06 20:07	06:39 19:17	07:11 18:25	06:48 16:43	
14	07:29 16:53	15:29 (AB01) 16:12 (AB01)	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:23	06:50 16:42	
15	07:28 16:54	15:31 (AB01) 16:14 (AB01)	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:25 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	
16	07:28 16:56	15:31 (AB01) 16:14 (AB01)	06:58 17:35	06:14 18:09	06:21 19:43	05:41 20:16	05:25 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	
17	07:27 16:57	15:33 (AB01) 16:16 (AB01)	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	
18	07:27 16:58	15:33 (AB01) 16:17 (AB01)	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	
19	07:26 16:59	15:35 (AB01) 16:18 (AB01)	06:54 17:39	06:09 18:12	06:17 19:46	05:38 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:36	
20	07:26 17:00	15:36 (AB01) 16:18 (AB01)	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:37	
21	07:25 17:02	15:37 (AB01) 16:18 (AB01)	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	
22	07:24 17:03	15:38 (AB01) 16:16 (AB01)	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	
23	07:24 17:04	15:40 (AB01) 16:16 (AB01)	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:26 20:41	05:45 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35	
24	07:23 17:05	15:41 (AB01) 16:15 (AB01)	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:41	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	
25	07:22 17:07	15:43 (AB01) 16:14 (AB01)	06:45 17:46	05:58 18:19	06:08 19:53	05:33 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	
26	07:21 17:08	15:45 (AB01) 16:12 (AB01)	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	
27	07:20 17:09	15:47 (AB01) 16:10 (AB01)	06:42 17:48	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:53 18:52	07:27 17:04	07:05 16:33	
28	07:20 17:10	15:51 (AB01) 16:07 (AB01)	06:40 17:50	05:53 18:22	06:03 19:56	05:31 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:28 17:02	07:06 16:33	
29	07:19 17:12	15:56 (AB01) 16:02 (AB01)	06:37 19:23	05:51 19:58	06:02 20:28	05:31 20:42	05:28 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:30 17:01	07:07 16:32	
30	07:18 17:13	16:02 (AB01)	06:34 19:24	05:50 19:59	06:01 20:29	05:30 20:42	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	07:31 17:00	07:08 16:32	
31	07:17 17:14		06:48 19:25	06:30 20:30	06:01 20:30	05:30 20:30	05:29 20:30	05:53 20:23	06:25 19:39	06:58 18:58	07:32 16:58	07:09 16:39	
Potential sun hours		295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case		1086										638	1226
Sun reduction		0,61										0,59	0,63
Oper. time red.		0,88										0,88	0,88
Wind dir. red.		0,52										0,52	0,52
Total reduction		0,28										0,27	0,29
Total, real		301										170	351

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

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

**SHADOW - Calendar**

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R067 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (100)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

**Operational time**

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:40	15:16 (AB01) 15:58 (AB01)	07:16 17:51	06:39 19:26	06:46 20:00	05:59 20:30	05:29 20:42	05:29 20:22	05:54 19:37	06:26 18:45	06:58 16:57	06:33 16:32
2	07:30 16:41	15:16 (AB01) 15:59 (AB01)	07:15 17:52	06:37 19:28	06:45 20:01	05:58 20:31	05:29 20:41	05:30 20:21	05:55 19:36	06:27 18:44	06:59 16:56	06:35 16:31
3	07:30 16:42	15:17 (AB01) 15:59 (AB01)	07:14 17:53	06:35 19:29	06:43 20:02	05:56 20:32	05:28 20:41	05:30 20:19	05:56 19:34	06:28 18:42	06:36 16:55	06:36 16:31
4	07:30 16:43	15:18 (AB01) 16:00 (AB01)	07:13 17:55	06:34 19:30	06:41 20:03	05:55 20:33	05:28 20:41	05:31 20:18	05:57 19:32	06:29 18:40	06:37 16:53	06:37 16:31
5	07:30 16:44	15:18 (AB01) 16:01 (AB01)	07:12 17:56	06:32 19:31	06:40 20:04	05:54 20:33	05:27 20:41	05:32 20:17	05:58 19:30	06:30 18:38	06:38 16:52	06:38 16:31
6	07:30 16:45	15:21 (AB01) 16:02 (AB01)	07:11 17:57	06:31 19:32	06:38 20:05	05:53 20:34	05:27 20:41	05:32 20:16	05:59 19:29	06:32 18:37	06:40 16:51	06:40 16:31
7	07:30 16:46	15:20 (AB01) 16:03 (AB01)	07:09 17:58	06:29 19:33	06:36 20:06	05:51 20:35	05:27 20:40	05:33 20:15	06:00 19:27	06:33 18:35	06:41 16:50	06:41 16:30
8	07:30 16:47	15:21 (AB01) 16:05 (AB01)	07:08 17:59	06:27 19:34	06:35 20:07	05:50 20:35	05:26 20:40	05:33 20:13	06:01 19:25	06:34 18:33	06:42 16:49	06:42 16:30
9	07:30 16:48	15:21 (AB01) 16:05 (AB01)	07:07 18:00	06:26 19:35	06:33 20:08	05:49 20:36	05:26 20:40	05:34 20:12	06:02 19:24	06:35 18:32	06:43 16:48	06:43 16:30
10	07:30 16:49	15:22 (AB01) 16:06 (AB01)	07:06 18:02	06:24 19:36	06:31 20:10	05:48 20:37	05:26 20:39	05:35 20:11	06:03 19:22	06:36 18:30	06:45 16:46	06:45 16:30
11	07:30 16:50	15:23 (AB01) 16:07 (AB01)	07:05 18:03	06:22 19:38	06:30 20:11	05:47 20:37	05:26 20:39	05:35 20:09	06:04 19:20	06:37 18:28	06:46 16:45	06:46 16:30
12	07:29 16:51	15:23 (AB01) 16:08 (AB01)	07:03 18:04	06:21 19:39	06:28 20:12	05:46 20:38	05:26 20:38	05:36 20:08	06:05 19:18	06:38 18:27	06:47 16:44	06:47 16:30
13	07:29 16:52	15:25 (AB01) 16:09 (AB01)	07:02 18:05	06:19 19:40	06:26 20:13	05:44 20:38	05:26 20:38	05:37 20:07	06:06 19:17	06:39 18:25	06:48 16:43	06:48 16:30
14	07:29 16:53	15:25 (AB01) 16:10 (AB01)	07:01 18:06	06:17 19:41	06:25 20:14	05:43 20:39	05:26 20:37	05:38 20:05	06:08 19:15	06:40 18:23	06:50 16:42	06:50 16:31
15	07:28 16:54	15:27 (AB01) 16:11 (AB01)	06:59 18:07	06:16 19:42	06:23 20:15	05:42 20:39	05:25 20:37	05:39 20:04	06:09 19:13	06:41 18:22	06:51 16:42	06:51 16:31
16	07:28 16:56	15:27 (AB01) 16:12 (AB01)	06:58 18:09	06:14 19:43	06:21 20:16	05:41 20:39	05:25 20:36	05:39 20:10	06:02 19:11	06:42 18:20	06:52 16:41	06:52 16:31
17	07:27 16:57	15:29 (AB01) 16:14 (AB01)	06:57 18:10	06:12 19:44	06:20 20:17	05:40 20:40	05:26 20:35	06:11 20:01	06:43 19:10	06:53 18:19	06:53 16:40	06:53 16:31
18	07:27 16:58	15:30 (AB01) 16:13 (AB01)	06:55 18:11	06:10 19:45	06:18 20:18	05:39 20:40	05:26 20:35	06:12 19:59	06:44 19:08	06:54 18:17	06:54 16:39	06:54 16:31
19	07:26 16:59	15:32 (AB01) 16:13 (AB01)	06:54 18:12	06:09 19:46	06:17 20:19	05:38 20:40	05:26 20:34	06:13 19:58	06:45 19:06	06:58 18:16	06:56 16:38	06:56 16:31
20	07:26 17:00	15:33 (AB01) 16:12 (AB01)	06:52 18:13	06:07 19:48	06:15 20:20	05:38 20:41	05:26 20:33	06:14 19:56	06:46 19:04	06:57 18:14	06:57 16:37	06:57 16:34
21	07:25 17:02	15:34 (AB01) 16:11 (AB01)	06:51 18:14	06:05 19:49	06:14 20:21	05:37 20:41	05:26 20:32	06:15 19:55	06:47 19:03	06:58 18:13	06:58 16:37	06:58 16:33
22	07:24 17:03	15:35 (AB01) 16:09 (AB01)	06:49 18:15	06:04 19:50	06:12 20:22	05:36 20:41	05:26 20:31	06:16 19:53	06:48 19:01	06:59 18:11	06:59 16:36	06:59 16:33
23	07:24 17:04	15:38 (AB01) 16:09 (AB01)	06:48 18:16	06:02 19:51	06:11 20:23	05:35 20:41	05:26 20:31	06:17 19:52	06:49 18:59	06:59 18:10	07:00 16:35	07:00 16:31
24	07:23 17:05	15:40 (AB01) 16:07 (AB01)	06:46 18:18	06:00 19:52	06:09 20:24	05:34 20:42	05:27 20:30	06:18 19:50	06:50 18:57	06:50 18:08	07:24 16:35	07:24 16:34
25	07:22 17:07	15:42 (AB01) 16:05 (AB01)	06:45 18:19	06:05 19:53	06:08 20:24	05:33 20:42	05:27 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	07:03 16:35
26	07:21 17:08	15:45 (AB01) 16:02 (AB01)	06:43 18:20	06:05 19:54	06:06 20:25	05:33 20:42	05:27 20:28	06:19 19:47	06:52 18:54	06:26 17:05	06:26 16:34	06:26 16:34
27	07:20 17:09	15:51 (AB01) 15:57 (AB01)	06:42 18:21	06:05 19:55	06:05 20:26	05:28 20:42	05:28 20:27	06:21 19:45	06:53 18:52	06:27 17:04	07:05 16:33	07:05 16:33
28	07:20 17:10	16:00 (AB01) 17:50	06:40 18:22	06:03 19:56	06:03 20:27	05:31 20:42	05:28 20:26	06:22 19:44	06:55 18:50	06:29 17:02	07:06 16:33	07:06 16:33
29	07:19 17:12	16:01 (AB01) 19:23	06:40 19:58	06:02 20:28	06:02 20:42	05:31 20:42	05:28 20:25	06:23 19:42	06:56 18:49	07:02 17:01	07:07 16:32	07:07 16:32
30	07:18 17:13	16:05 (AB01) 19:24	06:50 19:59	06:01 20:29	06:01 20:42	05:30 20:42	05:29 20:24	06:24 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:08 16:32
31	07:17 17:14	16:08 (AB01) 19:25	06:48 19:59	06:01 20:30	06:01 20:42	05:30 20:30	05:29 20:23	06:25 19:39	06:58 18:58	06:32 16:58	07:09 16:39	07:09 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case	1040										568	1302
Sun reduction	0,61										0,59	0,63
Oper. time red.	0,88										0,88	0,88
Wind dir. red.	0,51										0,51	0,51
Total reduction	0,27										0,26	0,28
Total, real	284										150	369

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: WF Abruzzo shadow flickering real caseShadow receptor: R079 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (101)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

## Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:30 16:40 30	15:43 (AB02) 16:13 (AB02) 17:16	07:16 17:51	06:39 19:27	06:46 20:00	05:59 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:10 16:32	15:33 (AB02) 16:06 (AB02)
2	07:30 16:41 30	15:44 (AB02) 16:14 (AB02) 17:17	07:15 17:52	06:37 19:28	06:45 20:01	05:58 20:31	05:29 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31	15:33 (AB02) 16:06 (AB02)
3	07:30 16:42 31	15:44 (AB02) 16:15 (AB02) 17:18	07:14 17:53	06:36 19:29	06:43 20:02	05:57 20:32	05:28 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31	15:33 (AB02) 16:06 (AB02)
4	07:30 16:43 31	15:45 (AB02) 16:16 (AB02) 17:19	07:13 17:55	06:34 19:30	06:41 20:03	05:55 20:33	05:28 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	07:13 16:31	15:33 (AB02) 16:05 (AB02)
5	07:30 16:44 31	15:46 (AB02) 16:17 (AB02) 17:21	07:12 17:56	06:32 19:31	06:40 20:04	05:54 20:33	05:27 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:14 16:31	15:33 (AB02) 16:05 (AB02)
6	07:30 16:45 31	15:48 (AB02) 16:18 (AB02) 17:22	07:11 17:57	06:31 19:32	06:38 20:05	05:53 20:34	05:27 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:30	15:33 (AB02) 16:05 (AB02)
7	07:30 16:46 32	15:48 (AB02) 16:20 (AB02) 17:23	07:11 17:58	06:29 19:33	06:36 20:06	05:51 20:35	05:27 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30	15:33 (AB02) 16:04 (AB02)
8	07:30 16:47 33	15:48 (AB02) 16:21 (AB02) 17:25	07:08 17:59	06:27 19:34	06:35 20:07	05:50 20:35	05:27 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:17 16:30	15:33 (AB02) 16:04 (AB02)
9	07:30 16:48 32	15:49 (AB02) 16:21 (AB02) 17:26	07:07 18:00	06:26 19:35	06:33 20:09	05:49 20:36	05:26 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30	15:33 (AB02) 16:04 (AB02)
10	07:30 16:49 33	15:50 (AB02) 16:23 (AB02) 17:27	07:06 18:02	06:24 19:37	06:31 20:10	05:48 20:37	05:26 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:30	15:34 (AB02) 16:04 (AB02)
11	07:30 16:50 33	15:51 (AB02) 16:24 (AB02) 17:28	07:05 18:03	06:22 19:38	06:30 20:11	05:47 20:37	05:26 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:45	07:19 16:30	15:33 (AB02) 16:03 (AB02)
12	07:29 16:51 34	15:52 (AB02) 16:25 (AB02) 17:30	07:03 18:04	06:21 19:39	06:28 20:12	05:46 20:38	05:26 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	07:20 16:30	15:34 (AB02) 16:03 (AB02)
13	07:29 16:52 34	15:52 (AB02) 16:26 (AB02) 17:31	07:02 18:05	06:19 19:40	06:26 20:13	05:44 20:38	05:26 20:38	06:06 20:07	06:39 19:17	07:11 18:25	06:48 16:43	07:21 16:31	15:34 (AB02) 16:03 (AB02)
14	07:29 16:53 34	15:53 (AB02) 16:27 (AB02) 17:32	07:01 18:06	06:17 19:41	06:25 20:14	05:43 20:39	05:26 20:37	06:08 20:05	06:40 19:15	07:12 18:23	06:50 16:43	07:22 16:31	15:35 (AB02) 16:03 (AB02)
15	07:28 16:55 34	15:55 (AB02) 16:29 (AB02) 17:34	06:59 18:07	06:16 19:42	06:23 20:15	05:42 20:39	05:26 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31	15:35 (AB02) 16:03 (AB02)
16	07:28 16:56 33	15:55 (AB02) 16:28 (AB02) 17:35	06:58 18:09	06:14 19:43	06:21 20:16	05:41 20:39	05:26 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31	15:35 (AB02) 16:03 (AB02)
17	07:27 16:57 31	15:57 (AB02) 16:28 (AB02) 17:36	06:57 18:10	06:12 19:44	06:20 20:17	05:40 20:40	05:26 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:31	15:36 (AB02) 16:03 (AB02)
18	07:27 16:58 29	15:58 (AB02) 16:27 (AB02) 17:37	06:55 18:11	06:10 19:45	06:18 20:18	05:39 20:40	05:26 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:25 16:32	15:37 (AB02) 16:04 (AB02)
19	07:26 16:59 27	16:00 (AB02) 16:27 (AB02) 17:39	06:54 18:12	06:09 19:47	06:17 20:19	05:38 20:40	05:26 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	7 07:25 16:32	15:45 (AB02) 16:04 (AB02)
20	07:26 17:00 23	16:02 (AB02) 16:25 (AB02) 17:40	06:52 18:13	06:07 19:48	06:15 20:20	05:38 20:41	05:26 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	15 07:26 16:33	15:51 (AB02) 16:05 (AB02)
21	07:25 17:02 20	16:04 (AB02) 16:24 (AB02) 17:41	06:51 18:14	06:05 19:49	06:14 20:21	05:37 20:41	05:26 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	20 07:26 16:33	15:40 (AB02) 16:04 (AB02)
22	07:24 17:03 15	16:06 (AB02) 16:21 (AB02) 17:42	06:49 18:15	06:04 19:50	06:12 20:22	05:36 20:41	05:26 20:32	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	23 07:27 16:33	15:38 (AB02) 16:05 (AB02)
23	07:24 17:04 7	16:11 (AB02) 16:18 (AB02) 17:44	06:48 18:16	06:02 19:51	06:11 20:23	05:35 20:41	05:26 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35	27 07:27 16:34	15:36 (AB02) 16:06 (AB02)
24	07:23 17:05 25	16:18 (AB02) 17:45 18:18	06:46 18:18	06:00 19:52	06:09 20:24	05:34 20:42	05:27 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	29 07:28 16:34	15:35 (AB02) 16:06 (AB02)
25	07:22 17:07 26	17:07 18:19	06:45 18:19	05:58 19:53	06:08 20:25	05:34 20:42	05:27 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	31 07:28 16:35	15:35 (AB02) 16:07 (AB02)
26	07:21 17:08 27	17:08 18:20	06:43 18:20	05:57 19:54	06:06 20:25	05:33 20:42	05:27 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	33 07:29 16:36	15:34 (AB02) 16:07 (AB02)
27	07:21 17:09 28	17:09 18:21	06:42 18:21	05:55 19:55	06:05 20:26	05:32 20:42	05:28 20:27	06:21 19:45	06:54 18:52	07:27 17:04	07:05 16:33	34 07:29 16:36	15:34 (AB02) 16:08 (AB02)
28	07:20 17:10 29	17:10 18:22	06:40 18:22	05:53 19:56	06:03 20:27	05:31 20:42	05:28 20:26	06:22 19:44	06:55 18:50	07:28 17:02	07:06 16:33	34 07:29 16:37	15:33 (AB02) 16:09 (AB02)
29	07:19 17:12 30	17:12 18:24	06:52 18:24	06:02 19:58	06:02 20:28	05:31 20:42	05:28 20:25	06:23 19:42	06:56 18:49	07:29 17:01	07:07 16:32	34 07:30 16:38	15:33 (AB02) 16:10 (AB02)
30	07:18 17:13 31	17:13 18:26	06:50 18:26	06:01 19:59	06:01 20:29	05:30 20:42	05:29 20:24	06:24 19:41	06:57 18:47	07:30 17:00	07:08 16:32	34 07:30 16:39	15:33 (AB02) 16:11 (AB02)
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285	
Total, worst case	668										321		907
Sun reduction	0,61										0,59		0,63
Oper. time red.	0,88										0,88		0,88
Wind dir. red.	0,53										0,53		0,53
Total reduction	0,28										0,27		0,29
Total, real	189										88		266

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		

Project:

WF Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it
Calculated:
15/11/2023 18:37/3.5.587

SHADOW - Calendar

Calculation: WF Abruzzo shadow flikering real caseShadow receptor: R080 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (102)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

Table with columns for months (January to December) and rows for time slots (e.g., 07:30, 16:40) and summary statistics (Potential sun hours, Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, Total, real).

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

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

SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R082 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (103)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Sep Oct Nov Dec
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

Table with 13 columns: N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum. Values range from 221 to 7675.

Main table with columns for months (January to December) and rows for each day of the month. Includes columns for start/end times and a summary row at the bottom with values like 1441, 0.61, 0.88, 0.74, 0.40, 573.

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

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

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real case Shadow receptor: R083 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (104)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

## Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30	08:19 (AB01)   07:16	07:54 (AB01)   06:39	06:46	05:59	05:29
	16:40	2 08:21 (AB01)   17:16	47 08:41 (AB01)   17:51	19:27	20:00	20:30
2	07:30	08:19 (AB01)   07:15	07:53 (AB01)   06:37	06:45	05:58	05:29
	16:41	3 08:22 (AB01)   17:17	48 08:41 (AB01)   17:52	19:28	20:01	20:31
3	07:30	08:19 (AB01)   07:14	07:54 (AB01)   06:36	06:43	05:57	05:28
	16:42	4 08:23 (AB01)   17:18	47 08:41 (AB01)   17:53	19:29	20:02	20:32
4	07:30	08:18 (AB01)   07:13	07:54 (AB01)   06:34	06:41	05:55	05:28
	16:43	6 08:24 (AB01)   17:19	47 08:41 (AB01)   17:55	19:30	20:03	20:33
5	07:30	08:18 (AB01)   07:12	07:55 (AB01)   06:32	06:40	05:54	05:27
	16:44	7 08:25 (AB01)   17:21	45 08:40 (AB01)   17:56	19:31	20:04	20:33
6	07:30	08:18 (AB01)   07:11	07:56 (AB01)   06:31	06:38	05:53	05:27
	16:45	8 08:26 (AB01)   17:22	44 08:40 (AB01)   17:57	19:32	20:05	20:34
7	07:30	08:18 (AB01)   07:09	07:57 (AB01)   06:29	06:36	05:51	05:27
	16:46	9 08:27 (AB01)   17:23	43 08:40 (AB01)   17:58	19:33	20:06	20:35
8	07:30	08:18 (AB01)   07:08	07:57 (AB01)   06:27	06:35	05:50	05:27
	16:47	11 08:29 (AB01)   17:25	41 08:38 (AB01)   17:59	19:34	20:07	20:35
9	07:30	08:17 (AB01)   07:07	07:58 (AB01)   06:26	06:33	05:49	05:26
	16:48	12 08:29 (AB01)   17:26	39 08:37 (AB01)   18:00	19:35	20:09	20:36
10	07:30	08:16 (AB01)   07:06	08:00 (AB01)   06:24	06:31	05:48	05:26
	16:49	14 08:30 (AB01)   17:27	36 08:36 (AB01)   18:02	19:37	20:10	20:37
11	07:30	08:16 (AB01)   07:05	08:00 (AB01)   06:22	06:30	05:47	05:26
	16:50	15 08:31 (AB01)   17:29	34 08:34 (AB01)   18:03	19:38	20:11	20:37
12	07:29	08:15 (AB01)   07:03	08:02 (AB01)   06:21	06:28	05:46	05:26
	16:51	17 08:32 (AB01)   17:30	31 08:33 (AB01)   18:04	19:39	20:12	20:38
13	07:29	08:15 (AB01)   07:02	08:04 (AB01)   06:19	06:26	05:44	05:26
	16:52	18 08:33 (AB01)   17:31	28 08:32 (AB01)   18:05	19:40	20:13	20:38
14	07:29	08:13 (AB01)   07:01	08:06 (AB01)   06:17	06:25	05:43	05:26
	16:53	20 08:33 (AB01)   17:32	23 08:29 (AB01)   18:06	19:41	20:14	20:39
15	07:28	08:13 (AB01)   06:59	08:09 (AB01)   06:16	06:23	05:42	05:26
	16:55	21 08:34 (AB01)   17:34	17 08:26 (AB01)   18:07	19:42	20:15	20:39
16	07:28	08:12 (AB01)   06:58	08:15 (AB01)   06:14	06:22	05:41	05:26
	16:56	23 08:35 (AB01)   17:35	5 08:20 (AB01)   18:09	19:43	20:16	20:39
17	07:27	08:12 (AB01)   06:57	06:12	06:20	05:40	05:26
	16:57	24 08:36 (AB01)   17:36	18:10	19:44	20:17	20:40
18	07:27	08:10 (AB01)   06:55	06:10	06:18	05:39	05:26
	16:58	26 08:36 (AB01)   17:37	18:11	19:45	20:18	20:40
19	07:26	08:10 (AB01)   06:54	06:09	06:17	05:38	05:26
	16:59	28 08:38 (AB01)   17:39	18:12	19:47	20:19	20:40
20	07:26	08:09 (AB01)   06:52	06:07	06:15	05:38	05:26
	17:00	29 08:38 (AB01)   17:40	18:13	19:48	20:20	20:41
21	07:25	08:08 (AB01)   06:51	06:05	06:14	05:37	05:26
	17:02	30 08:38 (AB01)   17:41	18:14	19:49	20:21	20:41
22	07:24	08:07 (AB01)   06:49	06:04	06:12	05:36	05:26
	17:03	33 08:40 (AB01)   17:42	18:15	19:50	20:22	20:41
23	07:24	08:06 (AB01)   06:48	06:02	06:11	05:35	05:26
	17:04	34 08:40 (AB01)   17:44	18:16	19:51	20:23	20:41
24	07:23	08:05 (AB01)   06:46	06:00	06:09	05:34	05:27
	17:05	35 08:40 (AB01)   17:45	18:18	19:52	20:24	20:42
25	07:22	08:03 (AB01)   06:45	05:58	06:08	05:34	05:27
	17:07	37 08:40 (AB01)   17:46	18:19	19:53	20:25	20:42
26	07:21	08:02 (AB01)   06:43	05:57	06:06	05:33	05:27
	17:08	39 08:41 (AB01)   17:47	18:20	19:54	20:25	20:42
27	07:21	08:01 (AB01)   06:42	05:55	06:05	05:32	05:28
	17:09	40 08:41 (AB01)   17:49	18:21	19:55	20:26	20:42
28	07:20	07:59 (AB01)   06:40	05:53	06:03	05:31	05:28
	17:10	42 08:41 (AB01)   17:50	18:22	19:57	20:27	20:42
29	07:19	07:58 (AB01)	06:52	06:02	05:31	05:29
	17:12	43 08:41 (AB01)	19:23	19:58	20:28	20:42
30	07:18	07:57 (AB01)	06:50	06:01	05:30	05:29
	17:13	44 08:41 (AB01)	19:24	19:59	20:29	20:42
31	07:17	07:55 (AB01)	06:48	06:00	05:30	
	17:14	46 08:41 (AB01)	19:25	20:30		
Potential sun hours	295	296	369	400	451	456
Total, worst case	720	575				
Sun reduction	0,61	0,55				
Oper. time red.	0,88	0,88				
Wind dir. red.	0,74	0,74				
Total reduction	0,40	0,36				
Total, real	286	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: WF Abruzzo shadow flickering real case Shadow receptor: R083 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (104) Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	July	August	September	October	November	December
1	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:34 16:57	07:28 (AB01) 16:32
2	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:28 (AB01) 16:31
3	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:27 (AB01) 16:31
4	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	07:26 (AB01) 16:31
5	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:26 (AB01) 16:31
6	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:25 (AB01) 16:30
7	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:24 (AB01) 16:30
8	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:24 (AB01) 16:30
9	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:24 (AB01) 16:30
10	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:25 (AB01) 16:30
11	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:27 (AB01) 16:30
12	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	07:29 (AB01) 16:30
13	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:30 (AB01) 16:31
14	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:50 16:43	07:32 (AB01) 16:31
15	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:34 (AB01) 16:31
16	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:35 (AB01) 16:31
17	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:37 (AB01) 16:31
18	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:39 (AB01) 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:40 (AB01) 16:32
20	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:41 (AB01) 16:33
21	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:44 (AB01) 16:33
22	05:45 20:32	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:45 (AB01) 16:33
23	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35	07:46 (AB01) 16:34
24	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:47 (AB01) 16:35
25	05:47 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	07:50 (AB01) 16:35
26	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34	07:51 (AB01) 16:36
27	05:49 20:27	06:21 19:45	06:54 18:52	06:27 17:04	07:05 16:33	07:52 (AB01) 16:36
28	05:50 20:26	06:22 19:44	06:55 18:50	06:29 17:02	07:06 16:33	07:53 (AB01) 16:37
29	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	07:55 (AB01) 16:38
30	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:57 (AB01) 16:39
31	05:53 20:23	06:25 19:39	06:58 18:45	06:32 17:00	07:30 (AB01) 08:04 (AB01)	07:30 16:39
Potential sun hours	462	430	375	344	296	285
Total, worst case				147	1066	94
Sun reduction				0,52	0,59	0,63
Oper. time red.				0,88	0,88	0,88
Wind dir. red.				0,74	0,74	0,74
Total reduction				0,34	0,38	0,41
Total, real				50	409	39

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 Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it
Calculated:
15/11/2023 18:37/3.5.587

SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R084 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (105)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

Table with 12 columns for months (January to December) and multiple rows for time slots. Includes a summary table at the bottom with metrics like Potential sun hours, Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, and Total, real.

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

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





Project:

WF Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:37/3.5.587

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real case Shadow receptor: R085 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (106)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June		
1	07:30	08:00 (AB01)	07:16	07:56 (AB01)	06:39	06:46	05:59	05:29
	16:40	23 08:23 (AB01)	17:16	41 08:37 (AB01)	17:51	19:27	20:00	20:30
2	07:30	08:00 (AB01)	07:15	07:57 (AB01)	06:37	06:45	05:58	05:29
	16:41	23 08:23 (AB01)	17:17	39 08:36 (AB01)	17:52	19:28	20:01	20:31
3	07:30	08:00 (AB01)	07:14	07:58 (AB01)	06:36	06:43	05:57	05:28
	16:42	24 08:24 (AB01)	17:18	38 08:36 (AB01)	17:53	19:29	20:02	20:32
4	07:30	08:00 (AB01)	07:13	07:59 (AB01)	06:34	06:41	05:55	05:28
	16:43	25 08:25 (AB01)	17:19	36 08:35 (AB01)	17:55	19:30	20:03	20:33
5	07:30	07:59 (AB01)	07:12	08:00 (AB01)	06:32	06:40	05:54	05:27
	16:44	27 08:26 (AB01)	17:21	34 08:34 (AB01)	17:56	19:31	20:04	20:33
6	07:30	07:59 (AB01)	07:11	08:02 (AB01)	06:31	06:38	05:53	05:27
	16:45	28 08:27 (AB01)	17:22	31 08:33 (AB01)	17:57	19:32	20:05	20:34
7	07:30	07:59 (AB01)	07:09	08:04 (AB01)	06:29	06:36	05:51	05:27
	16:46	29 08:28 (AB01)	17:23	28 08:32 (AB01)	17:58	19:33	20:06	20:35
8	07:30	07:59 (AB01)	07:08	08:05 (AB01)	06:27	06:35	05:50	05:27
	16:47	30 08:29 (AB01)	17:25	25 08:30 (AB01)	17:59	19:34	20:07	20:35
9	07:30	07:58 (AB01)	07:07	08:07 (AB01)	06:26	06:33	05:49	05:26
	16:48	31 08:29 (AB01)	17:26	21 08:28 (AB01)	18:00	19:35	20:09	20:36
10	07:30	07:58 (AB01)	07:06	08:10 (AB01)	06:24	06:31	05:48	05:26
	16:49	32 08:30 (AB01)	17:27	15 08:25 (AB01)	18:02	19:37	20:10	20:37
11	07:30	07:58 (AB01)	07:05		06:22	06:30	05:47	05:26
	16:50	33 08:31 (AB01)	17:29		18:03	19:38	20:11	20:37
12	07:29	07:57 (AB01)	07:03		06:21	06:28	05:46	05:26
	16:51	34 08:31 (AB01)	17:30		18:04	19:39	20:12	20:38
13	07:29	07:57 (AB01)	07:02		06:19	06:26	05:44	05:26
	16:52	35 08:32 (AB01)	17:31		18:05	19:40	20:13	20:38
14	07:29	07:55 (AB01)	07:01		06:17	06:25	05:43	05:26
	16:53	38 08:33 (AB01)	17:32		18:06	19:41	20:14	20:39
15	07:28	07:55 (AB01)	06:59		06:16	06:23	05:42	05:26
	16:55	39 08:34 (AB01)	17:34		18:07	19:42	20:15	20:39
16	07:28	07:54 (AB01)	06:58		06:14	06:22	05:41	05:26
	16:56	40 08:34 (AB01)	17:35		18:09	19:43	20:16	20:39
17	07:27	07:54 (AB01)	06:57		06:12	06:20	05:40	05:26
	16:57	41 08:35 (AB01)	17:36		18:10	19:44	20:17	20:40
18	07:27	07:53 (AB01)	06:55		06:10	06:18	05:39	05:26
	16:58	42 08:35 (AB01)	17:37		18:11	19:45	20:18	20:40
19	07:26	07:53 (AB01)	06:54		06:09	06:17	05:38	05:26
	16:59	43 08:36 (AB01)	17:39		18:12	19:47	20:19	20:40
20	07:26	07:52 (AB01)	06:52		06:07	06:15	05:38	05:26
	17:00	44 08:36 (AB01)	17:40		18:13	19:48	20:20	20:41
21	07:25	07:52 (AB01)	06:51		06:05	06:14	05:37	05:26
	17:02	44 08:36 (AB01)	17:41		18:14	19:49	20:21	20:41
22	07:24	07:53 (AB01)	06:49		06:04	06:12	05:36	05:26
	17:03	45 08:38 (AB01)	17:42		18:15	19:50	20:22	20:41
23	07:24	07:53 (AB01)	06:48		06:02	06:11	05:35	05:26
	17:04	45 08:38 (AB01)	17:44		18:17	19:51	20:23	20:41
24	07:23	07:53 (AB01)	06:46		06:00	06:09	05:34	05:27
	17:05	45 08:38 (AB01)	17:45		18:18	19:52	20:24	20:42
25	07:22	07:53 (AB01)	06:45		05:58	06:08	05:34	05:27
	17:07	45 08:38 (AB01)	17:46		18:19	19:53	20:25	20:42
26	07:21	07:53 (AB01)	06:43		05:57	06:06	05:33	05:27
	17:08	45 08:38 (AB01)	17:47		18:20	19:54	20:25	20:42
27	07:21	07:54 (AB01)	06:42		05:55	06:05	05:32	05:28
	17:09	44 08:38 (AB01)	17:49		18:21	19:55	20:26	20:42
28	07:20	07:54 (AB01)	06:40		05:53	06:03	05:31	05:28
	17:10	44 08:38 (AB01)	17:50		18:22	19:57	20:27	20:42
29	07:19	07:54 (AB01)			06:52	06:02	05:31	05:29
	17:12	43 08:37 (AB01)			19:23	19:58	20:28	20:42
30	07:18	07:55 (AB01)			06:50	06:01	05:30	05:29
	17:13	42 08:37 (AB01)			19:24	19:59	20:29	20:42
31	07:17	07:56 (AB01)			06:48		05:30	
	17:14	41 08:37 (AB01)			19:25		20:30	
Potential sun hours	295		296		369	400	451	456
Total, worst case	1144		308					
Sun reduction	0,61		0,55					
Oper. time red.	0,88		0,88					
Wind dir. red.	0,74		0,74					
Total reduction	0,40		0,36					
Total, real	455		110					

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: WF Abruzzo shadow flickering real caseShadow receptor: R085 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (106)  
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	July	August	September	October	November	December	
1	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:34 16:57	07:38 (AB01) 16:32 33	07:10 08:13 (AB01)
2	05:30 20:42	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:36 (AB01) 07:58 (AB01) 16:31 32	07:11 08:13 (AB01)
3	05:30 20:41	05:56 20:20	06:28 19:34	07:00 18:42	06:36 16:55	07:34 (AB01) 08:00 (AB01) 16:31 31	07:12 08:13 (AB01)
4	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:32 (AB01) 08:01 (AB01) 16:31 30	07:13 08:13 (AB01)
5	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:32 (AB01) 08:03 (AB01) 16:31 29	07:14 08:13 (AB01)
6	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:30 (AB01) 08:04 (AB01) 16:30 28	07:15 08:13 (AB01)
7	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:29 (AB01) 08:05 (AB01) 16:30 27	07:16 08:13 (AB01)
8	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:29 (AB01) 08:07 (AB01) 16:30 25	07:17 08:13 (AB01)
9	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:28 (AB01) 08:07 (AB01) 16:30 24	07:18 08:13 (AB01)
10	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:27 (AB01) 08:07 (AB01) 16:30 24	07:18 08:14 (AB01)
11	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:27 (AB01) 08:09 (AB01) 16:30 23	07:19 08:14 (AB01)
12	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	07:27 (AB01) 08:09 (AB01) 16:30 22	07:20 08:13 (AB01)
13	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:26 (AB01) 08:09 (AB01) 16:31 21	07:21 08:13 (AB01)
14	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:50 16:43	07:27 (AB01) 08:10 (AB01) 16:31 21	07:22 08:14 (AB01)
15	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:27 (AB01) 08:11 (AB01) 16:31 20	07:22 08:14 (AB01)
16	05:39 20:36	06:10 20:02	06:42 19:12	07:14 18:20	06:52 16:41	07:26 (AB01) 08:11 (AB01) 16:31 20	07:23 08:14 (AB01)
17	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:27 (AB01) 08:12 (AB01) 16:31 18	07:24 08:14 (AB01)
18	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:27 (AB01) 08:12 (AB01) 16:32 18	07:25 08:15 (AB01)
19	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:27 (AB01) 08:12 (AB01) 16:32 18	07:25 08:15 (AB01)
20	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:27 (AB01) 08:12 (AB01) 16:33 18	07:26 08:16 (AB01)
21	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:28 (AB01) 08:13 (AB01) 16:33 18	07:26 08:16 (AB01)
22	05:45 20:32	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:28 (AB01) 08:12 (AB01) 16:33 18	07:27 08:17 (AB01)
23	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35	07:29 (AB01) 08:12 (AB01) 16:34 18	07:27 08:17 (AB01)
24	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:30 (AB01) 08:12 (AB01) 16:35 18	07:28 08:18 (AB01)
25	05:47 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	07:32 (AB01) 08:13 (AB01) 16:35 18	07:28 08:18 (AB01)
26	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34	07:33 (AB01) 08:13 (AB01) 16:36 18	07:29 08:18 (AB01)
27	05:49 20:27	06:21 19:45	06:54 18:52	06:27 17:04	07:05 16:33	07:34 (AB01) 08:13 (AB01) 16:36 19	07:29 08:19 (AB01)
28	05:50 20:26	06:22 19:44	06:55 18:50	06:29 17:02	07:06 16:33	07:35 (AB01) 08:13 (AB01) 16:37 20	07:29 08:20 (AB01)
29	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	07:37 (AB01) 08:13 (AB01) 16:38 21	07:30 08:21 (AB01)
30	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:39 (AB01) 08:13 (AB01) 16:39 21	07:30 08:21 (AB01)
31	05:53 20:23	06:25 19:39	06:58 18:45	06:32 16:58	07:09 16:31	07:40 (AB01) 08:13 (AB01) 16:40 22	07:31 08:22 (AB01)
Potential sun hours	462	430	375	344	296	285	
Total, worst case				6	1152	693	
Sun reduction				0,52	0,59	0,63	
Oper. time red.				0,88	0,88	0,88	
Wind dir. red.				0,74	0,74	0,74	
Total reduction				0,34	0,38	0,41	
Total, real				2	442	285	

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)

Project:

WF Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:37/3.5.587

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R088 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (107)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

Table with columns for months (January to December) and rows for each day (1-31). Each row contains sunrise and sunset times in hh:mm, a grid of shadow reduction values (e.g., 0.61, 0.88, 0.54, 0.29), and a final column for 'Total, real' values (e.g., 294, 296, 400, 451, 456, 462, 430, 375, 344, 296, 4, 174, 0.63, 0.88, 0.54, 0.30, 21, 52).

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

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



## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R089 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (108) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30	07:16	06:39	06:46	05:59	05:29	05:29	05:54	06:26	06:58	06:33	07:09
	16:40	17:16	17:51	19:27	20:00	20:30	20:42	20:22	19:37	18:45	16:57	16:32
2	07:30	07:15	06:37	06:45	05:58	05:29	05:30	05:55	06:27	06:59	06:35	07:11
	16:41	17:17	17:52	19:28	20:01	20:31	20:41	20:21	19:36	18:44	16:56	16:31
3	07:30	07:14	06:35	06:43	05:56	05:28	05:30	05:56	06:28	07:00	06:36	07:12
	16:42	17:18	17:53	19:29	20:02	20:32	20:41	20:19	19:34	18:42	16:55	16:31
4	07:30	07:13	06:34	06:41	05:55	05:28	05:31	05:57	06:29	07:01	06:37	07:13
	16:43	17:19	17:55	19:30	20:03	20:33	20:41	20:18	19:32	18:40	16:53	16:31
5	07:30	07:12	06:32	06:40	05:54	05:27	05:32	05:58	06:30	07:02	06:38	07:14
	16:44	17:21	17:56	19:31	20:04	20:33	20:41	20:17	19:31	18:38	16:52	16:31
6	07:30	07:11	06:31	06:38	05:53	05:27	05:32	05:59	06:32	07:03	06:40	07:15
	16:45	17:22	17:57	19:32	20:05	20:34	20:41	20:16	19:29	18:37	16:51	16:30
7	07:30	07:09	06:29	06:36	05:51	05:27	05:33	06:00	06:33	07:04	06:41	07:16
	16:46	17:23	17:58	19:33	20:06	20:35	20:40	20:15	19:27	18:35	16:50	16:30
8	07:30	07:08	06:27	06:35	05:50	05:26	05:33	06:01	06:34	07:05	06:42	07:17
	16:47	17:25	17:59	19:34	20:07	20:35	20:40	20:13	19:25	18:33	16:49	16:30
9	07:30	07:07	06:26	06:33	05:49	05:26	05:34	06:02	06:35	07:07	06:43	07:17
	16:48	17:26	18:00	19:35	20:08	20:36	20:40	20:12	19:24	18:32	16:48	16:30
10	07:30	07:06	06:24	06:31	05:48	05:26	05:35	06:03	06:36	07:08	06:45	07:18
	16:49	17:27	18:02	19:37	20:10	20:37	20:39	20:11	19:22	18:30	16:46	16:30
11	07:30	07:05	06:22	06:30	05:47	05:26	05:35	06:04	06:37	07:09	06:46	07:19
	16:50	17:28	18:03	19:38	20:11	20:37	20:39	20:09	19:20	18:28	16:45	16:30
12	07:29	07:03	06:21	06:28	05:46	05:26	05:36	06:05	06:38	07:10	06:47	07:20
	16:51	17:30	18:04	19:39	20:12	20:38	20:38	20:08	19:18	18:27	16:44	16:30
13	07:29	07:02	06:19	06:26	05:44	05:26	05:37	06:06	06:39	07:11	06:48	07:21
	16:52	17:31	18:05	19:40	20:13	20:38	20:38	20:07	19:17	18:25	16:43	16:30
14	07:29	07:01	06:17	06:25	05:43	05:26	05:38	06:08	06:40	07:12	06:50	07:22
	16:53	17:32	18:06	19:41	20:14	20:39	20:37	20:05	19:15	18:23	16:43	16:31
15	07:28	06:59	06:16	06:23	05:42	05:25	05:39	06:09	06:41	07:13	06:51	07:22
	16:54	17:34	18:07	19:42	20:15	20:39	20:37	20:04	19:13	18:22	16:42	16:31
16	07:28	06:58	06:14	06:21	05:41	05:25	05:39	06:10	06:42	07:14	06:52	07:23
	16:56	17:35	18:09	19:43	20:16	20:39	20:36	20:02	19:11	18:20	16:41	16:31
17	07:27	06:57	06:12	06:20	05:40	05:26	05:40	06:11	06:43	07:16	06:53	07:24
	16:57	17:36	18:10	19:44	20:17	20:40	20:35	20:01	19:10	18:19	16:40	16:31
18	07:27	06:55	06:10	06:18	05:39	05:26	05:41	06:12	06:44	07:17	06:54	07:24
	16:58	17:37	18:11	19:45	20:18	20:40	20:35	19:59	19:08	18:17	16:39	16:32
19	07:26	06:54	06:09	06:17	05:38	05:26	05:42	06:13	06:45	07:18	06:56	07:25
	16:59	17:39	18:12	19:47	20:19	20:40	20:34	19:58	19:06	18:16	16:38	16:32
20	07:26	06:52	06:07	06:15	05:38	05:26	05:43	06:14	06:46	07:19	06:57	07:26
	17:00	17:40	18:13	19:48	20:20	20:41	20:33	19:56	19:04	18:14	16:37	16:32
21	07:25	06:51	06:05	06:14	05:37	05:26	05:44	06:15	06:47	07:20	06:58	07:26
	17:02	17:41	18:14	19:49	20:21	20:41	20:32	19:55	19:03	18:13	16:37	16:33
22	07:24	06:49	06:04	06:12	05:36	05:26	05:45	06:16	06:48	07:21	06:59	07:27
	17:03	17:42	18:15	19:50	20:22	20:41	20:32	19:53	19:01	18:11	16:36	16:33
23	07:24	06:48	06:02	06:11	05:35	05:26	05:45	06:17	06:49	07:23	07:00	07:27
	17:04	17:44	18:16	19:51	20:23	20:41	20:31	19:52	18:59	18:10	16:35	16:34
24	07:23	06:46	06:00	06:09	05:34	05:27	05:46	06:18	06:50	07:24	07:02	07:28
	17:05	17:45	18:18	19:52	20:24	20:42	20:30	19:50	18:57	18:08	16:35	16:34
25	07:22	06:45	05:58	06:08	05:33	05:27	05:47	06:19	06:51	06:25	07:03	07:28
	17:07	17:46	18:19	19:53	20:25	20:42	20:29	19:49	18:56	17:07	16:34	16:35
26	07:21	06:43	05:57	06:06	05:33	05:27	05:48	06:20	06:52	06:26	07:04	07:29
	17:08	17:47	18:20	19:54	20:25	20:42	20:28	19:47	18:54	17:05	16:34	16:36
27	07:20	06:42	05:55	06:05	05:32	05:28	05:49	06:21	06:53	06:27	07:05	07:29
	17:09	17:48	18:21	19:55	20:26	20:42	20:27	19:45	18:52	17:04	16:33	16:36
28	07:20	06:40	05:53	06:03	05:31	05:28	05:50	06:22	06:55	06:29	07:06	07:29
	17:10	17:50	18:22	19:56	20:27	20:42	20:26	19:44	18:50	17:02	16:33	16:37
29	07:19	06:52	06:02	06:11	05:28	05:28	05:51	06:23	06:56	06:30	07:07	07:30
	17:12	17:53	18:25	19:58	20:28	20:42	20:25	19:42	18:49	17:01	16:32	16:38
30	07:18	06:50	06:01	06:10	05:30	05:29	05:52	06:24	06:57	06:31	07:08	07:30
	17:13	17:54	18:26	19:59	20:29	20:42	20:24	19:41	18:47	17:00	16:32	16:38
31	07:17	06:48	06:02	06:11	05:30	05:29	05:53	06:25	06:58	06:32	07:09	07:30
	17:14	17:55	18:27	19:59	20:30	20:42	20:23	19:39	18:47	17:00	16:32	16:39
Potential sun hours	294	296	369	400	451	456	462	430	375	344	296	285
Total, worst case	17										15	3
Sun reduction	0,61										0,59	0,63
Oper. time red.	0,88										0,88	0,88
Wind dir. red.	0,55										0,55	0,55
Total reduction	0,29										0,28	0,30
Total, real	5									4		1

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

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

SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R090 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (109) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

		January	February	March	April	May	June	July	August	September	October	November	December
1	07:30		07:16	06:39	06:46	05:59	05:29	05:29	05:54	06:26	06:58	06:33	07:09
	16:40		17:16	17:51	19:27	20:00	20:30	20:42	20:22	19:37	18:45	16:57	16:32
2	07:30		07:15	06:37	06:45	05:58	05:29	05:30	05:55	06:27	06:59	06:35	07:11
	16:41		17:17	17:52	19:28	20:01	20:31	20:41	20:21	19:36	18:44	16:56	16:31
3	07:30		07:14	06:35	06:43	05:56	05:28	05:30	05:56	06:28	07:00	06:36	07:12
	16:42		17:18	17:53	19:29	20:02	20:32	20:41	20:19	19:34	18:42	16:55	16:31
4	07:30	16:15 (AB02)	07:13	06:34	06:41	05:55	05:28	05:31	05:57	06:29	07:01	06:37	07:13
	16:43	16:16 (AB02)	17:19	17:55	19:30	20:03	20:33	20:41	20:18	19:32	18:40	16:53	16:31
5	07:30	16:16 (AB02)	07:12	06:32	06:40	05:54	05:27	05:32	05:58	06:30	07:02	06:38	07:14
	16:44	16:17 (AB02)	17:21	17:56	19:31	20:04	20:33	20:41	20:17	19:31	18:38	16:52	16:31
6	07:30	16:18 (AB02)	07:11	06:31	06:38	05:53	05:27	05:32	05:59	06:32	07:03	06:40	07:15
	16:45	16:19 (AB02)	17:22	17:57	19:32	20:05	20:34	20:41	20:16	19:29	18:37	16:51	16:30
7	07:30	16:18 (AB02)	07:09	06:29	06:36	05:51	05:27	05:33	06:00	06:33	07:04	06:41	07:16
	16:46	16:20 (AB02)	17:23	17:58	19:33	20:06	20:35	20:40	20:15	19:27	18:35	16:50	16:30
8	07:30	16:19 (AB02)	07:08	06:27	06:35	05:50	05:26	05:33	06:01	06:34	07:05	06:42	07:17
	16:47	16:21 (AB02)	17:25	17:59	19:34	20:07	20:35	20:40	20:13	19:25	18:33	16:49	16:30
9	07:30	16:19 (AB02)	07:07	06:26	06:33	05:49	05:26	05:34	06:02	06:35	07:07	06:43	07:17
	16:48	16:21 (AB02)	17:26	18:00	19:35	20:08	20:36	20:40	20:12	19:24	18:32	16:48	16:30
10	07:30	16:20 (AB02)	07:06	06:24	06:31	05:48	05:26	05:35	06:03	06:36	07:08	06:45	07:18
	16:49	16:23 (AB02)	17:27	18:02	19:37	20:10	20:37	20:39	20:11	19:22	18:30	16:46	16:30
11	07:30	16:21 (AB02)	07:05	06:22	06:30	05:47	05:26	05:35	06:04	06:37	07:09	06:46	07:19
	16:50	16:22 (AB02)	17:28	18:03	19:38	20:11	20:37	20:39	20:09	19:20	18:28	16:45	16:30
12	07:29	16:22 (AB02)	07:03	06:21	06:28	05:46	05:26	05:36	06:05	06:38	07:10	06:47	07:20
	16:51	16:25 (AB02)	17:30	18:04	19:39	20:12	20:38	20:38	20:08	19:18	18:27	16:44	16:30
13	07:29	16:24 (AB02)	07:02	06:19	06:26	05:44	05:26	05:37	06:06	06:39	07:11	06:48	07:21
	16:52	16:26 (AB02)	17:31	18:05	19:40	20:13	20:38	20:38	20:07	19:17	18:25	16:43	16:30
14	07:29	16:24 (AB02)	07:01	06:17	06:25	05:43	05:26	05:38	06:08	06:40	07:12	06:50	07:22
	16:53	16:27 (AB02)	17:32	18:06	19:41	20:14	20:39	20:37	20:05	19:15	18:23	16:43	16:31
15	07:28	16:26 (AB02)	06:59	06:16	06:23	05:42	05:25	05:39	06:09	06:41	07:13	06:51	07:22
	16:54	16:29 (AB02)	17:34	18:07	19:42	20:15	20:39	20:37	20:04	19:13	18:22	16:42	16:31
16	07:28	16:28 (AB02)	06:58	06:14	06:21	05:41	05:25	05:39	06:10	06:42	07:14	06:52	07:23
	16:56	16:29 (AB02)	17:35	18:09	19:43	20:16	20:39	20:36	20:02	19:11	18:20	16:41	16:31
17	07:27	16:29 (AB02)	06:57	06:12	06:20	05:40	05:26	05:40	06:11	06:43	07:16	06:53	07:24
	16:57	17:36	18:10	19:44	20:17	20:40	20:35	20:20	20:01	19:10	18:19	16:40	16:31
18	07:27	16:30 (AB02)	06:56	06:10	06:18	05:39	05:26	05:41	06:12	06:44	07:17	06:54	07:24
	16:58	17:37	18:11	19:45	20:18	20:40	20:35	20:20	20:01	19:08	18:17	16:39	16:32
19	07:26	16:31 (AB02)	06:55	06:09	06:17	05:38	05:26	05:42	06:13	06:45	07:18	06:56	07:25
	16:59	17:39	18:12	19:47	20:19	20:40	20:34	20:19	20:00	19:06	18:16	16:38	16:32
20	07:26	16:32 (AB02)	06:54	06:07	06:15	05:38	05:26	05:43	06:14	06:46	07:19	06:57	07:26
	17:00	17:40	18:13	19:48	20:20	20:41	20:33	20:18	20:01	19:04	18:14	16:37	16:32
21	07:25	16:33 (AB02)	06:53	06:05	06:14	05:37	05:26	05:44	06:15	06:47	07:20	06:58	07:26
	17:02	17:41	18:14	19:49	20:21	20:41	20:32	20:17	20:00	19:03	18:13	16:37	16:33
22	07:24	16:34 (AB02)	06:52	06:04	06:12	05:36	05:26	05:45	06:16	06:48	07:21	06:59	07:27
	17:03	17:42	18:15	19:50	20:22	20:41	20:32	20:18	20:01	19:01	18:11	16:36	16:33
23	07:24	16:35 (AB02)	06:51	06:02	06:11	05:35	05:26	05:45	06:17	06:49	07:23	07:00	07:27
	17:04	17:44	18:16	19:51	20:23	20:41	20:31	20:19	20:02	19:01	18:10	16:35	16:34
24	07:23	16:36 (AB02)	06:50	06:00	06:09	05:34	05:27	05:46	06:18	06:50	07:24	07:02	07:28
	17:05	17:45	18:18	19:52	20:24	20:42	20:30	20:20	20:03	19:00	18:08	16:35	16:34
25	07:22	16:37 (AB02)	06:49	05:58	06:08	05:33	05:27	05:47	06:19	06:51	06:25	07:03	07:28
	17:07	17:46	18:19	19:53	20:25	20:42	20:29	20:20	20:03	19:00	18:06	16:34	16:35
26	07:21	16:38 (AB02)	06:48	05:57	06:06	05:33	05:27	05:48	06:20	06:52	06:26	07:04	07:29
	17:08	17:47	18:20	19:54	20:25	20:42	20:28	20:20	20:03	19:00	18:06	16:34	16:36
27	07:20	16:39 (AB02)	06:47	05:55	06:05	05:32	05:28	05:49	06:21	06:53	06:27	07:05	16:36
	17:09	17:48	18:21	19:55	20:26	20:42	20:27	20:20	20:03	19:00	18:06	16:34	16:36
28	07:20	16:40 (AB02)	06:46	05:53	06:03	05:31	05:28	05:50	06:22	06:55	06:29	07:06	16:36
	17:10	17:50	18:22	19:56	20:27	20:42	20:26	20:20	20:03	19:00	18:06	16:34	16:36
29	07:19	16:41 (AB02)	06:45	05:52	06:02	05:31	05:28	05:51	06:23	06:56	06:30	07:07	16:37
	17:12	17:51	18:23	19:58	20:28	20:42	20:25	20:20	20:03	19:00	18:06	16:34	16:37
30	07:18	16:42 (AB02)	06:44	05:50	06:01	05:30	05:29	05:52	06:24	06:57	06:31	07:08	16:38
	17:13	17:52	18:24	19:59	20:29	20:42	20:24	20:20	20:03	19:00	18:06	16:34	16:38
31	07:17	16:43 (AB02)	06:43	05:48	06:00	05:30	05:28	05:53	06:25	06:58	06:32	07:09	16:38
	17:14	17:53	18:25	19:60	20:30	20:42	20:23	20:20	20:03	19:00	18:06	16:34	16:39
Potential sun hours	294	296	369	400	451	456	462	430	375	344	296	285	285
Total, worst case	28												19
Sun reduction	0,61										12		0,63
Oper. time red.	0,88										0,88		0,88
Wind dir. red.	0,54										0,54		0,54
Total reduction	0,29										0,28		0,30
Total, real	8										3		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: WF Abruzzo shadow flickering real case Shadow receptor: R094 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (110)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:56 20:02	05:28 20:32	05:30 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:29 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:27 20:33	05:32 20:41	05:58 20:17	06:30 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:30
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:26 20:35	05:33 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:17 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:46	07:18 16:30
11	07:30 16:50	07:05 17:28	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:35 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:45	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:05 20:08	06:38 19:18	07:10 18:27	06:47 16:44	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:44 20:13	05:26 20:38	05:37 20:38	06:06 20:07	06:39 19:17	07:11 18:25	06:48 16:43	07:21 16:30
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:07 20:05	06:40 19:15	07:12 18:23	06:50 16:42	07:22 16:31
15	07:28 16:54	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:25 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:21 19:43	05:41 20:16	05:25 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:31
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:38 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:37	07:26 16:32
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:32	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:33
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:26 20:41	05:45 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:35	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:42	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:28 16:34
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:33 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34	07:29 16:36
27	07:20 17:09	06:42 17:48	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:53 18:52	06:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:31 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	06:29 17:02	07:06 16:33	07:29 16:37
29	07:19 17:12	06:40 19:23	05:52 19:23	06:02 19:58	05:31 20:28	05:28 20:42	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	07:30 16:38
30	07:18 17:13	06:40 19:24	05:52 19:24	06:01 19:59	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:38
31	07:17 17:14	06:40 19:25	05:52 19:25	06:01 20:30	05:30 20:30	05:29 20:42	05:53 20:23	06:25 19:39	06:58 16:58	06:32 16:58	07:09 16:32	07:30 16:39
Potential sun hours	294	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

Day in month	Sun rise (hh:mm)	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: WF Abruzzo shadow flickering real case Shadow receptor: R095 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (111)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

Table with columns for months (January to December) and rows for days (1 to 31). Each cell contains sun rise and set times (hh:mm) for that day. Summary rows at the bottom include 'Potential sun hours', 'Total, worst case', 'Sun reduction', 'Oper. time red.', 'Wind dir. red.', 'Total reduction', and 'Total, real'.

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

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

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R098 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (112)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	06:00 20:00	05:30 20:30	05:30 20:41	05:55 20:22	06:27 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:42	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:56 20:20	06:28 19:36	06:59 18:44	06:35 16:56	07:10 16:32
3	07:30 16:43	07:14 17:19	06:36 17:54	06:43 19:29	05:57 20:02	05:29 20:32	05:31 20:41	05:57 20:19	06:29 19:34	07:00 18:42	06:36 16:55	07:11 16:32
4	07:30 16:44	07:13 17:20	06:34 17:55	06:42 19:30	05:56 20:03	05:28 20:32	05:32 20:41	05:58 20:18	06:30 19:32	07:01 18:40	06:37 16:54	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:59 20:17	06:31 19:31	07:02 18:39	06:38 16:53	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:28 20:34	05:33 20:40	06:00 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:14 16:31
7	07:30 16:46	07:09 17:24	06:29 17:58	06:37 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:01 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 18:00	06:35 19:34	05:51 20:07	05:27 20:35	05:34 20:40	06:02 20:13	06:34 19:25	07:06 18:34	06:42 16:49	07:16 16:31
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	05:49 20:08	05:27 20:36	05:35 20:39	06:03 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:31
10	07:30 16:50	07:06 17:28	06:24 18:02	06:32 19:37	05:48 20:09	05:27 20:36	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:31
11	07:29 16:51	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:29	06:46 16:46	07:19 16:31
12	07:29 16:52	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:37 20:38	06:06 20:08	06:38 19:19	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:53	07:02 17:31	06:19 18:05	06:27 19:40	05:45 20:13	05:26 20:38	05:38 20:37	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:33	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	07:28 16:55	06:59 17:34	06:16 18:08	06:23 19:42	05:43 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:12	07:14 18:21	06:52 16:41	07:23 16:32
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40	05:41 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:59	06:55 17:38	06:11 18:11	06:19 19:45	05:40 20:18	05:26 20:40	05:42 20:34	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:40	07:24 16:32
19	07:26 17:00	06:54 17:39	06:09 18:12	06:17 19:47	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:39	07:25 16:33
20	07:25 17:01	06:52 17:40	06:07 18:13	06:16 19:48	05:38 20:20	05:26 20:40	05:43 20:33	06:14 19:56	06:46 19:05	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:27 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:34
22	07:24 17:03	06:49 17:43	06:04 18:16	06:13 19:50	05:36 20:22	05:27 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:37	07:27 16:34
23	07:23 17:05	06:48 17:44	06:02 18:17	06:11 19:51	05:36 20:22	05:27 20:41	05:46 20:30	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:35
24	07:23 17:06	06:46 17:45	06:00 18:18	06:10 19:52	05:35 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:58	07:24 18:08	07:01 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:59 18:19	06:08 19:53	05:34 20:24	05:28 20:41	05:48 20:29	06:19 19:49	06:52 18:56	06:25 17:07	07:03 16:35	07:28 16:36
26	07:21 17:08	06:43 17:48	05:57 18:20	06:07 19:54	05:33 20:25	05:28 20:41	05:49 20:28	06:20 19:47	06:53 18:54	06:26 17:06	07:04 16:34	07:28 16:36
27	07:20 17:10	06:42 17:49	05:55 18:21	06:05 19:55	05:33 20:26	05:28 20:42	05:50 20:27	06:21 19:45	06:54 18:52	06:27 17:04	07:05 16:34	07:29 16:37
28	07:20 17:11	06:40 17:50	05:53 18:22	06:04 19:56	05:32 20:27	05:29 20:42	05:51 20:26	06:23 19:44	06:55 18:51	06:29 17:03	07:06 16:33	07:29 16:38
29	07:19 17:12		06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:52 20:25	06:24 19:42	06:56 18:49	06:30 17:01	07:07 16:33	07:29 16:38
30	07:18 17:13		06:50 19:24	06:01 19:59	05:31 20:29	05:30 20:41	05:53 20:24	06:25 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:15		06:48 19:26		05:30 20:29		05:54 20:23	06:26 19:39		06:32 16:59		07:30 16:40
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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



### SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R114 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (113)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	06:00 20:00	05:30 20:30	05:30 20:41	05:55 20:22	06:27 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:42	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:56 20:20	06:28 19:36	06:59 18:44	06:35 16:56	07:10 16:32
3	07:30 16:43	07:14 17:19	06:36 17:54	06:43 19:29	05:57 20:02	05:29 20:32	05:31 20:41	05:57 20:19	06:29 19:34	07:00 18:42	06:36 16:55	07:11 16:32
4	07:30 16:44	07:13 17:20	06:34 17:55	06:41 19:30	05:56 20:03	05:28 20:32	05:32 20:41	05:58 20:18	06:30 19:32	07:01 18:40	06:37 16:54	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:59 20:17	06:31 19:31	07:02 18:39	06:38 16:53	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:28 20:34	05:33 20:40	06:00 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:14 16:31
7	07:30 16:46	07:09 17:24	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:34	05:33 20:40	06:01 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:51 20:07	05:27 20:35	05:34 20:40	06:02 20:13	06:34 19:25	07:05 18:34	06:42 16:49	07:16 16:31
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	05:49 20:08	05:27 20:36	05:35 20:39	06:03 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:31
10	07:30 16:49	07:06 17:28	06:24 18:02	06:31 19:37	05:48 20:09	05:27 20:36	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:31
11	07:29 16:51	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:29	06:46 16:46	07:19 16:31
12	07:29 16:52	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:37 20:38	06:06 20:08	06:38 19:19	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:53	07:02 17:31	06:19 18:05	06:27 19:40	05:45 20:13	05:26 20:38	05:38 20:37	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:33	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	07:28 16:55	06:59 17:34	06:16 18:08	06:23 19:42	05:43 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:12	07:14 18:21	06:52 16:41	07:23 16:32
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40	05:41 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:38	06:11 18:11	06:19 19:45	05:40 20:18	05:26 20:40	05:42 20:34	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 17:00	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:55 16:39	07:25 16:33
20	07:25 17:01	06:52 17:40	06:07 18:13	06:16 19:48	05:38 20:20	05:26 20:40	05:43 20:33	06:14 19:56	06:46 19:05	07:19 18:14	06:57 16:38	07:25 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:27 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:43	06:04 18:15	06:12 19:50	05:36 20:22	05:27 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:37	07:27 16:34
23	07:23 17:05	06:48 17:44	06:02 18:17	06:11 19:51	05:36 20:22	05:27 20:41	05:46 20:30	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	07:23 17:06	06:46 17:45	06:00 18:18	06:09 19:52	05:35 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:58	07:24 18:08	07:01 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:59 18:19	06:08 19:53	05:34 20:24	05:28 20:41	05:48 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:35	07:28 16:36
26	07:21 17:08	06:43 17:48	05:57 18:20	06:07 19:54	05:33 20:25	05:28 20:41	05:49 20:28	06:20 19:47	06:53 18:54	06:26 17:06	07:04 16:34	07:28 16:36
27	07:20 17:10	06:42 17:49	05:55 18:21	06:05 19:55	05:33 20:26	05:28 20:41	05:50 20:27	06:21 19:45	06:54 18:52	06:27 17:04	07:05 16:34	07:29 16:37
28	07:19 17:11	06:40 17:50	05:53 18:22	06:04 19:56	05:32 20:27	05:29 20:41	05:51 20:26	06:22 19:44	06:55 18:51	06:29 17:03	07:06 16:33	07:29 16:38
29	07:19 17:12	06:40 17:50	05:53 18:22	06:04 19:56	05:32 20:27	05:29 20:41	05:51 20:26	06:22 19:44	06:55 18:51	06:29 17:03	07:06 16:33	07:29 16:38
30	07:18 17:13	06:40 17:50	05:53 18:22	06:04 19:56	05:32 20:27	05:29 20:41	05:51 20:26	06:22 19:44	06:55 18:51	06:29 17:03	07:06 16:33	07:29 16:38
31	07:17 17:15	06:40 17:50	05:53 18:22	06:04 19:56	05:32 20:27	05:29 20:41	05:51 20:26	06:22 19:44	06:55 18:51	06:29 17:03	07:06 16:33	07:29 16:38
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R117 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (114)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:41	07:16 17:16	06:39 17:51	07:20 (AB08) 17:51	06:47 19:27	07:29 (AB09) 20:00
2	07:30 16:42	07:15 17:17	06:37 17:52	07:21 (AB08) 19:28	06:45 19:28	07:29 (AB09) 20:01
3	07:30 16:43	07:14 17:19	06:36 17:54	07:24 (AB08) 19:29	06:43 19:29	07:27 (AB09) 20:02
4	07:30 16:44	07:13 17:20	06:34 17:55	07:27 (AB08) 19:30	06:42 19:30	07:25 (AB09) 20:03
5	07:30 16:45	07:12 17:21	06:32 17:56	07:33 (AB08) 19:31	06:40 19:31	07:24 (AB09) 20:04
6	07:30 16:45	07:11 17:22	06:31 17:57	07:24 (AB08) 19:32	06:38 19:32	07:22 (AB09) 20:05
7	07:30 16:46	07:09 17:24	06:29 17:58	07:20 (AB08) 19:33	06:37 19:33	07:20 (AB09) 20:06
8	07:30 16:47	07:08 17:25	06:27 18:00	07:19 (AB08) 19:34	06:35 19:34	07:19 (AB09) 20:07
9	07:30 16:48	07:07 17:26	06:26 18:01	07:17 (AB08) 19:36	06:33 19:36	07:17 (AB09) 20:08
10	07:30 16:50	07:06 17:28	06:24 18:02	07:15 (AB08) 19:37	06:32 19:37	07:15 (AB09) 20:09
11	07:29 16:51	07:05 17:29	06:23 18:03	07:14 (AB08) 19:38	06:30 19:38	07:14 (AB09) 20:11
12	07:29 16:52	07:03 17:30	06:21 18:04	07:14 (AB08) 19:39	06:28 19:39	07:14 (AB09) 20:12
13	07:29 16:53	07:02 17:31	07:38 (AB08) 18:05	06:19 19:40	06:27 19:40	07:13 (AB09) 20:13
14	07:28 16:54	07:01 17:33	07:36 (AB08) 18:06	06:17 19:41	06:25 19:41	07:14 (AB09) 20:14
15	07:28 16:55	06:59 17:34	07:34 (AB08) 18:08	06:16 19:42	06:23 19:42	07:14 (AB09) 20:15
16	07:28 16:56	06:58 17:35	07:33 (AB08) 18:09	06:14 19:43	06:22 19:43	07:15 (AB09) 20:16
17	07:27 16:57	06:57 17:36	07:30 (AB08) 18:10	06:12 19:44	06:20 19:44	07:16 (AB09) 20:17
18	07:27 16:59	06:55 17:38	07:28 (AB08) 18:11	06:11 19:45	06:19 19:45	07:17 (AB09) 20:18
19	07:26 17:00	06:54 17:39	07:26 (AB08) 18:12	06:09 19:47	06:17 19:47	07:18 (AB09) 20:19
20	07:25 17:01	06:52 17:40	07:25 (AB08) 18:13	06:07 19:48	06:16 19:48	07:19 (AB09) 20:20
21	07:25 17:02	06:51 17:41	07:24 (AB08) 18:14	06:06 19:49	06:14 19:49	07:20 (AB09) 20:21
22	07:24 17:03	06:49 17:43	07:24 (AB08) 18:16	06:04 19:50	06:13 19:50	07:23 (AB09) 20:22
23	07:24 17:05	06:48 17:44	07:22 (AB08) 18:17	06:02 19:51	06:11 19:51	07:25 (AB09) 20:23
24	07:23 17:06	06:46 17:45	07:21 (AB08) 18:18	06:00 19:52	06:10 19:52	07:30 (AB09) 20:23
25	07:22 17:07	06:45 17:46	07:19 (AB08) 18:19	05:59 19:53	06:08 19:53	07:37 (AB09) 20:24
26	07:21 17:08	06:43 17:48	07:18 (AB08) 18:20	05:57 19:54	06:07 19:54	07:30 (AB09) 20:25
27	07:20 17:10	06:42 17:49	07:18 (AB08) 18:21	05:55 19:55	06:05 19:55	07:30 (AB09) 20:26
28	07:20 17:11	06:40 17:50	07:19 (AB08) 18:22	05:53 19:56	06:04 19:56	07:30 (AB09) 20:27
29	07:19 17:12		07:19 (AB08) 19:23	05:52 19:23	06:02 19:23	07:35 (AB09) 20:28
30	07:18 17:13		07:19 (AB08) 19:24	05:51 19:24	06:01 19:24	07:35 (AB09) 20:29
31	07:17 17:15		07:19 (AB08) 19:26	05:50 19:26	06:00 19:26	07:35 (AB09) 20:29
Potential sun hours	295	296	369	400	451	455
Total, worst case		319	243	872		
Sun reduction		0,55	0,49	0,44		
Oper. time red.		0,88	0,88	0,88		
Wind dir. red.		0,71	0,67	0,66		
Total reduction		0,34	0,28	0,25		
Total, real		109	69	217		

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: WF Abruzzo shadow flickering real case Shadow receptor: R117 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (114)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December	
1	05:30 20:41	05:55 20:22	06:27 19:37	07:13 (AB09) 08:00 (AB09)	06:58 18:45	06:33 16:58	07:09 16:32
2	05:30 20:41	05:58 20:21	06:28 19:36	07:14 (AB09) 08:00 (AB09)	06:59 18:44	06:35 16:56	07:10 16:32
3	05:31 20:41	05:57 20:19	06:29 19:34	07:15 (AB09) 08:00 (AB09)	07:00 18:42	06:36 16:55	07:11 16:32
4	05:32 20:41	05:58 20:18	06:30 19:32	07:16 (AB09) 07:59 (AB09)	07:01 18:40	06:37 16:54	07:13 16:31
5	05:32 20:41	05:59 20:17	06:31 19:31	07:17 (AB09) 07:59 (AB09)	07:02 18:39	06:38 16:53	07:14 16:31
6	05:33 20:40	06:00 20:16	06:32 19:29	07:18 (AB09) 07:59 (AB09)	07:03 18:37	06:40 16:51	07:14 16:31
7	05:33 20:40	06:01 20:15	06:33 19:27	07:19 (AB09) 07:58 (AB09)	07:04 18:35	06:41 16:50	07:15 16:31
8	05:34 20:40	06:02 20:13	06:34 19:26	07:20 (AB09) 07:58 (AB09)	07:06 18:34	06:42 16:49	07:16 16:31
9	05:35 20:39	06:03 20:12	06:35 19:24	07:21 (AB09) 07:57 (AB09)	07:07 18:32	06:43 16:48	07:17 16:31
10	05:35 20:39	06:04 20:11	06:36 19:22	07:22 (AB09) 07:56 (AB09)	07:08 18:30	06:45 16:47	07:18 16:31
11	05:36 20:39	06:05 20:09	06:37 19:20	07:22 (AB09) 07:55 (AB09)	07:09 18:29	06:46 16:46	07:19 16:31
12	05:37 20:38	06:06 20:08	06:38 19:19	07:23 (AB09) 07:54 (AB09)	07:10 18:27	06:47 16:45	07:20 16:31
13	05:38 20:38	06:07 20:07	06:39 19:17	07:24 (AB09) 07:53 (AB09)	07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 20:05	06:40 19:15	07:25 (AB09) 07:52 (AB09)	07:12 18:24	06:49 16:43	07:21 16:31
15	05:39 20:36	06:09 20:04	06:41 19:13	07:25 (AB09) 07:50 (AB09)	07:13 18:22	06:51 16:42	07:22 16:31
16	05:40 20:36	06:10 20:02	06:42 19:12	07:26 (AB09) 07:48 (AB09)	07:15 18:21	06:52 16:41	07:23 16:32
17	05:41 20:35	06:11 20:01	06:43 19:10	07:27 (AB09) 07:46 (AB09)	07:16 18:19	06:53 16:40	07:24 16:32
18	05:42 20:34	06:12 19:59	06:44 19:08	07:27 (AB09) 07:44 (AB09)	07:17 18:17	06:54 16:40	07:24 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	07:28 (AB09) 07:40 (AB09)	07:18 18:16	06:56 16:39	07:25 16:33
20	05:43 20:33	06:14 19:56	06:46 19:05	07:30 (AB09) 07:29 (AB09)	06:46 07:19	06:57 16:38	07:26 16:33
21	05:44 20:32	06:15 19:55	06:47 19:03	07:36 (AB09) 07:27 (AB09)	18:14 07:20	06:58 16:37	16:33 16:34
22	05:45 20:31	06:16 19:53	06:48 19:01	07:25 (AB09) 07:52 (AB09)	07:21 18:11	06:59 16:37	07:27 16:34
23	05:46 20:31	06:17 19:52	06:49 18:59	07:23 (AB09) 07:54 (AB09)	07:23 18:10	07:00 16:36	07:27 16:35
24	05:47 20:30	06:18 19:50	06:51 18:58	07:21 (AB09) 07:55 (AB09)	07:24 18:08	07:02 16:35	07:28 16:35
25	05:48 20:29	06:19 19:49	06:52 18:56	07:20 (AB09) 07:56 (AB09)	06:25 17:07	07:03 16:35	07:28 16:36
26	05:49 20:28	06:20 19:47	06:53 18:54	07:18 (AB09) 07:57 (AB09)	06:26 17:06	07:04 16:34	07:28 16:36
27	05:50 20:27	06:21 19:46	06:54 18:52	07:17 (AB09) 07:58 (AB09)	06:27 17:04	07:05 16:34	07:29 16:37
28	05:51 20:26	06:23 19:44	06:55 18:51	07:16 (AB09) 07:58 (AB09)	06:29 17:03	07:06 16:33	07:29 16:38
29	05:52 20:25	06:24 19:42	06:56 18:49	07:15 (AB09) 07:59 (AB09)	06:30 17:01	07:07 16:33	07:29 16:38
30	05:53 20:24	06:25 19:41	06:57 18:47	07:14 (AB09) 07:59 (AB09)	06:31 17:00	07:08 16:32	07:30 16:39
31	05:54 20:23	06:26 19:39	06:58 18:45	07:14 (AB09) 07:59 (AB09)	06:32 16:59	07:09 16:40	07:30 16:40
Potential sun hours	462	430	375	344	296	285	
Total, worst case		434	633		385		
Sun reduction		0,42	0,46		0,52		
Oper. time red.		0,88	0,88		0,88		
Wind dir. red.		0,66	0,66		0,71		
Total reduction		0,24	0,27		0,32		
Total, real		104	168		125		

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 Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it

Calculated:

15/11/2023 18:37/3.5.587

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real case Shadow receptor: R120 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (115)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:30	08:27 (AB09)   07:16	08:58 (AB09)   06:39	06:47	06:00	05:30	05:30	05:55	06:27	06:58	06:33	07:09	08:13 (AB09)
2	16:41	09:18 (AB09)   17:16	09:04 (AB09)   17:51	19:27	20:00	20:30	20:41	20:22	19:37	18:45	16:57	16:32	50 09:03 (AB09)
3	07:30	08:27 (AB09)   07:15	06:37	06:45	05:58	05:29	05:30	05:56	06:28	06:59	06:35	07:10	08:14 (AB09)
4	16:42	09:19 (AB09)   17:17	17:52	19:28	20:01	20:31	20:41	20:21	19:36	18:44	16:56	16:32	51 09:05 (AB09)
5	07:30	08:28 (AB09)   07:14	06:36	06:43	05:57	05:29	05:31	05:57	06:29	07:00	06:36	07:11	08:14 (AB09)
6	16:43	09:19 (AB09)   17:19	17:54	19:29	20:02	20:32	20:41	20:19	19:34	18:42	16:55	16:32	51 09:05 (AB09)
7	07:30	08:28 (AB09)   07:13	06:34	06:42	05:56	05:28	05:32	05:58	06:30	07:01	06:37	07:13	08:15 (AB09)
8	16:44	09:19 (AB09)   17:20	17:55	19:30	20:03	20:33	20:41	20:18	19:32	18:40	16:54	16:31	51 09:06 (AB09)
9	07:30	08:29 (AB09)   07:12	06:32	06:40	05:54	05:28	05:32	05:59	06:31	07:02	06:38	07:14	08:15 (AB09)
10	16:44	09:20 (AB09)   17:21	17:56	19:31	20:04	20:33	20:41	20:17	19:31	18:39	16:53	16:31	51 09:06 (AB09)
11	07:30	08:29 (AB09)   07:11	06:31	06:38	05:53	05:28	05:33	06:00	06:32	07:03	06:40	07:15	08:15 (AB09)
12	16:45	09:20 (AB09)   17:22	17:57	19:32	20:05	20:34	20:40	20:16	19:29	18:37	16:51	16:31	52 09:07 (AB09)
13	07:30	08:30 (AB09)   07:09	06:29	06:37	05:52	05:27	05:33	06:01	06:33	07:04	06:41	07:15	08:16 (AB09)
14	16:46	09:21 (AB09)   17:24	17:58	19:33	20:06	20:35	20:40	20:15	19:27	18:35	16:50	16:31	51 09:07 (AB09)
15	07:30	08:30 (AB09)   07:08	06:27	06:35	05:51	05:27	05:34	06:02	06:34	07:06	06:42	07:16	08:16 (AB09)
16	16:47	09:21 (AB09)   17:25	18:00	19:34	20:07	20:35	20:40	20:13	19:25	18:34	16:49	16:31	52 09:08 (AB09)
17	07:30	08:30 (AB09)   07:07	06:26	06:33	05:49	05:27	05:35	06:03	06:35	07:07	06:43	07:17	08:17 (AB09)
18	16:48	09:21 (AB09)   17:26	18:01	19:36	20:08	20:36	20:39	20:12	19:24	18:32	16:48	16:31	51 09:08 (AB09)
19	07:30	08:31 (AB09)   07:06	06:24	06:32	05:48	05:27	05:35	06:04	06:36	07:08	06:45	07:18	08:16 (AB09)
20	16:49	09:22 (AB09)   17:28	18:02	19:37	20:10	20:36	20:39	20:11	19:22	18:30	16:47	16:47	7 08:29 (AB09)   07:18
21	07:29	08:31 (AB09)   07:05	06:22	06:30	05:47	05:26	05:36	06:05	06:37	07:09	06:46	07:19	08:17 (AB09)
22	16:51	09:21 (AB09)   17:29	18:03	19:38	20:11	20:37	20:39	20:09	19:20	18:29	16:46	16	08:41 (AB09)   16:31
23	07:29	08:32 (AB09)   07:03	06:21	06:28	05:46	05:26	05:37	06:06	06:38	07:10	06:47	08:22 (AB09)   07:20	
24	16:52	09:22 (AB09)   17:30	18:04	19:39	20:12	20:37	20:38	20:08	19:19	18:27	16:45	22	08:44 (AB09)   16:31
25	07:29	08:33 (AB09)   07:02	06:19	06:27	05:45	05:26	05:38	06:07	06:39	07:11	06:48	08:20 (AB09)   07:21	
26	16:53	09:22 (AB09)   17:31	18:05	19:40	20:13	20:38	20:38	20:07	19:17	18:25	16:44	26	08:46 (AB09)   16:31
27	07:28	08:33 (AB09)   07:01	06:17	06:25	05:44	05:26	05:38	06:08	06:40	07:12	06:49	08:19 (AB09)   07:22	
28	16:54	09:22 (AB09)   17:33	18:06	19:41	20:14	20:38	20:37	20:05	19:15	18:24	16:43	30	08:49 (AB09)   16:31
29	07:28	08:34 (AB09)   06:59	06:16	06:23	05:43	05:26	05:39	06:09	06:41	07:13	06:51	08:17 (AB09)   07:22	
30	16:55	09:22 (AB09)   17:34	18:08	19:42	20:15	20:39	20:36	20:04	19:13	18:22	16:42	33	08:50 (AB09)   16:31
31	07:28	08:34 (AB09)   06:58	06:14	06:22	05:42	05:26	05:40	06:10	06:42	07:15	06:52	08:16 (AB09)   07:23	
32	16:56	09:22 (AB09)   17:35	18:09	19:43	20:16	20:39	20:36	20:02	19:12	18:21	16:41	35	08:51 (AB09)   16:32
33	07:27	08:35 (AB09)   06:57	06:12	06:20	05:41	05:26	05:41	06:11	06:43	07:16	06:53	08:15 (AB09)   07:24	
34	16:57	09:23 (AB09)   17:36	18:10	19:44	20:17	20:40	20:35	20:01	19:10	18:19	16:40	37	08:52 (AB09)   16:32
35	07:27	08:36 (AB09)   06:55	06:11	06:19	05:40	05:26	05:42	06:12	06:44	07:17	06:54	08:15 (AB09)   07:24	
36	16:59	09:22 (AB09)   17:38	18:11	19:45	20:18	20:40	20:34	20:04	19:08	18:17	16:40	39	08:54 (AB09)   16:32
37	07:26	08:36 (AB09)   06:54	06:09	06:17	05:39	05:26	05:42	06:13	06:45	07:18	06:56	41	08:14 (AB09)   07:25
38	17:00	09:22 (AB09)   17:39	18:12	19:47	20:19	20:40	20:34	20:04	19:06	18:16	16:39	41	08:55 (AB09)   16:33
39	07:25	08:37 (AB09)   06:52	06:07	06:16	05:38	05:26	05:43	06:14	06:46	07:19	06:57	08:14 (AB09)   07:26	
40	17:01	09:22 (AB09)   17:40	18:13	19:48	20:20	20:41	20:33	20:03	19:05	18:14	16:38	42	08:56 (AB09)   16:33
41	07:25	08:38 (AB09)   06:51	06:06	06:14	05:37	05:27	05:44	06:15	06:47	07:20	06:58	08:14 (AB09)   07:26	
42	17:02	09:21 (AB09)   17:41	18:14	19:49	20:21	20:41	20:32	20:02	19:03	18:13	16:37	43	08:57 (AB09)   16:33
43	07:24	08:39 (AB09)   06:49	06:04	06:13	05:36	05:27	05:45	06:16	06:48	07:21	06:59	08:13 (AB09)   07:27	
44	17:03	09:21 (AB09)   17:43	18:16	19:50	20:22	20:41	20:31	20:01	19:01	18:11	16:37	45	08:58 (AB09)   16:34
45	07:24	08:40 (AB09)   06:48	06:02	06:11	05:36	05:27	05:46	06:17	06:49	07:23	07:00	08:13 (AB09)   07:27	
46	17:05	09:21 (AB09)   17:44	18:17	19:51	20:23	20:41	20:31	20:01	19:01	18:10	16:36	46	08:59 (AB09)   16:34
47	07:23	08:41 (AB09)   06:46	06:00	06:10	05:35	05:27	05:47	06:18	06:51	07:24	07:02	08:13 (AB09)   07:28	
48	17:06	09:20 (AB09)   17:45	18:18	19:52	20:23	20:41	20:30	20:00	19:00	18:08	16:35	46	08:59 (AB09)   16:35
49	07:22	08:42 (AB09)   06:45	05:59	06:08	05:34	05:28	05:48	06:19	06:52	07:25	07:03	08:13 (AB09)   07:28	
50	17:07	09:19 (AB09)   17:46	18:19	19:53	20:24	20:41	20:29	20:00	19:00	18:07	16:35	48	09:01 (AB09)   16:36
51	07:21	08:43 (AB09)   06:43	05:57	06:07	05:33	05:28	05:49	06:20	06:53	07:26	07:04	08:13 (AB09)   07:28	
52	17:08	09:18 (AB09)   17:48	18:20	19:54	20:25	20:42	20:28	20:00	18:54	17:06	16:34	48	09:01 (AB09)   16:36
53	07:20	08:45 (AB09)   06:42	05:55	06:05	05:33	05:28	05:50	06:21	06:54	07:27	07:05	08:13 (AB09)   07:29	
54	17:10	09:17 (AB09)   17:49	18:21	19:55	20:26	20:42	20:27	20:00	18:52	17:04	16:34	49	09:02 (AB09)   16:37
55	07:20	08:46 (AB09)   06:40	05:53	06:04	05:32	05:29	05:51	06:23	06:55	07:29	07:06	08:13 (AB09)   07:29	
56	17:11	09:16 (AB09)   17:50	18:22	19:56	20:27	20:42	20:26	20:00	18:51	17:03	16:33	49	09:02 (AB09)   16:38
57	07:19	08:48 (AB09)	06:52	06:02	05:31	05:29	05:52	06:24	06:56	07:30	07:07	08:13 (AB09)   07:29	
58	17:12	09:14 (AB09)	19:23	19:58	20:28	20:42	20:25	20:00	18:49	17:01	16:33	49	09:02 (AB09)   16:38
59	07:18	08:50 (AB09)	06:50	06:01	05:31	05:29	05:53	06:25	06:57	07:31	07:08	08:13 (AB09)   07:30	
60	17:13	09:12 (AB09)	19:24	19:59	20:29	20:42	20:24	20:00	18:47	17:00	16:32	50	09:03 (AB09)   16:39
61	07:17	08:53 (AB09)	06:48	06:04	05:30	05:28	05:54	06:26	06:58	07:32	07:09	08:13 (AB09)   07:30	
62	17:15	09:09 (AB09)	19:26	19:61	20:30	20:23	20:00	19:39	18:59	17:02	16:40	52	09:18 (AB09)
63	Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
64	Total, worst case	1353											1590
65	Sun reduction	0,61		0,55									0,63
66	Oper. time red.	0,88		0,88									0,88
67	Wind dir. red.	0,74		0,74									0,74
68	Total reduction	0,40		0,36									0,41
69	Total, real	536		2									652

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

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

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R126 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (116)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June		
1	07:30 16:41	09:13 (AB06) 09:35 (AB06)	07:16 17:16	06:39 17:51	08:14 (AB05) 08:51 (AB05)	06:47 19:27	05:59 20:00	05:29 20:30
2	07:30 16:41	09:14 (AB06) 09:36 (AB06)	07:15 17:17	06:37 17:52	08:14 (AB05) 08:50 (AB05)	06:45 19:28	05:58 20:01	05:29 20:31
3	07:30 16:42	09:14 (AB06) 09:37 (AB06)	07:14 17:18	06:36 17:53	08:14 (AB05) 08:50 (AB05)	06:43 19:29	05:57 20:02	05:28 20:32
4	07:30 16:43	09:14 (AB06) 09:38 (AB06)	07:13 17:20	06:34 17:55	08:14 (AB05) 08:49 (AB05)	06:41 19:30	05:55 20:03	05:28 20:33
5	07:30 16:44	09:14 (AB06) 09:39 (AB06)	07:12 17:21	06:32 17:56	08:15 (AB05) 08:47 (AB05)	06:40 19:31	05:54 20:04	05:28 20:33
6	07:30 16:45	09:14 (AB06) 09:40 (AB06)	07:11 17:22	06:31 17:57	08:16 (AB05) 08:46 (AB05)	06:38 19:32	05:53 20:05	05:27 20:34
7	07:30 16:46	09:14 (AB06) 09:41 (AB06)	07:09 17:24	06:29 17:58	08:16 (AB05) 08:44 (AB05)	06:36 19:33	05:52 20:06	05:27 20:35
8	07:30 16:47	09:14 (AB06) 09:40 (AB06)	07:08 17:25	06:27 17:59	08:17 (AB05) 08:42 (AB05)	06:35 19:34	05:50 20:07	05:27 20:35
9	07:30 16:48	09:14 (AB06) 09:41 (AB06)	07:07 17:26	06:26 18:01	08:20 (AB05) 08:40 (AB05)	06:33 19:35	05:49 20:08	05:27 20:36
10	07:30 16:49	09:14 (AB06) 09:42 (AB06)	07:06 17:27	06:24 18:02	08:22 (AB05) 08:37 (AB05)	06:31 19:37	05:48 20:10	05:26 20:36
11	07:29 16:50	09:15 (AB06) 09:43 (AB06)	07:05 17:29	06:22 18:03	08:27 (AB05) 08:30 (AB05)	06:30 19:38	05:47 20:11	05:26 20:37
12	07:29 16:51	09:14 (AB06) 09:43 (AB06)	07:03 17:30	06:21 18:04	08:30 (AB05)	06:28 19:39	05:46 20:12	05:26 20:38
13	07:29 16:52	09:15 (AB06) 09:44 (AB06)	07:02 17:31	06:19 18:05	08:30 (AB05)	06:26 19:40	05:45 20:13	05:26 20:38
14	07:29 16:54	09:15 (AB06) 09:44 (AB06)	07:01 17:32	06:17 18:06	08:30 (AB05)	06:25 19:41	05:44 20:14	05:26 20:39
15	07:28 16:55	09:15 (AB06) 09:45 (AB06)	06:59 17:34	06:16 18:08	08:27 (AB05) 08:42 (AB05)	06:23 19:42	05:43 20:15	05:26 20:39
16	07:28 16:56	09:15 (AB06) 09:45 (AB06)	15 06:58	08:25 (AB05) 08:45 (AB05)	18:09	06:22 19:43	05:42 20:16	05:26 20:39
17	07:27 16:57	09:16 (AB06) 09:46 (AB06)	06:57 17:36	08:22 (AB05) 08:46 (AB05)	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40
18	07:27 16:58	09:16 (AB06) 09:46 (AB06)	06:55 17:38	08:21 (AB05) 08:48 (AB05)	06:11 18:11	06:18 19:45	05:40 20:18	05:26 20:40
19	07:26 16:59	09:17 (AB06) 09:47 (AB06)	06:54 17:39	08:19 (AB05) 08:49 (AB05)	06:09 18:12	06:17 19:47	05:39 20:19	05:26 20:40
20	07:26 17:01	09:17 (AB06) 09:47 (AB06)	06:52 17:40	08:18 (AB05) 08:50 (AB05)	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41
21	07:25 17:02	09:17 (AB06) 09:47 (AB06)	06:51 17:41	08:17 (AB05) 08:51 (AB05)	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41
22	07:24 17:03	09:17 (AB06) 09:46 (AB06)	06:49 17:43	08:17 (AB05) 08:52 (AB05)	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41
23	07:24 17:04	09:18 (AB06) 09:47 (AB06)	06:48 17:44	08:15 (AB05) 08:52 (AB05)	06:02 18:17	06:11 19:51	05:35 20:23	05:27 20:41
24	07:23 17:06	09:19 (AB06) 09:47 (AB06)	06:46 17:45	08:15 (AB05) 08:52 (AB05)	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:41
25	07:22 17:07	09:19 (AB06) 09:46 (AB06)	06:45 17:46	08:14 (AB05) 08:52 (AB05)	05:59 18:19	06:08 19:53	05:34 20:24	05:27 20:42
26	07:21 17:08	09:20 (AB06) 09:46 (AB06)	06:43 17:47	08:15 (AB05) 08:52 (AB05)	05:57 18:20	06:06 19:54	05:33 20:25	05:28 20:42
27	07:20 17:09	09:21 (AB06) 09:45 (AB06)	06:42 17:49	08:14 (AB05) 08:52 (AB05)	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42
28	07:20 17:11	09:22 (AB06) 09:44 (AB06)	06:40 17:50	08:14 (AB05) 08:52 (AB05)	05:53 18:22	06:04 19:56	05:32 20:27	05:28 20:42
29	07:19 17:12	09:23 (AB06) 09:43 (AB06)		06:52 19:23		06:02 19:58	05:31 20:28	05:29 20:42
30	07:18 17:13	09:25 (AB06) 09:41 (AB06)		06:50 19:24		06:01 19:59	05:30 20:29	05:29 20:42
31	07:17 17:14	09:27 (AB06) 09:39 (AB06)		06:48 19:25			05:30 20:30	
Potential sun hours	295	296	369	400	451	455		
Total, worst case	808	442	297					
Sun reduction	0,61	0,55	0,49					
Oper. time red.	0,88	0,88	0,88					
Wind dir. red.	0,75	0,74	0,74					
Total reduction	0,40	0,36	0,32					
Total, real	322	157	94					

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: WF Abruzzo shadow flickering real caseShadow receptor: R126 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (116) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December
1	05:30	05:54	06:27	06:58	06:33	07:09
	20:42	20:22	19:37	18:45	16:57	16:32
2	05:30	05:55	06:28	06:59	06:35	07:11
	20:41	20:21	19:36	18:44	16:56	16:32
3	05:31	05:56	06:29	07:00	09:01 (AB05)	06:36
	20:41	20:19	19:34	18:42	12 09:13 (AB05)	16:55
4	05:31	05:57	06:30	07:01	08:58 (AB05)	06:37
	20:41	20:18	19:32	18:40	19 09:17 (AB05)	16:54
5	05:32	05:58	06:31	07:02	08:56 (AB05)	06:38
	20:41	20:17	19:31	18:39	23 09:19 (AB05)	16:52
6	05:32	05:59	06:32	07:03	08:54 (AB05)	06:40
	20:41	20:16	19:29	18:37	26 09:20 (AB05)	16:51
7	05:33	06:00	06:33	07:04	08:52 (AB05)	06:41
	20:40	20:15	19:27	18:35	29 09:21 (AB05)	16:50
8	05:34	06:02	06:34	07:06	08:51 (AB05)	06:42
	20:40	20:13	19:25	18:33	31 09:22 (AB05)	16:49
9	05:34	06:03	06:35	07:07	08:49 (AB05)	06:43
	20:40	20:12	19:24	18:32	34 09:23 (AB05)	16:48
10	05:35	06:04	06:36	07:08	08:48 (AB05)	06:45
	20:39	20:11	19:22	18:30	35 09:23 (AB05)	16:47
11	05:36	06:05	06:37	07:09	08:48 (AB05)	06:46
	20:39	20:09	19:20	18:29	36 09:24 (AB05)	16:46
12	05:37	06:06	06:38	07:10	08:48 (AB05)	06:47
	20:38	20:08	19:19	18:27	37 09:25 (AB05)	16:45
13	05:37	06:07	06:39	07:11	08:47 (AB05)	06:48
	20:38	20:07	19:17	18:25	38 09:25 (AB05)	16:44
14	05:38	06:08	06:40	07:12	08:47 (AB05)	06:50
	20:37	20:05	19:15	18:24	38 09:25 (AB05)	16:43
15	05:39	06:09	06:41	07:13	08:46 (AB05)	06:51
	20:37	20:04	19:13	18:22	38 09:24 (AB05)	16:42
16	05:40	06:10	06:42	07:14	08:46 (AB05)	06:52
	20:36	20:02	19:12	18:20	38 09:24 (AB05)	16:41
17	05:40	06:11	06:43	07:16	08:47 (AB05)	06:53
	20:35	20:01	19:10	18:19	37 09:24 (AB05)	16:40
18	05:41	06:12	06:44	07:17	08:47 (AB05)	06:54
	20:35	19:59	19:08	18:17	37 09:24 (AB05)	16:39
19	05:42	06:13	06:45	07:18	08:47 (AB05)	06:56
	20:34	19:58	19:06	18:16	36 09:23 (AB05)	16:38
20	05:43	06:14	06:46	07:19	08:47 (AB05)	06:57
	20:33	19:56	19:05	18:14	35 09:22 (AB05)	16:38
21	05:44	06:15	06:47	07:20	08:48 (AB05)	06:58
	20:32	19:55	19:03	18:13	33 09:21 (AB05)	16:37
22	05:45	06:16	06:48	07:21	08:49 (AB05)	06:59
	20:31	19:53	19:01	18:11	32 09:21 (AB05)	16:36
23	05:46	06:17	06:49	07:23	08:50 (AB05)	07:00
	20:31	19:52	18:59	18:10	29 09:19 (AB05)	16:36
24	05:47	06:18	06:50	07:24	08:51 (AB05)	07:02
	20:30	19:50	18:58	18:08	26 09:17 (AB05)	16:35
25	05:48	06:19	06:51	06:25	07:52 (AB05)	07:03
	20:29	19:49	18:56	17:07	23 08:15 (AB05)	16:34
26	05:49	06:20	06:53	06:26	07:55 (AB05)	07:04
	20:28	19:47	18:54	17:05	19 08:14 (AB05)	16:34
27	05:49	06:21	06:54	06:27	07:58 (AB05)	07:05
	20:27	19:45	18:52	17:04	13 08:11 (AB05)	16:33
28	05:50	06:22	06:55	06:29	07:06	08:55 (AB06)
	20:26	19:44	18:51	17:03	16:33	29 09:24 (AB06)
29	05:51	06:23	06:56	06:30	07:07	08:55 (AB06)
	20:25	19:42	18:49	17:01	16:33	29 09:24 (AB06)
30	05:52	06:24	06:57	06:31	07:08	08:55 (AB06)
	20:24	19:41	18:47	17:00	16:32	29 09:24 (AB06)
31	05:53	06:25	06:58	06:32	07:09	08:56 (AB06)
	20:23	19:39	18:44	16:59	16:40	22 09:35 (AB06)
Potential sun hours	462	430	375	344	296	285
Total, worst case				754	533	656
Sun reduction				0,52	0,59	0,63
Oper. time red.				0,88	0,88	0,88
Wind dir. red.				0,74	0,75	0,75
Total reduction				0,34	0,38	0,41
Total, real				255	205	271

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: WF Abruzzo shadow flickering real caseShadow receptor: R129 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (117)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:40	07:16 17:16	06:39 17:51	06:58 (AB04) 07:24 (AB04)	06:46 19:27	07:05 (AB03) 20:00
2	07:30 16:41	07:15 17:17	06:37 17:52	06:56 (AB04) 07:22 (AB04)	06:45 19:28	07:07 (AB03) 20:01
3	07:30 16:42	07:14 17:18	06:36 17:53	06:55 (AB04) 07:22 (AB04)	06:43 19:29	05:57 20:02
4	07:30 16:43	07:13 17:20	06:34 17:55	06:54 (AB04) 07:19 (AB04)	06:41 19:30	05:55 20:03
5	07:30 16:44	07:12 17:21	06:32 17:56	06:56 (AB04) 07:17 (AB04)	06:40 19:31	05:54 20:04
6	07:30 16:45	07:11 17:22	06:31 17:57	06:59 (AB04) 07:14 (AB04)	06:38 19:32	19:08 (AB11) 20:05
7	07:30 16:46	07:09 17:23	06:29 17:58	07:05 (AB04) 07:07 (AB04)	06:36 19:33	19:06 (AB11) 20:06
8	07:30 16:47	07:08 17:25	06:27 17:59	06:27 19:34	06:35 19:34	19:04 (AB11) 20:07
9	07:30 16:48	07:07 17:26	06:26 18:01	06:26 19:35	06:33 19:35	19:04 (AB11) 20:09
10	07:30 16:49	07:06 17:27	06:24 18:02	06:24 19:37	06:31 19:37	19:03 (AB11) 20:10
11	07:30 16:50	07:05 17:29	06:22 18:03	06:22 19:38	06:30 19:38	19:02 (AB11) 20:11
12	07:29 16:51	07:03 17:30	06:21 18:04	06:21 19:39	06:28 19:39	19:02 (AB11) 20:12
13	07:29 16:52	07:02 17:31	07:22 (AB04) 18:05	06:19 19:40	06:26 19:40	19:01 (AB11) 20:13
14	07:29 16:53	07:01 17:32	07:20 (AB04) 18:06	06:17 19:41	06:25 19:41	19:02 (AB11) 20:14
15	07:28 16:55	06:59 17:34	07:19 (AB04) 18:07	06:16 19:42	06:23 19:42	19:02 (AB11) 20:15
16	07:28 16:56	06:58 17:35	07:18 (AB04) 18:09	06:14 19:43	06:22 19:43	19:01 (AB11) 20:16
17	07:27 16:57	06:57 17:36	07:16 (AB04) 18:10	06:12 19:44	06:20 19:44	19:03 (AB11) 20:17
18	07:27 16:58	06:55 17:37	07:15 (AB04) 18:11	06:11 19:45	06:18 19:45	19:03 (AB11) 20:18
19	07:26 16:59	06:54 17:39	07:13 (AB04) 18:12	06:09 19:47	06:17 19:47	19:05 (AB11) 20:19
20	07:26 17:00	06:52 17:40	07:12 (AB04) 18:13	06:07 19:48	06:15 19:48	19:07 (AB11) 20:20
21	07:25 17:02	06:51 17:41	07:10 (AB04) 18:14	06:05 19:49	06:14 19:49	05:37 20:21
22	07:24 17:03	06:49 17:42	07:09 (AB04) 18:15	06:04 19:50	06:12 19:50	05:36 20:22
23	07:24 17:04	06:48 17:44	07:07 (AB04) 18:17	06:02 19:51	06:21 (AB03) 19:51	05:35 20:23
24	07:23 17:05	06:46 17:45	07:06 (AB04) 18:18	06:00 19:52	06:19 (AB03) 19:52	05:34 20:24
25	07:22 17:07	06:45 17:46	07:04 (AB04) 18:19	05:58 19:53	06:17 (AB03) 19:53	05:34 20:25
26	07:21 17:08	06:43 17:47	07:03 (AB04) 18:20	05:57 19:54	06:16 (AB03) 19:54	05:33 20:26
27	07:21 17:09	06:42 17:49	07:01 (AB04) 18:21	05:55 19:55	06:14 (AB03) 19:55	05:32 20:27
28	07:20 17:10	06:40 17:50	07:00 (AB04) 18:22	05:53 19:57	06:12 (AB03) 19:57	05:32 20:28
29	07:19 17:12		07:25 (AB04) 19:23	05:52 19:23	07:10 (AB03) 19:58	05:31 20:28
30	07:18 17:13			05:50 19:24	07:09 (AB03) 19:59	05:30 20:29
31	07:17 17:14			05:48 19:25	07:07 (AB03) 19:59	05:30 20:30
Potential sun hours	295	296	369	400	451	456
Total, worst case		248	223		220	
Sun reduction		0,55	0,49		0,44	
Oper. time red.		0,88	0,88		0,88	
Wind dir. red.		0,69	0,68		0,67	
Total reduction		0,33	0,29		0,26	
Total, real		83	64		56	

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: WF Abruzzo shadow flickering real caseShadow receptor: R129 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (117)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	July	August	September	October	November	December	
1	05:29 20:42	05:54 20:22	06:26 19:37	19:02 (AB11) 19:15 (AB11)	06:58 18:45	06:34 16:57	07:10 16:32
2	05:30 20:41	05:55 20:21	06:27 19:36	19:02 (AB11) 19:13 (AB11)	06:59 18:44	06:35 16:56	07:11 16:31
3	05:31 20:41	05:56 20:19	06:28 19:34	19:02 (AB11) 19:12 (AB11)	07:00 18:42	06:36 16:55	07:12 16:31
4	05:31 20:41	05:57 20:18	06:30 19:32	19:02 (AB11) 19:10 (AB11)	07:01 18:40	06:37 16:53	07:13 16:31
5	05:32 20:41	05:58 20:17	06:31 19:31	19:03 (AB11) 19:08 (AB11)	07:02 18:38	06:38 16:52	07:14 16:31
6	05:32 20:41	05:59 20:16	06:32 19:29	19:04 (AB11) 19:07 (AB11)	07:03 18:37	06:40 16:51	07:15 16:31
7	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	07:37 (AB04) 07:48 (AB04)	06:41 16:50	07:16 16:30
8	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	07:33 (AB04) 07:51 (AB04)	06:42 16:49	07:17 16:30
9	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	07:30 (AB04) 07:53 (AB04)	06:43 16:48	07:17 16:30
10	05:35 20:39	06:03 20:11	06:36 19:22	07:01 (AB03) 07:08 (AB03)	07:08 18:30	06:45 16:47	07:18 16:30
11	05:36 20:39	06:04 20:09	06:37 19:20	06:58 (AB03) 07:11 (AB03)	07:09 18:28	06:46 16:46	07:19 16:30
12	05:36 20:38	06:06 20:08	06:38 19:18	06:59 (AB03) 07:12 (AB03)	07:10 18:27	06:47 16:45	07:20 16:30
13	05:37 20:38	06:07 20:07	06:39 19:17	07:00 (AB03) 07:13 (AB03)	07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 20:05	06:40 19:15	07:01 (AB03) 07:13 (AB03)	07:12 18:24	06:50 16:43	07:22 16:31
15	05:39 20:37	06:09 20:04	06:41 19:13	07:02 (AB03) 07:13 (AB03)	07:13 18:22	06:51 16:42	07:22 16:31
16	05:39 20:36	06:10 20:02	06:42 19:12	07:03 (AB03) 07:13 (AB03)	07:14 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	06:43 19:10	07:04 (AB03) 07:13 (AB03)	07:16 18:19	06:53 16:40	07:24 16:31
18	05:41 20:35	06:12 19:59	06:44 19:08	07:05 (AB03) 07:12 (AB03)	07:17 18:17	06:54 16:39	07:25 16:32
19	05:42 20:34	06:13 19:58	06:45 19:06	07:06 (AB03) 07:11 (AB03)	07:18 18:16	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	06:46 19:04	07:07 (AB03) 07:10 (AB03)	07:19 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	07:41 (AB04) 07:58 (AB04)	06:58 16:37	07:26 16:33
22	05:45 20:32	06:16 19:53	06:48 19:01	07:21 18:11	07:43 (AB04) 07:59 (AB04)	06:59 16:36	07:27 16:34
23	05:46 20:31	06:17 19:52	19:11 (AB11) 19:22 (AB11)	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	05:46 20:30	06:18 19:50	11 19:22 (AB11) 19:09 (AB11)	18:59 06:50	07:24 18:08	14 07:58 (AB04) 07:45 (AB04)	16:36 07:02
25	05:47 20:29	06:19 19:49	15 19:24 (AB11) 19:07 (AB11)	18:57 06:51	12 07:57 (AB04) 06:25	16:35 06:46 (AB04)	16:35 07:03
26	05:48 20:28	06:20 19:47	18 19:25 (AB11) 19:25 (AB11)	18:56 18:54	10 06:56 (AB04) 06:26	16:34 07:04	16:35 07:29
27	05:49 20:27	06:21 19:45	20 19:25 (AB11) 19:23 (AB11)	18:54 18:52	8 06:56 (AB04) 06:27	16:34 07:05	16:36 07:29
28	05:50 20:26	06:22 19:44	19 19:22 (AB11) 19:03 (AB11)	06:55 06:56	6 06:55 (AB04) 06:29	16:33 07:06	16:36 07:29
29	05:51 20:25	06:23 19:42	19 19:22 (AB11) 19:20 (AB11)	18:50 18:49	3 06:53 (AB04) 06:30	16:33 07:07	16:37 07:30
30	05:52 20:24	06:24 19:41	17 19:20 (AB11) 19:02 (AB11)	06:57 06:57	1 06:53 (AB04) 06:31	16:32 07:08	16:38 07:30
31	05:53 20:23	06:25 19:39	16 19:18 (AB11) 19:02 (AB11)	18:47 06:57	06:32 16:58	16:32 16:39	07:30 07:30
Potential sun hours	462	430	375	344	296	285	
Total, worst case		150	153	399			
Sun reduction		0,42	0,46	0,52			
Oper. time red.		0,88	0,88	0,88			
Wind dir. red.		0,68	0,66	0,69			
Total reduction		0,25	0,27	0,32			
Total, real		37	41	126			

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 Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it

Calculated:

15/11/2023 18:37/3.5.587

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flikering real caseShadow receptor: R130 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (118) Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:30	07:16	06:39	06:46	05:59	05:29	05:29	05:54	06:26	19:09 (AB11)	06:58	06:34	07:10	
	16:40	17:16	17:51	19:27	20:00	20:30	20:42	20:22	19:37	6 19:15 (AB11)	18:45	16:57	16:32	
2	07:30	07:15	06:37	06:45	05:58	05:29	05:30	05:55	06:27	19:10 (AB11)	06:59	06:35	07:11	
	16:41	17:17	17:52	19:28	20:01	20:31	20:41	20:21	19:36	3 19:13 (AB11)	18:44	16:56	16:31	
3	07:30	07:14	06:36	06:43	05:57	05:28	05:31	05:56	06:28		07:00	06:36	07:12	
	16:42	17:18	17:53	19:29	20:02	20:32	20:41	20:19	19:34		18:42	16:55	16:31	
4	07:30	07:13	06:34	06:41	05:55	05:28	05:31	05:57	06:30		07:01	06:37	07:13	
	16:43	17:20	17:55	19:30	20:03	20:33	20:41	20:18	19:32		18:40	16:53	16:31	
5	07:30	07:12	06:32	06:40	05:54	05:28	05:32	05:58	06:31		07:02	06:38	07:14	
	16:44	17:21	17:56	19:31	20:04	20:33	20:41	20:17	19:31		18:38	16:52	16:31	
6	07:30	07:11	06:31	06:38	05:53	05:27	05:32	05:59	06:32		07:03	06:40	07:15	
	16:45	17:22	17:57	19:32	20:05	20:34	20:41	20:16	19:29		18:37	16:51	16:31	
7	07:30	07:09	06:29	06:36	05:51	05:27	05:33	06:00	06:33		07:04	06:41	07:16	
	16:46	17:23	17:58	19:33	20:06	20:35	20:40	20:15	19:27		18:35	16:50	16:30	
8	07:30	07:08	06:27	06:35	05:50	05:27	05:34	06:01	06:34		07:05	06:42	07:17	
	16:47	17:25	17:59	19:34	20:07	20:35	20:40	20:13	19:25		18:33	16:49	16:30	
9	07:30	07:07	06:26	06:33	05:49	05:26	05:34	06:02	06:35		07:07	06:43	07:17	
	16:48	17:26	18:01	19:35	20:09	20:36	20:40	20:12	19:24		18:32	16:48	16:30	
10	07:30	07:06	06:24	06:31	19:11 (AB11)	05:48	05:26	05:35	06:36		07:08	06:45	07:18	
	16:49	17:27	18:02	19:37	4 19:15 (AB11)	20:10	20:37	20:39	20:11		18:30	16:47	16:30	
11	07:30	07:05	06:22	06:30	19:09 (AB11)	05:47	05:26	05:36	06:04		07:09	06:46	07:19	
	16:50	17:29	18:03	19:38	6 19:15 (AB11)	20:11	20:37	20:39	20:09		18:28	16:46	16:30	
12	07:29	07:03	06:21	06:28	19:09 (AB11)	05:46	05:26	05:36	06:06		07:10	06:47	07:20	
	16:51	17:30	18:04	19:39	8 19:17 (AB11)	20:12	20:38	20:38	20:08		18:27	16:45	16:30	
13	07:29	07:02	06:19	06:26	19:07 (AB11)	05:45	05:26	05:37	06:07		07:11	06:48	07:21	
	16:52	17:31	18:05	19:40	11 19:18 (AB11)	20:13	20:38	20:38	20:07		18:25	16:44	16:31	
14	07:29	07:01	06:17	06:25	19:07 (AB11)	05:43	05:26	05:38	06:08		07:12	06:50	07:22	
	16:53	17:32	18:06	19:41	12 19:19 (AB11)	20:14	20:39	20:37	20:05		18:24	16:43	16:31	
15	07:28	06:59	06:16	06:23	19:06 (AB11)	05:42	05:26	05:39	06:09		07:13	06:51	07:22	
	16:55	17:34	18:07	19:42	14 19:20 (AB11)	20:15	20:39	20:37	20:04		18:22	16:42	16:31	
16	07:28	06:58	06:14	06:22	19:06 (AB11)	05:41	05:26	05:39	06:10		07:14	06:52	07:23	
	16:56	17:35	18:09	19:43	14 19:20 (AB11)	20:16	20:39	20:36	20:02		18:20	16:41	16:31	
17	07:27	06:57	06:12	06:20	19:06 (AB11)	05:40	05:26	05:40	06:11		07:16	06:53	07:24	
	16:57	17:36	18:10	19:44	16 19:22 (AB11)	20:17	20:40	20:35	20:01		18:19	16:40	16:31	
18	07:27	06:55	06:11	06:18	19:06 (AB11)	05:39	05:26	05:41	06:12	19:21 (AB11)	06:44	07:17	06:54	07:24
	16:58	17:37	18:11	19:45	17 19:23 (AB11)	20:18	20:40	20:35	19:59	5 19:26 (AB11)	19:08	18:17	16:39	16:32
19	07:26	06:54	06:09	06:17	19:06 (AB11)	05:39	05:26	05:42	06:13	19:17 (AB11)	06:45	07:18	06:56	07:25
	16:59	17:39	18:12	19:47	18 19:24 (AB11)	20:19	20:40	20:34	19:58	12 19:29 (AB11)	19:06	18:16	16:38	16:32
20	07:26	06:52	06:07	06:15	19:06 (AB11)	05:38	05:26	05:43	06:14	19:15 (AB11)	06:46	07:19	06:57	07:26
	17:00	17:40	18:13	19:48	19 19:25 (AB11)	20:20	20:41	20:33	19:56	16 19:31 (AB11)	19:04	18:14	16:38	16:33
21	07:25	06:51	06:05	06:14	19:07 (AB11)	05:37	05:26	05:44	06:15	19:13 (AB11)	06:47	07:20	06:58	07:26
	17:02	17:41	18:14	19:49	19 19:26 (AB11)	20:21	20:41	20:32	19:55	19 19:32 (AB11)	19:03	18:13	16:37	16:33
22	07:24	06:49	06:04	06:12	19:08 (AB11)	05:36	05:26	05:45	06:16	19:12 (AB11)	06:48	07:21	06:59	07:27
	17:03	17:42	18:15	19:50	18 19:26 (AB11)	20:22	20:41	20:32	19:53	19 19:31 (AB11)	19:01	18:11	16:36	16:34
23	07:24	06:48	06:02	06:11	19:09 (AB11)	05:35	05:27	05:46	06:17	19:11 (AB11)	06:49	07:23	07:00	07:27
	17:04	17:44	18:17	19:51	16 19:25 (AB11)	20:23	20:41	20:31	19:52	18 19:29 (AB11)	18:59	18:10	16:36	16:34
24	07:23	06:46	06:00	06:09	19:11 (AB11)	05:34	05:27	05:46	06:18	19:10 (AB11)	06:50	07:24	07:02	07:28
	17:05	17:45	18:18	19:52	11 19:22 (AB11)	20:24	20:42	20:30	19:50	18 19:28 (AB11)	18:57	18:08	16:35	16:35
25	07:22	06:45	05:58	06:08	05:34	05:27	05:47	06:19	19:09 (AB11)	06:51	06:25	07:03	07:28	
	17:07	17:46	18:19	19:53	20:25	20:42	20:29	19:49	17 19:26 (AB11)	18:56	17:07	16:34	16:35	
26	07:21	06:43	05:57	06:06	05:33	05:27	05:48	06:20	19:09 (AB11)	06:52	06:26	07:04	07:29	
	17:08	17:47	18:20	19:54	20:25	20:42	20:28	19:47	16 19:25 (AB11)	18:54	17:05	16:34	16:36	
27	07:21	06:42	05:55	06:05	05:32	05:28	05:49	06:21	19:08 (AB11)	06:54	06:27	07:05	07:29	
	17:09	17:49	18:21	19:55	20:26	20:42	20:27	19:45	15 19:23 (AB11)	18:52	17:04	16:33	16:36	
28	07:20	06:40	05:53	06:03	05:32	05:28	05:50	06:22	19:08 (AB11)	06:55	06:29	07:06	07:29	
	17:10	17:50	18:22	19:57	20:27	20:42	20:26	19:44	14 19:22 (AB11)	18:50	17:03	16:33	16:37	
29	07:19	06:52	06:02	06:11	05:31	05:29	05:51	06:23	19:08 (AB11)	06:56	06:30	07:07	07:30	
	17:12	17:53	19:23	19:58	20:28	20:42	20:25	19:42	12 19:20 (AB11)	18:49	17:01	16:32	16:38	
30	07:18	06:50	06:01	06:10	05:30	05:29	05:52	06:24	19:08 (AB11)	06:57	06:31	07:08	07:30	
	17:13	17:54	19:24	19:59	20:29	20:42	20:24	19:41	10 19:18 (AB11)	18:47	17:00	16:32	16:39	
31	07:17	06:48	06:00	06:09	05:30	05:30	05:53	06:25	19:09 (AB11)	06:58	06:32	07:09	07:30	
	17:14	17:55	19:25	19:60	20:30	20:43	20:23	19:39	8 19:17 (AB11)	18:46	16:58	16:39	16:39	
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285		
Total, worst case				203				199	9					
Sun reduction				0,44				0,42	0,46					
Oper. time red.				0,88				0,88	0,88					
Wind dir. red.				0,68				0,68	0,68					
Total reduction				0,26				0,25	0,28					
Total, real				53				50	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

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R145 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (119)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:36	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:30
11	07:29 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:50 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:27 20:41	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34	07:29 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	06:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	06:29 17:02	07:06 16:33	07:29 16:37
29	07:19 17:12	06:39 17:51	05:52 18:23	06:02 19:57	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	07:29 16:38
30	07:18 17:13	06:38 17:50	05:51 18:24	06:01 19:58	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14	06:37 17:49	05:50 18:25	06:00 19:59	05:29 20:30	05:28 20:42	05:53 20:23	06:25 19:39	06:58 16:58	06:32 16:58	07:09 16:31	07:30 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

Day in month	Sun rise (hh:mm)	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: WF Abruzzo shadow flickering real caseShadow receptor: R146 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (120)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:30
11	07:29 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:50 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:31
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:47	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:27 20:41	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:41	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34	07:29 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	06:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	06:29 17:02	07:06 16:33	07:29 16:37
29	07:19 17:12	06:40 17:50	06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	07:29 16:38
30	07:18 17:13	06:40 17:50	06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	07:29 16:38
31	07:17 17:14	06:40 17:50	06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	07:29 16:38
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

Day in month	Sun rise (hh:mm)	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: WF Abruzzo shadow flickering real caseShadow receptor: R148 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (121) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:19	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:17 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:30
11	07:29 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:50 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:47	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:27 20:41	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:41	05:46 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34	07:29 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	06:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	06:29 17:02	07:06 16:33	07:29 16:37
29	07:19 17:12	06:40 18:23	06:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	07:29 16:38
30	07:18 17:13	06:40 18:24	06:50 19:24	06:01 19:59	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14	06:40 18:25	06:48 19:25	06:00 20:30	05:30 20:30	05:29 20:42	05:53 20:23	06:25 19:39	06:58 16:58	06:32 16:58	07:09 16:31	07:30 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R149 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (122)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:29 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:36 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:17 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:30
11	07:29 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:50 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:47	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	07:26 17:00	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:27 20:41	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34	07:29 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	06:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	06:29 17:03	07:06 16:33	07:29 16:37
29	07:19 17:12	06:39 17:51	05:52 18:23	06:02 19:57	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	07:29 16:38
30	07:18 17:13	06:38 17:50	05:51 18:24	06:01 19:58	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14	06:37 17:49	05:50 18:25	06:00 19:59	05:29 20:30	05:28 20:42	05:53 20:23	06:25 19:39	06:58 16:58	06:32 16:58	07:09 16:31	07:30 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

Project:

WF Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it

Calculated:

15/11/2023 18:37/3.5.587

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real case Shadow receptor: R150 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (123)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	05:29 20:30	05:30 20:42	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:21	06:27 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:36 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:13 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:38	06:38 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:51 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:30
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:17 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:40	06:02 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:30
11	07:29 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:04 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:30
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:38	06:07 20:07	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	05:43 20:14	05:26 20:39	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:50 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:37	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	05:39 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:39 20:18	05:26 20:40	05:41 20:35	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:47	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:56 16:38	07:25 16:32
20	07:26 17:01	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:24 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:23	05:27 20:41	05:46 20:31	06:17 19:52	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:02 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:42	05:47 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:27 20:42	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	07:29 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:54 18:52	07:27 17:04	07:05 16:33	07:29 16:36
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:29 17:03	07:06 16:33	07:29 16:37
29	07:19 17:12	06:40 18:23	05:52 19:23	06:02 19:58	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:30 17:01	07:07 16:32	07:29 16:38
30	07:18 17:13	06:40 18:24	05:52 19:24	06:01 19:59	05:30 20:29	05:29 20:42	05:52 20:24	06:24 19:41	06:57 18:47	07:31 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14	06:40 18:25	05:52 19:25	06:01 19:59	05:30 20:30	05:29 20:42	05:53 20:23	06:25 19:39	06:58 16:58	07:32 17:00	07:09 16:32	07:31 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R155 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (124)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June		
1	07:30 16:40	07:16 17:16	06:39 17:51	06:46 19:27	05:59 20:00	06:19 (AB03) 06:49 (AB04)	05:29 20:30	
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	06:18 (AB03) 06:47 (AB04)	05:29 20:31	
3	07:30 16:42	07:14 17:18	06:36 17:53	06:43 19:29	05:57 20:02	06:16 (AB03) 06:44 (AB04)	05:28 20:32	
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	06:17 (AB03) 19:40 (AB11)	05:28 20:33	
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	06:28 (AB04) 19:41 (AB11)	05:28 20:33	
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	06:57 (AB04) 06:59 (AB04)	05:53 20:05	19:38 (AB11) 19:42 (AB11)	05:27 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	06:55 (AB04) 07:00 (AB04)	05:51 20:06	19:37 (AB11) 19:42 (AB11)	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	06:53 (AB04) 07:00 (AB04)	05:50 20:07	19:37 (AB11) 19:43 (AB11)	05:27 20:35
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	06:52 (AB04) 07:01 (AB04)	05:49 20:09	19:37 (AB11) 19:44 (AB11)	05:26 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	06:50 (AB04) 07:01 (AB04)	05:48 20:10	19:37 (AB11) 19:46 (AB11)	05:26 20:37
11	07:30 16:50	07:05 17:29	06:22 18:03	06:30 19:38	06:48 (AB04) 07:01 (AB04)	05:47 20:11	19:37 (AB11) 19:47 (AB11)	05:26 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	06:47 (AB04) 07:02 (AB04)	05:46 20:12	19:38 (AB11) 19:48 (AB11)	05:26 20:38
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	06:45 (AB04) 07:02 (AB04)	05:45 20:13	19:38 (AB11) 19:49 (AB11)	05:26 20:38
14	07:29 16:53	07:01 17:32	06:17 18:06	06:25 19:41	06:44 (AB04) 07:02 (AB04)	05:43 20:14	19:39 (AB11) 19:50 (AB11)	05:26 20:39
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	06:42 (AB04) 07:02 (AB04)	05:42 20:15	19:40 (AB11) 19:51 (AB11)	05:26 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	06:40 (AB04) 07:01 (AB04)	05:41 20:16	19:41 (AB11) 19:51 (AB11)	05:26 20:39
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	06:39 (AB04) 07:01 (AB04)	05:40 20:17	19:42 (AB11) 19:52 (AB11)	05:26 20:40
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	06:37 (AB04) 07:00 (AB04)	05:39 20:18	19:44 (AB11) 19:50 (AB11)	05:26 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:47	06:36 (AB04) 07:01 (AB04)	05:39 20:19	05:26 20:40	05:26 20:40
20	07:26 17:00	06:52 17:40	06:07 18:13	06:15 19:48	06:34 (AB04) 07:00 (AB04)	05:38 20:20	05:26 20:41	05:26 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	06:33 (AB03) 06:59 (AB04)	05:37 20:21	05:26 20:41	05:26 20:41
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	06:31 (AB03) 06:58 (AB04)	05:36 20:22	05:26 20:41	05:26 20:41
23	07:24 17:04	06:48 17:44	06:02 18:17	06:11 19:51	06:30 (AB03) 06:58 (AB04)	05:35 20:23	05:27 20:41	05:27 20:41
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	06:28 (AB03) 06:57 (AB04)	05:34 20:24	05:27 20:42	05:27 20:42
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	06:27 (AB03) 06:56 (AB04)	05:34 20:24	05:27 20:42	05:27 20:42
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	06:26 (AB03) 06:56 (AB04)	05:33 20:25	05:27 20:42	05:27 20:42
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	06:24 (AB03) 06:54 (AB04)	05:32 20:26	05:28 20:42	05:28 20:42
28	07:20 17:10	06:40 17:50	05:53 18:22	06:03 19:56	06:23 (AB03) 06:53 (AB04)	05:32 20:27	05:28 20:42	05:28 20:42
29	07:19 17:12		06:52 19:23	06:02 19:58	06:21 (AB03) 06:51 (AB04)	05:31 20:28	05:29 20:42	05:29 20:42
30	07:18 17:13		06:50 19:24	06:01 19:59	06:20 (AB03) 06:50 (AB04)	05:30 20:29	05:29 20:42	05:29 20:42
31	07:17 17:14		06:48 19:25			05:30 20:30		
Potential sun hours	295	296	369	400	451		456	
Total, worst case					523		237	
Sun reduction					0,44		0,40	
Oper. time red.					0,88		0,88	
Wind dir. red.					0,60		0,65	
Total reduction					0,23		0,23	
Total, real					119		54	

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: WF Abruzzo shadow flickering real caseShadow receptor: R155 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (124)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

## Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December		
1	05:29 20:42	05:54 20:22	19:48 (AB11) 19:58 (AB11)	06:26 19:37	06:48 (AB04) 07:01 (AB04)	06:58 18:45	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:21	19:48 (AB11) 19:57 (AB11)	06:27 19:36	06:49 (AB04) 07:00 (AB04)	06:59 18:44	06:35 16:56	07:11 16:31
3	05:31 20:41	05:56 20:19	19:48 (AB11) 19:56 (AB11)	06:28 19:34	06:50 (AB04) 06:59 (AB04)	07:00 18:42	06:36 16:55	07:12 16:31
4	05:31 20:41	05:57 20:18	19:47 (AB11) 19:55 (AB11)	06:30 19:32	06:51 (AB04) 06:58 (AB04)	07:01 18:40	06:37 16:53	07:13 16:31
5	05:32 20:41	05:58 20:17	19:47 (AB11) 19:54 (AB11)	06:31 19:31	06:52 (AB04) 06:57 (AB04)	07:02 18:38	06:38 16:52	07:14 16:31
6	05:32 20:41	05:59 20:16	19:47 (AB11) 19:52 (AB11)	06:32 19:29	06:53 (AB04) 06:56 (AB04)	07:03 18:37	06:40 16:51	07:15 16:31
7	05:33 20:40	06:00 20:15	19:47 (AB11) 19:51 (AB11)	06:33 19:27		07:04 18:35	06:41 16:50	07:16 16:30
8	05:34 20:40	06:01 20:13	06:36 (AB04) 19:50 (AB11)	06:34 19:25		07:05 18:33	06:42 16:49	07:17 16:30
9	05:34 20:40	06:02 20:12	06:26 (AB03) 19:49 (AB11)	06:35 19:24		07:07 18:32	06:43 16:48	07:17 16:30
10	05:35 20:39	06:03 20:11	06:26 (AB03) 06:55 (AB04)	06:36 19:22		07:08 18:30	06:45 16:47	07:18 16:30
11	05:36 20:39	06:04 20:09	06:27 (AB03) 06:56 (AB04)	06:37 19:20		07:09 18:28	06:46 16:46	07:19 16:30
12	05:36 20:38	06:06 20:08	06:28 (AB03) 06:58 (AB04)	06:38 19:18		07:10 18:27	06:47 16:45	07:20 16:30
13	05:37 20:38	06:07 20:07	06:29 (AB03) 06:59 (AB04)	06:39 19:17		07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 20:05	06:30 (AB03) 07:00 (AB04)	06:40 19:15		07:12 18:24	06:50 16:43	07:22 16:31
15	05:39 20:37	06:09 20:04	06:31 (AB03) 07:01 (AB04)	06:41 19:13		07:13 18:22	06:51 16:42	07:22 16:31
16	05:39 20:36	06:10 20:02	06:32 (AB03) 07:02 (AB04)	06:42 19:11		07:14 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 20:01	06:33 (AB03) 07:03 (AB04)	06:43 19:10		07:16 18:19	06:53 16:40	07:24 16:32
18	05:41 20:35	06:12 19:59	06:34 (AB03) 07:03 (AB04)	06:44 19:08		07:17 18:17	06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 19:58	06:35 (AB03) 07:04 (AB04)	06:45 19:06		07:18 18:16	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 19:56	06:36 (AB03) 07:04 (AB04)	06:46 19:04		07:19 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	06:15 19:55	06:37 (AB03) 07:04 (AB04)	06:47 19:03		07:20 18:13	06:58 16:37	07:26 16:33
22	05:45 20:32	06:16 19:53	06:38 (AB04) 07:04 (AB04)	06:48 19:01		07:21 18:11	06:59 16:36	07:27 16:34
23	05:46 20:31	06:17 19:52	06:39 (AB04) 07:04 (AB04)	06:49 18:59		07:23 18:10	07:00 16:36	07:27 16:34
24	05:46 20:30	06:18 19:50	06:40 (AB04) 07:04 (AB04)	06:50 18:57		07:24 18:08	07:02 16:35	07:28 16:35
25	05:47 20:29	06:19 19:49	06:41 (AB04) 07:04 (AB04)	06:51 18:56		06:25 17:07	07:03 16:34	07:28 16:35
26	05:48 20:28	19:54 (AB11) 20:02 (AB11)	06:20 19:47	06:42 (AB04) 07:04 (AB04)	06:52 18:54	06:26 17:05	07:04 16:34	07:29 16:36
27	05:49 20:27	19:52 (AB11) 20:02 (AB11)	06:21 19:45	06:43 (AB04) 07:04 (AB04)	06:54 18:52	06:27 17:04	07:05 16:33	07:29 16:36
28	05:50 20:26	19:51 (AB11) 20:02 (AB11)	06:22 19:44	06:44 (AB04) 07:04 (AB04)	06:55 18:50	06:29 17:03	07:06 16:33	07:29 16:37
29	05:51 20:25	19:50 (AB11) 20:01 (AB11)	06:23 19:42	06:45 (AB04) 07:03 (AB04)	06:56 18:49	06:30 17:01	07:07 16:32	07:30 16:38
30	05:52 20:24	19:49 (AB11) 20:00 (AB11)	06:24 19:41	06:46 (AB04) 07:03 (AB04)	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39
31	05:53 20:23	19:49 (AB11) 19:59 (AB11)	06:25 19:39	06:47 (AB04) 07:02 (AB04)		06:32 16:58	07:30 16:39	07:30 16:39
Potential sun hours	462	430	375	344	296	285		
Total, worst case	61	655	48					
Sun reduction	0,39	0,42	0,46					
Oper. time red.	0,88	0,88	0,88					
Wind dir. red.	0,71	0,60	0,60					
Total reduction	0,24	0,22	0,24					
Total, real	15	145	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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Project:

WF Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it
Calculated:
15/11/2023 18:37/3.5.587

SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R159 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (125)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

Table with columns for months (January to December) and rows for each day of the year (1-31), showing sun rise/set times, operational time, and reduction percentages.

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)

Project:

WF Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:

15/11/2023 18:37/3.5.587

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R170 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (126) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	05:59 20:00	06:19 (AB11) 20:28	05:29 20:42	05:54 20:22	06:17 (AB11) 06:55 (AB11)	06:27 19:37	06:58 18:45	06:34 16:57
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	06:18 (AB11) 20:31	05:29 20:42	05:55 20:21	06:18 (AB11) 06:55 (AB11)	06:28 19:36	06:59 18:44	06:35 16:56
3	07:31 16:42	07:14 17:18	06:36 17:54	06:43 19:29	05:57 20:02	06:16 (AB11) 20:32	05:28 20:41	05:56 20:20	06:19 (AB11) 06:56 (AB11)	06:29 19:34	07:00 18:42	06:36 16:55
4	07:31 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	06:15 (AB11) 20:33	05:28 20:41	05:57 20:18	06:20 (AB11) 06:56 (AB11)	06:30 19:32	07:01 18:40	06:37 16:54
5	07:31 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	06:14 (AB11) 20:34	05:32 20:41	05:58 20:17	06:21 (AB11) 06:56 (AB11)	06:31 19:31	07:02 18:39	06:39 16:52
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	06:13 (AB11) 20:34	05:32 20:41	05:59 20:16	06:22 (AB11) 06:56 (AB11)	06:32 19:29	07:03 18:37	06:40 16:51
7	07:30 16:46	07:10 17:24	06:29 17:58	06:36 19:33	05:52 20:06	06:12 (AB11) 20:35	05:33 20:40	06:00 20:15	06:23 (AB11) 06:56 (AB11)	06:33 19:27	07:04 18:35	06:41 16:50
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:08	06:10 (AB11) 20:35	05:34 20:40	06:01 20:13	06:24 (AB11) 06:57 (AB11)	06:34 19:26	07:06 18:34	06:42 16:49
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:36	05:49 20:09	06:09 (AB11) 20:36	05:34 20:40	06:03 20:12	06:25 (AB11) 06:56 (AB11)	06:35 19:24	07:07 18:32	06:43 16:48
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	06:08 (AB11) 20:37	05:35 20:39	06:04 20:11	06:26 (AB11) 06:56 (AB11)	06:36 19:22	07:08 18:30	06:45 16:47
11	07:30 16:50	07:05 17:29	06:23 18:03	06:30 19:38	05:47 20:11	06:07 (AB11) 20:37	05:36 20:39	06:05 20:10	06:27 (AB11) 06:56 (AB11)	06:37 19:20	07:09 18:29	06:46 16:46
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	06:06 (AB11) 20:38	05:36 20:38	06:06 20:08	06:28 (AB11) 06:56 (AB11)	06:38 19:19	07:10 18:27	06:47 16:45
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	06:05 (AB11) 20:38	05:37 20:38	06:07 20:07	06:29 (AB11) 06:56 (AB11)	06:39 19:17	07:11 18:25	06:48 16:44
14	07:29 16:54	07:01 17:33	06:17 18:06	06:25 19:41	05:44 20:14	06:04 (AB11) 20:39	05:38 20:37	06:08 20:05	06:30 (AB11) 06:55 (AB11)	06:40 19:15	07:12 18:24	06:50 16:43
15	07:28 16:55	06:59 17:34	06:16 18:08	06:23 19:42	05:43 20:15	06:03 (AB11) 20:39	05:39 20:37	06:09 20:04	06:31 (AB11) 06:55 (AB11)	06:41 19:13	07:13 18:22	06:51 16:42
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16	06:02 (AB11) 20:40	05:40 20:36	06:10 20:02	06:32 (AB11) 06:54 (AB11)	06:42 19:12	07:15 18:20	06:52 16:41
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17	06:01 (AB11) 20:40	05:40 20:35	06:09 (AB11) 06:36 (AB11)	06:11 06:53 (AB11)	06:43 19:10	07:16 18:19	06:53 16:40
18	07:27 16:58	06:55 17:38	06:11 18:11	06:18 19:46	05:40 20:18	06:06 (AB11) 20:40	05:41 20:35	06:26 (AB11) 06:40 (AB11)	06:12 06:52 (AB11)	06:44 19:08	07:17 18:17	06:55 16:39
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:47	05:39 20:19	06:08 (AB11) 20:41	05:42 20:34	06:24 (AB11) 06:42 (AB11)	06:13 06:51 (AB11)	06:45 19:06	07:18 18:16	06:56 16:38
20	07:26 17:01	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	06:09 (AB11) 20:41	05:43 20:33	06:23 (AB11) 06:44 (AB11)	06:14 06:50 (AB11)	06:46 19:05	07:19 18:14	06:57 16:38
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	06:10 (AB11) 20:41	05:44 20:32	06:22 (AB11) 06:45 (AB11)	06:15 06:51 (AB11)	06:47 19:03	07:20 18:13	06:58 16:37
22	07:24 17:03	06:50 17:43	06:04 18:16	06:12 19:50	05:36 20:22	06:11 (AB11) 20:41	05:45 20:32	06:21 (AB11) 06:47 (AB11)	06:16 06:54 (AB11)	06:48 19:01	07:22 18:11	06:59 16:36
23	07:24 17:04	06:48 17:44	06:02 18:17	06:11 19:51	05:35 20:23	06:12 (AB11) 20:41	05:46 20:31	06:20 (AB11) 06:48 (AB11)	06:17 06:52 (AB11)	06:49 18:59	07:23 18:10	07:01 16:36
24	07:23 17:06	06:47 17:45	06:00 18:18	06:09 19:52	05:34 20:24	06:13 (AB11) 20:42	05:47 20:30	06:18 (AB11) 06:48 (AB11)	06:18 06:50 (AB11)	06:50 18:58	07:24 18:08	07:02 16:35
25	07:22 17:07	06:45 17:46	05:59 18:19	06:08 19:53	05:34 20:25	06:14 (AB11) 20:42	05:48 20:29	06:17 (AB11) 06:50 (AB11)	06:19 06:52 (AB11)	06:19 18:56	07:25 17:07	07:03 16:34
26	07:21 17:08	06:44 17:47	05:57 18:20	06:06 19:54	05:33 20:26	06:15 (AB11) 20:42	05:48 20:28	06:16 (AB11) 06:51 (AB11)	06:20 06:54 (AB11)	06:20 18:54	07:26 17:05	07:04 16:34
27	07:21 17:08	06:42 17:47	05:55 18:20	06:05 19:54	05:32 20:26	06:16 (AB11) 20:42	05:49 20:27	06:15 (AB11) 06:49 (AB11)	06:21 06:54 (AB11)	06:21 18:52	07:27 17:04	07:05 16:33
28	07:20 17:11	06:40 17:50	05:53 18:22	06:04 19:57	05:32 20:27	06:17 (AB11) 20:42	05:50 20:26	06:15 (AB11) 06:52 (AB11)	06:22 06:54 (AB11)	06:22 18:51	07:28 17:03	07:06 16:33
29	07:19 17:12	06:40 17:50	05:52 18:22	06:02 19:57	05:31 20:27	06:18 (AB11) 20:42	05:51 20:25	06:14 (AB11) 06:53 (AB11)	06:23 06:54 (AB11)	06:23 18:49	07:29 17:01	07:07 16:33
30	07:18 17:13	06:40 17:50	05:51 18:22	06:01 19:58	05:30 20:28	06:19 (AB11) 20:42	05:52 20:25	06:15 (AB11) 06:54 (AB11)	06:24 06:55 (AB11)	06:24 18:47	07:30 17:01	07:09 16:33
31	07:17 17:14	06:40 17:50	05:50 18:22	06:00 19:59	05:30 20:30	06:20 (AB11) 20:42	05:53 20:24	06:16 (AB11) 06:54 (AB11)	06:25 06:55 (AB11)	06:25 18:47	07:31 17:00	07:30 16:32
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case				203	806		424	599				
Sun reduction				0,44	0,40		0,39	0,42				
Oper. time red.				0,88	0,88		0,88	0,88				
Wind dir. red.				0,58	0,58		0,58	0,58				
Total reduction				0,22	0,20		0,20	0,21				
Total, real				45	162		83	126				

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: WF Abruzzo shadow flickering real caseShadow receptor: R171 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (127)  
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

#### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	05:59 20:00	05:29 20:31	05:51 (AB11) 05:30	05:53 (AB11) 05:54	06:17 (AB11) 06:27	06:58 06:34	06:34 07:10	07:10 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:51 (AB11) 06:34 (AB11)	05:53 (AB11) 20:42	06:18 (AB11) 20:21	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:36 17:54	06:43 19:29	05:57 20:02	05:28 20:32	05:50 (AB11) 06:33 (AB11)	05:31 20:41	05:54 (AB11) 20:20	06:19 (AB11) 06:24 (AB11)	06:29 18:42	07:00 16:55
4	07:31 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:50 (AB11) 06:34 (AB11)	05:31 20:41	05:54 (AB11) 20:18	06:20 (AB11) 06:21 (AB11)	06:30 18:01	06:37 16:31
5	07:31 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:34	05:50 (AB11) 06:35 (AB11)	05:32 20:41	05:55 (AB11) 20:17	06:31 19:31	07:02 18:39	06:39 16:52
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:49 (AB11) 06:34 (AB11)	05:32 20:41	05:55 (AB11) 20:16	06:32 19:29	07:03 18:37	06:40 16:51
7	07:30 16:46	07:10 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:49 (AB11) 06:35 (AB11)	05:33 20:40	05:56 (AB11) 20:15	06:33 19:27	07:04 18:35	06:41 16:50
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:08	05:27 20:35	05:49 (AB11) 06:35 (AB11)	05:34 20:40	05:57 (AB11) 20:13	06:01 19:26	06:06 18:33	06:42 16:49
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:36	05:49 20:09	05:26 20:36	05:49 (AB11) 06:11 (AB11)	05:34 20:40	05:57 (AB11) 20:12	06:03 19:24	06:03 18:32	06:43 16:48
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37	05:49 (AB11) 06:14 (AB11)	05:35 20:37	05:58 (AB11) 20:11	06:04 19:22	07:08 18:30	06:45 16:47
11	07:30 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	06:07 (AB11) 06:16 (AB11)	05:36 20:37	05:59 (AB11) 20:09	06:05 19:20	06:46 18:29	06:46 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	06:06 (AB11) 06:36 (AB11)	05:36 20:38	06:00 (AB11) 20:08	06:06 19:19	07:10 18:27	06:47 16:45
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	06:05 (AB11) 06:36 (AB11)	05:37 20:38	06:00 (AB11) 20:07	06:07 19:17	07:11 18:25	06:48 16:44
14	07:29 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:39	06:04 (AB11) 06:21 (AB11)	05:38 20:37	06:01 (AB11) 20:05	06:40 19:15	07:12 18:24	06:50 16:43
15	07:28 16:55	06:59 17:34	06:16 18:08	06:23 19:42	05:43 20:15	05:26 20:39	06:03 (AB11) 06:22 (AB11)	05:39 20:39	06:02 (AB11) 20:04	06:09 19:13	07:13 18:22	06:51 16:42
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:42 20:16	05:26 20:40	06:02 (AB11) 06:23 (AB11)	05:40 20:36	06:03 (AB11) 20:02	06:10 19:12	07:15 18:20	06:52 16:41
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	05:41 20:17	05:26 20:40	06:01 (AB11) 06:24 (AB11)	05:40 20:40	06:03 (AB11) 20:01	06:11 19:10	07:16 18:19	06:53 16:40
18	07:27 16:58	06:55 17:38	06:11 18:11	06:18 19:46	05:40 20:18	05:26 20:40	06:00 (AB11) 06:25 (AB11)	05:26 20:40	06:04 (AB11) 20:00	06:44 19:08	07:17 18:17	06:55 16:39
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:47	05:39 20:19	05:26 20:41	06:00 (AB11) 06:27 (AB11)	05:26 20:41	06:05 (AB11) 20:34	06:13 19:06	07:18 18:16	06:56 16:38
20	07:26 17:01	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	05:59 (AB11) 06:27 (AB11)	05:26 20:41	06:06 (AB11) 19:57	06:14 19:05	07:19 18:14	06:57 16:38
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:58 (AB11) 06:28 (AB11)	05:26 20:41	06:07 (AB11) 19:55	06:15 19:03	07:20 18:13	06:58 16:37
22	07:24 17:03	06:50 17:43	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:57 (AB11) 06:28 (AB11)	05:26 20:41	06:08 (AB11) 19:53	06:16 19:01	07:22 18:11	06:59 16:36
23	07:24 17:04	06:48 17:44	06:02 18:17	06:11 19:51	05:35 20:23	05:27 20:41	05:56 (AB11) 06:29 (AB11)	05:27 20:41	06:09 (AB11) 19:52	06:17 18:59	07:23 18:10	07:01 16:36
24	07:23 17:06	06:47 17:45	06:00 18:18	06:09 19:52	05:34 20:24	05:27 20:42	06:29 (AB11) 06:30 (AB11)	05:47 20:42	06:09 (AB11) 19:50	06:18 18:58	07:24 18:08	07:28 16:35
25	07:22 17:07	06:45 17:46	05:59 18:19	06:08 19:53	05:34 20:25	05:27 20:42	05:55 (AB11) 06:30 (AB11)	05:48 20:42	06:10 (AB11) 19:49	06:19 18:56	07:25 17:07	07:28 16:35
26	07:21 17:08	06:43 17:47	06:57 18:20	06:06 19:54	05:33 20:26	05:28 20:42	05:54 (AB11) 06:30 (AB11)	05:48 20:42	06:11 (AB11) 19:47	06:20 18:54	07:04 17:05	07:29 16:36
27	07:21 17:09	06:42 17:49	05:55 18:21	06:05 19:56	05:32 20:26	05:28 20:42	05:54 (AB11) 06:31 (AB11)	05:49 20:42	06:12 (AB11) 19:46	06:21 18:52	07:05 17:04	07:29 16:33
28	07:20 17:11	06:40 17:50	05:53 18:22	06:04 19:57	05:32 20:27	05:28 20:42	05:53 (AB11) 06:31 (AB11)	05:28 20:42	06:13 (AB11) 19:44	06:22 18:51	07:06 17:03	07:06 16:33
29	07:19 17:12	06:39 17:52	05:52 18:23	06:02 19:58	05:31 20:28	05:29 20:42	05:53 (AB11) 06:32 (AB11)	05:29 20:42	06:14 (AB11) 19:42	06:23 18:49	07:07 17:01	07:30 16:33
30	07:18 17:13	06:38 17:53	05:51 18:24	06:01 19:59	05:30 20:29	05:29 20:42	05:52 (AB11) 06:32 (AB11)	05:29 20:42	06:15 (AB11) 19:41	06:24 18:47	07:09 17:00	07:30 16:33
31	07:17 17:14	06:37 17:52	05:50 18:25	06:00 19:59	05:29 20:30	05:28 20:42	05:52 (AB11) 06:33 (AB11)	05:28 20:42	06:16 (AB11) 19:39	06:25 16:59	07:00 17:00	07:30 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case					598	1423		1103				
Sun reduction					0,40	0,38		0,39		0,42		
Oper. time red.					0,88	0,88		0,88		0,88		
Wind dir. red.					0,56	0,56		0,56		0,56		
Total reduction					0,20	0,19		0,19		0,21		
Total, real					117	267		211		5		

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: WF Abruzzo shadow flickering real caseShadow receptor: R172 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (128)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	05:59 20:00	05:29 20:31	05:30 20:42	05:54 20:22	06:27 19:37	06:58 18:45	06:34 16:57	07:10 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:42	05:55 20:21	06:28 19:36	06:59 18:44	06:35 16:56	07:11 16:31
3	07:30 16:42	07:14 17:18	06:36 17:54	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:20	06:29 19:34	07:00 18:42	06:36 16:55	07:12 16:31
4	07:31 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:33	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:54	07:13 16:31
5	07:31 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:31	07:02 18:39	06:39 16:52	07:14 16:31
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:41	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:15 16:31
7	07:30 16:46	07:10 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:15	06:33 19:27	07:04 18:35	06:41 16:50	07:16 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:08	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:26	07:06 18:33	06:42 16:49	07:17 16:30
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:36	05:49 20:09	05:26 20:36	05:34 20:40	06:03 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:18 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:37	05:48 20:10	05:26 20:37	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	06:45 16:47	07:18 16:30
11	07:30 16:50	07:05 17:29	06:22 18:03	06:30 19:38	05:47 20:11	05:26 20:37	05:36 20:39	06:05 20:09	06:37 19:20	07:09 18:29	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:38	05:36 20:38	06:06 20:08	06:38 19:19	07:10 18:27	06:47 16:45	07:20 16:31
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31	07:17 17:14		06:48 19:26		05:30 20:30		05:53 20:23	06:25 19:39		06:32 16:59		07:30 16:39
Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R173 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (129)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	05:59 20:00	05:29 20:31	05:30 20:42	05:54 20:22	06:27 19:37	06:58 18:45	06:34 16:57	07:10 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:42	05:55 20:21	06:28 19:36	06:59 18:44	06:35 16:56	07:11 16:31
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Potential sun hours	295	296	369	400	451	456	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real case Shadow receptor: R178 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (130)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

## Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
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Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

Day in month	Sun rise (hh:mm)	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: WF Abruzzo shadow flickering real caseShadow receptor: R185 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (131)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	18:34 (AB07) 05:59	18:51 (AB06) 05:29
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	18:33 (AB07) 05:58	18:50 (AB06) 05:29
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	18:34 (AB07) 05:57	18:49 (AB06) 05:28
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	18:33 (AB07) 05:55	18:48 (AB06) 05:28
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	18:33 (AB07) 05:54	18:48 (AB06) 05:28
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	18:34 (AB07) 05:53	18:47 (AB06) 05:27
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	18:35 (AB07) 05:52	18:47 (AB06) 05:27
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	18:36 (AB07) 05:50	18:46 (AB06) 05:27
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	18:39 (AB07) 05:49	18:46 (AB06) 05:26
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	18:47 (AB07) 05:48	19:19 (AB06) 05:26
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	18:47 (AB07) 05:47	18:46 (AB06) 05:26
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	18:46 (AB07) 05:46	18:46 (AB06) 05:26
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	18:46 (AB07) 05:45	18:46 (AB06) 05:26
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	18:46 (AB07) 05:44	18:46 (AB06) 05:26
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	18:47 (AB07) 05:43	18:47 (AB06) 05:26
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	18:47 (AB07) 05:42	18:47 (AB06) 05:26
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	18:47 (AB07) 05:41	18:47 (AB06) 05:26
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	18:48 (AB07) 05:40	18:48 (AB06) 05:26
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	18:48 (AB07) 05:39	18:48 (AB06) 05:26
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	18:50 (AB07) 05:38	18:50 (AB06) 05:26
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	18:50 (AB07) 05:37	18:50 (AB06) 05:26
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	18:51 (AB07) 05:36	18:51 (AB06) 05:26
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	18:51 (AB07) 05:35	18:51 (AB06) 05:27
24	07:23 17:06	06:46 17:45	06:00 18:18	06:09 19:52	18:53 (AB07) 05:34	18:53 (AB06) 05:27
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	18:54 (AB07) 05:33	18:54 (AB06) 05:27
26	07:21 17:08	06:43 17:47	05:57 18:20	17:44 (AB07) 06:06	19:01 (AB06) 05:32	18:54 (AB06) 05:28
27	07:20 17:09	06:42 17:49	05:55 18:21	17:41 (AB07) 06:05	19:07 (AB06) 05:32	18:56 (AB06) 05:28
28	07:20 17:11	06:40 17:50	05:53 18:22	17:38 (AB07) 06:03	19:11 (AB06) 05:32	18:58 (AB06) 05:28
29	07:19 17:12	06:52 19:23	06:52 18:36 (AB07)	06:02 19:56	18:55 (AB06) 05:31	19:01 (AB06) 05:29
30	07:18 17:13	06:50 19:24	06:50 18:55 (AB07)	06:01 19:57	18:52 (AB06) 05:30	19:08 (AB06) 05:29
31	07:17 17:14	06:48 19:25	06:48 18:56 (AB07)	06:01 19:59	19:14 (AB06) 05:30	20:29 20:41
Potential sun hours	295	296	369	400	451	455
Total, worst case			93	226	778	
Sun reduction			0,49	0,44	0,40	
Oper. time red.			0,88	0,88	0,88	
Wind dir. red.			0,65	0,66	0,68	
Total reduction			0,28	0,25	0,24	
Total, real			26	57	186	

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: WF Abruzzo shadow flickering real caseShadow receptor: R185 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (131)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December
1	05:30 20:41	05:54 20:22	18:57 (AB06) 06:26	06:58	06:33	07:09
2	05:30 20:41	05:55 20:20	18:57 (AB06) 06:27	06:59	06:35	07:10
3	05:31 20:41	05:56 20:19	18:57 (AB06) 06:29	18:37 (AB07) 07:00	06:36	07:11
4	05:31 20:41	05:57 20:18	18:57 (AB06) 06:30	18:34 (AB07) 07:01	06:37	07:12
5	05:32 20:41	05:58 20:17	18:57 (AB06) 06:31	18:32 (AB07) 07:02	06:38	07:13
6	05:32 20:40	05:59 20:16	18:57 (AB06) 06:32	18:31 (AB07) 07:03	06:40	07:14
7	05:33 20:40	06:00 20:14	18:57 (AB06) 06:33	18:29 (AB07) 07:04	06:41	07:15
8	05:34 20:40	06:01 20:13	18:57 (AB06) 06:34	18:28 (AB07) 07:05	06:42	07:16
9	05:34 20:39	06:02 20:12	18:58 (AB06) 06:35	18:28 (AB07) 07:07	06:43	07:17
10	05:35 20:39	06:04 20:11	18:58 (AB06) 06:36	18:27 (AB07) 07:08	06:44	07:18
11	05:36 20:39	06:05 20:09	18:59 (AB06) 06:37	18:27 (AB07) 07:09	06:46	07:19
12	05:36 20:38	06:06 20:08	19:00 (AB06) 06:38	18:27 (AB07) 07:10	06:47	07:20
13	05:37 20:38	06:07 20:07	19:01 (AB06) 06:39	18:27 (AB07) 07:11	06:48	07:21
14	05:38 20:37	19:11 (AB06) 06:08	19:03 (AB06) 06:40	18:27 (AB07) 07:12	06:49	07:21
15	05:39 20:36	19:14 (AB06) 06:09	19:21 (AB06) 06:41	18:46 (AB07) 07:13	06:51	07:22
16	05:40 20:36	19:08 (AB06) 06:10	19:05 (AB06) 06:42	18:28 (AB07) 07:14	06:52	07:23
17	05:40 20:35	19:20 (AB06) 06:11	19:18 (AB06) 06:43	18:29 (AB07) 07:15	06:53	07:24
18	05:41 20:34	19:04 (AB06) 06:12	19:11 06:44	18:43 (AB07) 07:16	06:54	07:24
19	05:42 20:34	19:21 (AB06) 06:13	19:22 (AB06) 06:45	18:40 (AB07) 07:17	06:55	07:25
20	05:43 20:33	19:03 (AB06) 06:14	19:06 06:46	18:17 07:18	06:56	07:25
21	05:44 20:32	19:23 (AB06) 06:15	19:02 (AB06) 06:47	18:16 07:19	06:57	07:26
22	05:45 20:31	19:02 (AB06) 06:16	19:04 06:48	18:14 07:20	06:58	07:26
23	05:46 20:31	19:01 (AB06) 06:17	19:01 06:49	18:13 07:21	06:59	07:27
24	05:47 20:30	19:26 (AB06) 06:18	19:26 (AB06) 06:50	18:11 07:22	06:59	07:27
25	05:48 20:29	18:59 (AB06) 06:19	18:59 (AB06) 06:51	18:10 07:23	06:59	07:28
26	05:48 20:28	19:27 (AB06) 06:20	19:50 06:52	18:08 07:24	06:59	07:28
27	05:49 20:27	18:58 (AB06) 06:21	18:58 (AB06) 06:53	18:07 07:25	06:59	07:29
28	05:50 20:26	19:28 (AB06) 06:22	19:28 (AB06) 06:54	18:06 07:26	06:59	07:29
29	05:51 20:25	18:57 (AB06) 06:23	18:57 (AB06) 06:55	18:05 07:27	06:59	07:29
30	05:52 20:24	19:29 (AB06) 06:24	19:29 (AB06) 06:56	18:04 07:28	06:59	07:30
31	05:53 20:23	18:57 (AB06) 06:25	18:57 (AB06) 06:57	18:03 07:29	06:59	07:30
Potential sun hours	462	430	375	344	296	285
Total, worst case	428	419	265			
Sun reduction	0,39	0,42	0,46			
Oper. time red.	0,88	0,88	0,88			
Wind dir. red.	0,68	0,68	0,65			
Total reduction	0,23	0,25	0,27			
Total, real	100	105	70			

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: WF Abruzzo shadow flickering real caseShadow receptor: R186 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (132)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June	
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	18:28 (AB07) 19:28	05:59 20:00	18:27 (AB06) 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 19:28	31 20:01	18:28 (AB06) 20:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	30 28	18:28 (AB06) 20:32
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	06:41 20:03	28 26	18:29 (AB06) 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	25 25	18:30 (AB06) 20:33
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	22 22	18:32 (AB06) 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	19 19	18:33 (AB06) 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	16 16	18:34 (AB06) 20:35
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	10 10	18:37 (AB06) 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09		20:36
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10		20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12		20:37
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13		20:38
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14		20:38
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	18:39 (AB06) 20:15		20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	13 19	18:52 (AB06) 18:54 (AB06)	20:15 20:16
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:44	19 22	18:54 (AB06) 18:56 (AB06)	20:16 20:17
18	07:27 16:58	06:55 17:37	06:10 18:11	17:33 (AB07) 19:45	22 25	18:32 (AB06) 18:57 (AB06)	20:17 20:18
19	07:26 16:59	06:54 17:39	06:09 18:12	17:29 (AB07) 19:46	27 27	18:31 (AB06) 18:58 (AB06)	20:18 20:19
20	07:25 17:01	06:52 17:40	06:07 18:13	17:27 (AB07) 19:48	20 30	18:29 (AB06) 18:59 (AB06)	20:19 20:20
21	07:25 17:02	06:51 17:41	06:05 18:14	17:25 (AB07) 19:49	30 31	18:29 (AB06) 19:00 (AB06)	20:20 20:21
22	07:24 17:03	06:49 17:42	06:04 18:15	17:23 (AB07) 19:50	31 31	18:28 (AB06) 18:59 (AB06)	20:21 20:22
23	07:23 17:04	06:48 17:44	06:02 18:16	17:23 (AB07) 19:51	32 32	18:28 (AB06) 19:00 (AB06)	20:22 20:23
24	07:23 17:06	06:46 17:45	06:00 18:18	17:22 (AB07) 19:52	33 33	18:27 (AB06) 19:00 (AB06)	20:23 20:23
25	07:22 17:07	06:45 17:46	05:58 18:19	17:22 (AB07) 19:53	33 33	18:27 (AB06) 19:00 (AB06)	20:24 20:24
26	07:21 17:08	06:43 17:47	05:57 18:20	17:21 (AB07) 19:54	33 33	18:27 (AB06) 19:00 (AB06)	20:25 20:25
27	07:20 17:09	06:42 17:49	05:55 18:21	17:22 (AB07) 19:55	33 33	18:26 (AB06) 18:59 (AB06)	20:26 20:26
28	07:20 17:11	06:40 17:50	05:53 18:22	17:22 (AB07) 19:56	33 33	18:27 (AB06) 19:00 (AB06)	20:27 20:27
29	07:19 17:12	06:40 19:23	06:52 19:23	18:22 (AB07) 19:57	32 32	18:27 (AB06) 18:59 (AB06)	20:28 20:28
30	07:18 17:13	06:50 19:24	06:50 18:24	18:24 (AB07) 19:59	31 31	18:27 (AB06) 18:58 (AB06)	20:29 20:29
31	07:17 17:14	06:48 19:25	06:48 18:25	18:25 (AB07) 19:59	31 31	18:27 (AB06) 18:58 (AB06)	20:29 20:29
Potential sun hours	295	296	369	400	451	455	
Total, worst case			233	464	207	10	
Sun reduction			0,49	0,44	0,40	0,38	
Oper. time red.			0,88	0,88	0,88	0,88	
Wind dir. red.			0,64	0,67	0,67	0,74	
Total reduction			0,27	0,26	0,24	0,25	
Total, real			63	119	49	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

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R186 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (132)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December
1	05:30 20:41	05:54 20:22		06:26 19:37	06:58 18:45	07:09 16:32
2	05:30 20:41	05:55 20:20		06:27 19:36	06:59 18:44	07:10 16:31
3	05:31 20:41	05:56 20:19	5 18:50 (AB06) 18:55 (AB06)	06:28 19:34	07:00 18:42	07:11 16:31
4	05:31 20:41	05:57 20:18	13 18:46 (AB06) 18:59 (AB06)	06:30 19:32	07:01 18:40	07:12 16:31
5	05:32 20:41	05:58 20:17	17 18:44 (AB06) 19:01 (AB06)	06:31 19:30	07:02 18:38	07:13 16:31
6	05:32 20:40	05:59 20:16	20 18:42 (AB06) 19:02 (AB06)	06:32 19:29	07:03 18:37	07:14 16:31
7	05:33 20:40	06:00 20:14	23 18:41 (AB06) 19:04 (AB06)	06:33 19:27	07:04 18:35	07:15 16:31
8	05:34 20:40	06:01 20:13	25 18:40 (AB06) 19:05 (AB06)	06:34 19:25	07:05 18:33	07:16 16:30
9	05:34 20:39	06:02 20:12	27 18:38 (AB06) 19:05 (AB06)	06:35 19:24	07:07 18:32	07:17 16:30
10	05:35 20:39	06:04 20:11	28 18:38 (AB06) 19:06 (AB06)	06:36 19:22	07:08 18:30	07:18 16:30
11	05:36 20:39	06:05 20:09	30 18:37 (AB06) 19:07 (AB06)	06:37 19:20	18:22 (AB07) 18:28	07:19 16:30
12	05:36 20:38	06:06 20:08	31 18:36 (AB06) 19:07 (AB06)	06:38 19:18	18:18 (AB07) 18:27	07:20 16:31
13	05:37 20:38	06:07 20:07	32 18:35 (AB06) 19:07 (AB06)	06:39 19:17	18:16 (AB07) 18:25	07:21 16:31
14	05:38 20:37	06:08 20:05	32 18:35 (AB06) 19:07 (AB06)	06:40 19:15	18:14 (AB07) 18:24	07:21 16:31
15	05:39 20:36	06:09 20:04	33 18:34 (AB06) 19:07 (AB06)	06:41 19:13	18:12 (AB07) 18:22	07:22 16:31
16	05:40 20:36	06:10 20:02	33 18:34 (AB06) 19:07 (AB06)	06:42 19:11	18:11 (AB07) 18:20	07:23 16:31
17	05:40 20:35	06:11 20:01	33 18:34 (AB06) 19:07 (AB06)	06:43 19:10	18:11 (AB07) 18:19	07:24 16:32
18	05:41 20:34	06:12 19:59	34 18:33 (AB06) 19:07 (AB06)	06:44 19:08	18:10 (AB07) 18:17	07:24 16:32
19	05:42 20:34	06:13 19:58	33 18:33 (AB06) 19:06 (AB06)	06:45 19:06	18:10 (AB07) 18:16	07:25 16:32
20	05:43 20:33	06:14 19:56	33 18:33 (AB06) 19:06 (AB06)	06:46 19:04	18:10 (AB07) 18:14	07:26 16:33
21	05:44 20:32	06:15 19:55	31 18:34 (AB06) 19:05 (AB06)	06:47 19:03	18:10 (AB07) 18:13	07:26 16:33
22	05:45 20:31	06:16 19:53	30 18:34 (AB06) 19:04 (AB06)	06:48 19:01	18:10 (AB07) 18:11	07:27 16:34
23	05:46 20:31	06:17 19:52	29 18:34 (AB06) 19:03 (AB06)	06:49 18:59	18:11 (AB07) 18:10	07:27 16:34
24	05:47 20:30	06:18 19:50	27 18:35 (AB06) 19:02 (AB06)	06:50 18:57	18:12 (AB07) 18:08	07:28 16:35
25	05:48 20:29	06:19 19:49	25 18:36 (AB06) 19:01 (AB06)	06:51 18:56	18:14 (AB07) 18:21 (AB07)	07:28 16:35
26	05:48 20:28	06:20 19:47	22 18:37 (AB06) 18:59 (AB06)	06:52 18:54	06:26 17:05	07:28 16:36
27	05:49 20:27	06:21 19:45	19 18:38 (AB06) 18:57 (AB06)	06:53 18:52	06:27 17:04	07:29 16:37
28	05:50 20:26	06:22 19:44	13 18:41 (AB06) 18:54 (AB06)	06:55 18:50	06:29 17:03	07:29 16:37
29	05:51 20:25	06:23 19:42		06:56 18:49	06:30 17:01	07:29 16:38
30	05:52 20:24	06:24 19:41		06:57 18:47	06:31 17:00	07:30 16:39
31	05:53 20:23	06:25 19:39			06:32 16:59	07:30 16:39
Potential sun hours	462	430	375	344	296	285
Total, worst case		678		239		
Sun reduction		0,42		0,46		
Oper. time red.		0,88		0,88		
Wind dir. red.		0,67		0,64		
Total reduction		0,25		0,26		
Total, real		168		62		

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

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

Project:

WF Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:

15/11/2023 18:37/3.5.587

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flikering real caseShadow receptor: R189 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (133)  
Assumptions for shadow calculations  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32		
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:20	06:27 19:36	06:59 18:44	06:35 16:56	07:10 16:31		
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:11 16:31		
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:12 16:31		
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:30	07:02 18:38	06:38 16:52	07:13 16:31		
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:14 16:31		
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:30		
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30		
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:39	06:02 20:12	06:35 19:24	07:06 18:32	06:43 16:48	07:17 16:30		
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	05:26 20:36	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30		
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30		
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:31		
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:37	06:07 20:06	19:05 (AB06) 19:07 (AB06)	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31	
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	19:02 (AB06) 19:06 (AB06)	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31	
15	07:28 16:55	15:20 (AB10) 15:22 (AB10)	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	06:09 20:36	19:01 (AB06) 19:04 (AB06)	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31	
16	07:28 16:56	2 15:24 (AB10)	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:29 20:39	06:10 20:36	3 19:04 (AB06)	06:42 19:11	07:14 18:20	06:52 16:41	15:10 (AB10) 15:22 (AB10)	07:23 16:31
17	07:27 16:57	3 15:24 (AB10)	06:56 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	06:11 20:35	4 19:03 (AB06)	06:43 19:10	07:16 18:19	06:53 16:40	12 15:22 (AB10)	07:24 16:32
18	07:27 16:58	6 15:28 (AB10)	06:55 17:37	06:10 18:11	06:18 19:45	05:40 20:18	05:26 20:40	06:12 20:34	4 19:02 (AB06)	06:44 19:08	07:17 18:17	06:54 16:39	18 15:25 (AB10)	07:24 16:32
19	07:26 16:59	8 15:31 (AB10)	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	05:26 20:40	06:13 20:34	4 18:56 (AB06)	06:45 19:06	07:18 18:16	06:55 16:38	15 15:04 (AB10)	07:25 16:32
20	07:25 17:01	10 15:34 (AB10)	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:41	06:14 20:33	4 18:56 (AB06)	06:46 19:04	07:19 18:14	06:57 16:38	15 15:18 (AB10)	07:26 16:33
21	07:25 17:02	11 15:37 (AB10)	06:51 17:41	06:05 18:14	06:14 19:49	18:50 (AB06) 20:21	05:26 20:41	06:15 20:32	2 18:58 (AB06)	06:47 19:03	07:20 18:13	06:58 16:37	15 15:03 (AB10)	07:26 16:33
22	07:24 17:03	13 15:40 (AB10)	06:49 17:42	06:04 18:15	06:12 19:50	18:50 (AB06) 20:22	05:26 20:41	06:16 20:31	1 18:55 (AB06)	06:48 19:01	07:21 18:11	06:59 16:36	13 15:16 (AB10)	07:27 16:34
23	07:23 17:04	15 15:43 (AB10)	06:48 17:44	06:02 18:16	06:11 19:51	18:50 (AB06) 20:22	05:27 20:41	06:17 20:30	1 18:56 (AB06)	06:49 18:59	07:23 18:10	07:00 16:36	12 15:14 (AB10)	07:27 16:34
24	07:23 17:05	18 15:47 (AB10)	06:46 17:45	06:00 18:18	06:09 19:52	18:50 (AB06) 20:23	05:27 20:41	06:18 20:30	4 19:00 (AB06)	06:50 18:57	07:24 18:08	07:01 16:35	10 15:11 (AB10)	07:28 16:34
25	07:22 17:07	19 15:51 (AB10)	06:45 17:46	05:58 18:19	06:08 19:53	18:53 (AB06) 20:24	05:27 20:41	06:19 20:29	4 19:00 (AB06)	06:51 18:56	07:25 17:07	07:03 16:34	8 15:08 (AB10)	07:28 16:35
26	07:22 17:08	18 15:52 (AB10)	06:45 17:46	05:57 18:19	06:06 19:53	18:54 (AB06) 20:24	05:28 20:41	06:20 20:29	4 19:01 (AB06)	06:52 18:57	07:26 17:06	07:04 16:34	6 15:05 (AB10)	07:28 16:35
27	07:20 17:09	12 15:49 (AB10)	06:42 17:47	05:55 18:20	06:05 19:54	18:52 (AB06) 20:25	05:28 20:41	06:21 20:28	4 19:02 (AB06)	06:53 18:54	07:27 17:05	07:05 16:34	4 15:04 (AB10)	07:29 16:36
28	07:19 17:11		06:40 17:49	06:03 18:21	06:03 19:55	18:53 (AB06) 20:26	05:28 20:42	06:22 20:27	4 19:03 (AB06)	06:54 18:52	07:28 17:04	07:06 16:33	2 15:01 (AB10)	07:29 16:37
29	07:19 17:12		06:52 17:50	06:02 18:22	06:02 19:56	18:55 (AB06) 20:27	05:29 20:42	06:23 20:26	4 19:04 (AB06)	06:56 18:50	07:29 17:03	07:07 16:33		07:29 16:37
30	07:18 17:13		06:50 17:51	06:01 19:57	06:01 19:57	18:58 (AB06) 20:28	05:30 20:42	06:24 20:25	4 19:05 (AB06)	06:57 18:49	07:30 17:01	07:08 16:32		07:30 16:38
31	07:17 17:14		06:48 17:52	06:00 19:59	06:00 19:59	18:59 (AB06) 20:29	05:31 20:41	06:25 20:24	4 19:06 (AB06)	06:58 18:47	07:31 17:00	07:09 16:32		07:31 16:39
Potential sun hours	295		296	369	400	451	462	430	375	344	296	285		
Total, worst case	135				26			29				137		
Sun reduction	0.61				0.44			0.42				0.59		
Oper. time red.	0.88				0.88			0.88				0.88		
Wind dir. red.	0.51				0.68			0.68				0.51		
Total reduction	0.27				0.26			0.25				0.26		
Total, real	37				7			7				36		

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

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

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R190 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (134)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	19:00 (AB06) 05:29 19:18 (AB06) 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	19:01 (AB06) 05:29 19:17 (AB06) 20:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	19:01 (AB06) 05:28 19:15 (AB06) 20:32
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	19:03 (AB06) 05:28 19:14 (AB06) 20:32
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	19:07 (AB06) 05:28 19:10 (AB06) 20:33
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 19:50 (AB05) 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 19:51 (AB05) 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 19:51 (AB05) 20:35
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 19:52 (AB05) 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	05:26 19:52 (AB05) 20:36
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 19:52 (AB05) 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 19:52 (AB05) 20:37
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 19:52 (AB05) 20:38
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	05:26 19:52 (AB05) 20:38
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 19:53 (AB05) 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 19:53 (AB05) 20:39
17	07:27 16:57	06:56 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 19:53 (AB05) 20:40
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:40 20:18	05:26 19:54 (AB05) 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	19:06 (AB06) 05:39 19:07 (AB06) 20:19	05:26 19:54 (AB05) 20:40
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	19:03 (AB06) 05:38 19:08 (AB06) 20:20	05:26 19:54 (AB05) 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	19:02 (AB06) 05:37 19:11 (AB06) 20:21	05:26 19:54 (AB05) 20:41
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	19:00 (AB06) 05:36 19:12 (AB06) 20:22	05:26 19:54 (AB05) 20:41
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	19:00 (AB06) 05:35 19:15 (AB06) 20:22	05:27 19:55 (AB05) 20:41
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	18:58 (AB06) 05:34 19:16 (AB06) 20:23	05:27 19:55 (AB05) 20:41
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	18:58 (AB06) 05:34 19:18 (AB06) 20:24	05:27 19:55 (AB05) 20:41
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	18:59 (AB06) 05:33 19:20 (AB06) 20:25	05:28 19:56 (AB05) 20:41
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	18:58 (AB06) 05:32 19:20 (AB06) 20:26	05:28 19:56 (AB05) 20:42
28	07:19 17:11	06:40 17:50	05:53 18:22	06:03 19:56	18:58 (AB06) 05:32 19:20 (AB06) 20:27	05:28 19:55 (AB05) 20:42
29	07:19 17:12	06:40 17:50	05:52 18:22	06:02 19:56	18:59 (AB06) 05:31 19:20 (AB06) 20:27	05:29 19:56 (AB05) 20:42
30	07:18 17:13	06:40 17:50	05:52 18:22	06:02 19:56	18:59 (AB06) 05:31 19:20 (AB06) 20:27	05:29 19:56 (AB05) 20:42
31	07:17 17:14	06:40 17:50	05:52 18:22	06:02 19:56	18:59 (AB06) 05:30 19:19 (AB06) 20:29	05:29 19:56 (AB05) 20:41
Potential sun hours	295	296	369	400	451	455
Total, worst case				186	147	573
Sun reduction				0,44	0,40	0,38
Oper. time red.				0,88	0,88	0,88
Wind dir. red.				0,68	0,71	0,73
Total reduction				0,26	0,25	0,25
Total, real				48	37	140

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: WF Abruzzo shadow flickering real caseShadow receptor: R190 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (134)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December		
1	05:30 20:41	19:57 (AB05) 20:16 (AB05)	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32	
2	05:30 20:41	19:56 (AB05) 20:15 (AB05)	05:55 20:20	06:27 19:36	06:59 18:44	06:35 16:56	07:10 16:31	
3	05:31 20:41	19:57 (AB05) 20:16 (AB05)	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:11 16:31	
4	05:31 20:41	19:56 (AB05) 20:15 (AB05)	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:12 16:31	
5	05:32 20:41	19:57 (AB05) 20:15 (AB05)	05:58 20:17	06:31 19:30	07:02 18:38	06:38 16:52	07:13 16:31	
6	05:32 20:40	19:57 (AB05) 20:14 (AB05)	05:59 20:16	06:32 19:29	07:03 18:37	06:39 16:51	07:14 16:31	
7	05:33 20:40	19:57 (AB05) 20:14 (AB05)	06:00 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:30	
8	05:34 20:40	19:58 (AB05) 20:14 (AB05)	06:01 20:13	19:15 (AB06) 19:21 (AB06)	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30
9	05:34 20:39	19:57 (AB05) 20:13 (AB05)	06:02 20:12	19:12 (AB06) 19:24 (AB06)	06:35 19:24	07:06 18:32	06:43 16:48	07:17 16:30
10	05:35 20:39	19:58 (AB05) 20:13 (AB05)	06:03 20:11	19:10 (AB06) 19:25 (AB06)	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30
11	05:36 20:38	19:58 (AB05) 20:13 (AB05)	06:05 20:09	19:09 (AB06) 19:26 (AB06)	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	05:36 20:38	19:58 (AB05) 20:12 (AB05)	06:06 20:08	19:08 (AB06) 19:27 (AB06)	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:31
13	05:37 20:37	19:59 (AB05) 20:12 (AB05)	06:07 20:06	19:07 (AB06) 19:28 (AB06)	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	19:59 (AB05) 20:12 (AB05)	06:08 20:05	19:06 (AB06) 19:28 (AB06)	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	05:39 20:36	20:00 (AB05) 20:11 (AB05)	06:09 20:04	19:06 (AB06) 19:28 (AB06)	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	05:40 20:36	20:01 (AB05) 20:11 (AB05)	06:10 20:02	19:06 (AB06) 19:28 (AB06)	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	20:00 (AB05) 20:10 (AB05)	06:11 20:01	19:05 (AB06) 19:27 (AB06)	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	05:41 20:34	20:01 (AB05) 20:09 (AB05)	06:12 19:59	19:05 (AB06) 19:24 (AB06)	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	05:42 20:34	20:02 (AB05) 20:09 (AB05)	06:13 19:58	19:05 (AB06) 19:22 (AB06)	06:45 19:06	07:18 18:16	06:55 16:38	07:25 16:32
20	05:43 20:33	20:04 (AB05) 20:08 (AB05)	06:14 19:56	19:06 (AB06) 19:20 (AB06)	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	20:05 (AB05) 20:08 (AB05)	06:15 19:55	19:06 (AB06) 19:18 (AB06)	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 19:53	06:16 19:53	19:07 (AB06) 19:15 (AB06)	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	05:46 20:30	06:17 19:52	06:17 19:52	19:08 (AB06) 19:13 (AB06)	06:49 18:59	07:23 18:10	07:00 16:36	07:27 16:34
24	05:47 20:30	06:18 19:50	06:18 19:50	06:50 18:57	07:24 18:08	07:01 16:35	07:28 16:35	07:28 16:35
25	05:48 20:29	06:19 19:49	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	07:29 16:35	07:28 16:35
26	05:48 20:28	06:20 19:47	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	07:28 16:36	07:28 16:36
27	05:49 20:27	06:21 19:45	06:21 19:45	06:53 18:52	07:27 17:04	07:05 16:33	07:29 16:37	07:29 16:37
28	05:50 20:26	06:22 19:44	06:22 19:44	06:55 18:50	07:28 17:03	07:06 16:33	07:29 16:37	07:29 16:37
29	05:51 20:25	06:23 19:42	06:23 19:42	06:56 18:49	07:30 17:01	07:07 16:32	07:29 16:38	07:29 16:38
30	05:52 20:24	06:24 19:40	06:24 19:40	06:57 18:47	07:31 17:00	07:08 16:32	07:30 16:39	07:30 16:39
31	05:53 20:23	06:25 19:39	06:25 19:39	06:58 16:58	07:32 16:58	07:09 16:31	07:31 16:39	07:30 16:39
Potential sun hours	462	430		375	344	296	285	
Total, worst case	283		253					
Sun reduction	0,39		0,42					
Oper. time red.	0,88		0,88					
Wind dir. red.	0,73		0,68					
Total reduction	0,25		0,25					
Total, real	71		63					

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: WF Abruzzo shadow flickering real caseShadow receptor: R191 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (135)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	19:00 (AB06) 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	19:02 (AB06) 20:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	19:03 (AB06) 20:32
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	19:12 (AB06) 20:32
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	05:26 20:36
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39
17	07:27 16:57	06:56 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	19:05 (AB06) 19:14 (AB06)	05:40 20:18
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	19:03 (AB06) 19:17 (AB06)	05:39 20:19
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	19:01 (AB06) 19:18 (AB06)	05:38 20:20
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	19:00 (AB06) 19:19 (AB06)	05:37 20:21
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	18:59 (AB06) 19:19 (AB06)	05:36 20:22
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	18:59 (AB06) 19:20 (AB06)	05:35 20:22
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	18:58 (AB06) 19:19 (AB06)	05:34 20:23
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	18:58 (AB06) 19:20 (AB06)	05:34 20:24
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	18:58 (AB06) 19:20 (AB06)	05:33 20:25
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	18:58 (AB06) 19:19 (AB06)	05:32 20:26
28	07:19 17:11	06:40 17:50	05:53 18:22	06:03 19:56	18:58 (AB06) 19:19 (AB06)	05:32 20:27
29	07:19 17:12	06:40 17:50	05:52 18:22	06:02 19:56	18:59 (AB06) 19:18 (AB06)	05:31 20:28
30	07:18 17:13	06:40 17:50	05:52 18:22	06:02 19:56	18:59 (AB06) 19:17 (AB06)	05:31 20:29
31	07:17 17:14	06:40 17:50	05:52 18:22	06:02 19:56	18:59 (AB06) 19:17 (AB06)	05:31 20:29
Potential sun hours	295	296	369	400	451	455
Total, worst case				244	155	574
Sun reduction				0,44	0,40	0,38
Oper. time red.				0,88	0,88	0,88
Wind dir. red.				0,68	0,72	0,73
Total reduction				0,26	0,25	0,24
Total, real				63	39	140

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 Abruzzo Shoadow flickering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:37/3.5.587

### SHADOW - Calendar

Calculation: WF Abruzzo shadow flickering real caseShadow receptor: R191 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (135)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December		
1	05:30	19:55 (AB05)	05:54	06:26	06:58	06:33	07:09	
	20:41	20:15 (AB05)	20:22	19:37	18:45	16:57	16:32	
2	05:30	19:55 (AB05)	05:55	06:27	06:59	06:35	07:10	
	20:41	20:15 (AB05)	20:20	19:35	18:44	16:56	16:31	
3	05:31	19:56 (AB05)	05:56	06:28	07:00	06:36	07:11	
	20:41	20:16 (AB05)	20:19	19:34	18:42	16:55	16:31	
4	05:31	19:55 (AB05)	05:57	06:30	07:01	06:37	07:12	
	20:41	20:15 (AB05)	20:18	19:32	18:40	16:53	16:31	
5	05:32	19:56 (AB05)	05:58	06:31	07:02	06:38	07:13	
	20:41	20:15 (AB05)	20:17	19:30	18:38	16:52	16:31	
6	05:32	19:55 (AB05)	05:59	06:32	07:03	06:39	07:14	
	20:40	20:14 (AB05)	20:16	19:29	18:37	16:51	16:31	
7	05:33	19:56 (AB05)	06:00	06:33	07:04	06:41	07:15	
	20:40	20:14 (AB05)	20:14	19:27	18:35	16:50	16:30	
8	05:34	19:56 (AB05)	06:01	06:34	07:05	06:42	07:16	
	20:40	20:14 (AB05)	20:13	19:25	18:33	16:49	16:30	
9	05:34	19:55 (AB05)	06:02	19:15 (AB06)	06:35	07:06	06:43	07:17
	20:39	20:13 (AB05)	20:12	19:19 (AB06)	19:24	18:32	16:48	16:30
10	05:35	19:56 (AB05)	06:03	19:12 (AB06)	06:36	07:08	06:44	07:18
	20:39	20:13 (AB05)	20:11	19:22 (AB06)	19:22	18:30	16:47	16:30
11	05:36	19:56 (AB05)	06:05	19:10 (AB06)	06:37	07:09	06:46	07:19
	20:38	20:13 (AB05)	20:09	19:24 (AB06)	19:20	18:28	16:46	16:30
12	05:36	19:56 (AB05)	06:06	19:08 (AB06)	06:38	07:10	06:47	07:20
	20:38	20:12 (AB05)	20:08	19:25 (AB06)	19:18	18:27	16:45	16:31
13	05:37	19:56 (AB05)	06:07	19:07 (AB06)	06:39	07:11	06:48	07:21
	20:37	20:12 (AB05)	20:06	19:26 (AB06)	19:17	18:25	16:44	16:31
14	05:38	19:57 (AB05)	06:08	19:06 (AB06)	06:40	07:12	06:49	07:21
	20:37	20:11 (AB05)	20:05	19:26 (AB06)	19:15	18:24	16:43	16:31
15	05:39	19:57 (AB05)	06:09	19:06 (AB06)	06:41	07:13	06:51	07:22
	20:36	20:11 (AB05)	20:04	19:27 (AB06)	19:13	18:22	16:42	16:31
16	05:40	19:58 (AB05)	06:10	19:05 (AB06)	06:42	07:14	06:52	07:23
	20:36	20:11 (AB05)	20:02	19:27 (AB06)	19:11	18:20	16:41	16:31
17	05:40	19:58 (AB05)	06:11	19:05 (AB06)	06:43	07:16	06:53	07:24
	20:35	20:09 (AB05)	20:01	19:27 (AB06)	19:10	18:19	16:40	16:32
18	05:41	19:58 (AB05)	06:12	19:05 (AB06)	06:44	07:17	06:54	07:24
	20:34	20:09 (AB05)	19:59	19:26 (AB06)	19:08	18:17	16:39	16:32
19	05:42	19:59 (AB05)	06:13	19:04 (AB06)	06:45	07:18	06:55	07:25
	20:34	20:08 (AB05)	19:58	19:26 (AB06)	19:06	18:16	16:38	16:32
20	05:43	20:00 (AB05)	06:14	19:05 (AB06)	06:46	07:19	06:57	07:26
	20:33	20:08 (AB05)	19:56	19:25 (AB06)	19:04	18:14	16:38	16:33
21	05:44	20:01 (AB05)	06:15	19:05 (AB06)	06:47	07:20	06:58	07:26
	20:32	20:07 (AB05)	19:55	19:25 (AB06)	19:03	18:13	16:37	16:33
22	05:45	20:02 (AB05)	06:16	19:05 (AB06)	06:48	07:21	06:59	07:27
	20:31	20:07 (AB05)	19:53	19:24 (AB06)	19:01	18:11	16:36	16:34
23	05:46	20:02 (AB05)	06:17	19:06 (AB06)	06:49	07:22	07:00	07:27
	20:30	20:05 (AB05)	19:52	19:22 (AB06)	18:59	18:10	16:36	16:34
24	05:47	06:18	06:18	19:07 (AB06)	06:50	07:24	07:01	07:28
	20:30	19:50	14	19:21 (AB06)	18:57	18:08	16:35	16:35
25	05:48	06:19	06:19	19:10 (AB06)	06:51	06:25	07:03	07:28
	20:29	19:49	8	19:18 (AB06)	18:56	17:07	16:34	16:35
26	05:48	06:20	06:20	06:52	06:26	07:04	07:28	
	20:28	19:47	06:21	18:54	17:05	16:34	16:36	
27	05:49	06:21	06:21	06:53	06:27	07:05	07:29	
	20:27	19:45	06:22	18:52	17:04	16:33	16:37	
28	05:50	06:22	06:22	06:55	06:28	07:06	07:29	
	20:26	19:44	06:23	18:50	17:03	16:33	16:37	
29	05:51	06:23	06:23	06:56	06:30	07:07	07:29	
	20:25	19:42	06:24	18:49	17:01	16:32	16:38	
30	05:52	06:24	06:24	06:57	06:31	07:08	07:30	
	20:24	19:40	06:25	18:47	17:00	16:32	16:39	
31	05:53	06:25	06:25	06:58	06:32	07:09	07:30	
	20:23	19:39	06:26	16:58	16:58	16:39	16:39	
Potential sun hours	462	430		375	344	296	285	
Total, worst case	332		289					
Sun reduction	0,39		0,42					
Oper. time red.	0,88		0,88					
Wind dir. red.	0,73		0,68					
Total reduction	0,25		0,25					
Total, real	83		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: WF Abruzzo shadow flickering real caseShadow receptor: R192 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (136)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	19:01 (AB06) 20:30
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	19:02 (AB06) 20:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	19:03 (AB06) 20:32
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	19:05 (AB06) 20:32
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	19:05 (AB06) 20:33
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	19:05 (AB06) 20:34
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	19:05 (AB06) 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	19:05 (AB06) 20:35
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	19:05 (AB06) 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	19:05 (AB06) 20:36
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	19:05 (AB06) 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	19:05 (AB06) 20:37
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	19:05 (AB06) 20:38
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	19:05 (AB06) 20:38
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	19:05 (AB06) 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	19:05 (AB06) 20:39
17	07:27 16:57	06:56 17:36	06:12 18:10	06:20 19:44	05:40 20:17	19:05 (AB06) 20:40
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:40 20:18	19:05 (AB06) 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	19:07 (AB06) 20:40
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	19:04 (AB06) 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	19:03 (AB06) 20:41
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	19:54 (AB05) 20:41
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:22	19:53 (AB05) 20:41
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:23	19:52 (AB05) 20:41
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	19:51 (AB05) 20:41
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	19:50 (AB05) 20:41
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	20:00 (AB05) 20:42
28	07:19 17:11	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	19:50 (AB05) 20:42
29	07:19 17:12	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	19:50 (AB05) 20:42
30	07:18 17:13	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	19:50 (AB05) 20:42
31	07:17 17:14	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	19:50 (AB05) 20:42
Potential sun hours	295	296	369	400	451	455
Total, worst case				227	153	554
Sun reduction				0,44	0,40	0,38
Oper. time red.				0,88	0,88	0,88
Wind dir. red.				0,68	0,71	0,73
Total reduction				0,26	0,25	0,24
Total, real				59	38	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: WF Abruzzo shadow flickering real caseShadow receptor: R192 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (136)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December		
1	05:30 20:41	19:57 (AB05) 20:16 (AB05)	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32	
2	05:30 20:41	19:56 (AB05) 20:15 (AB05)	05:55 20:20	06:27 19:35	06:59 18:44	06:35 16:56	07:10 16:31	
3	05:31 20:41	19:57 (AB05) 20:16 (AB05)	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:11 16:31	
4	05:31 20:41	19:56 (AB05) 20:15 (AB05)	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:12 16:31	
5	05:32 20:41	19:57 (AB05) 20:15 (AB05)	05:58 20:17	06:31 19:30	07:02 18:38	06:38 16:52	07:13 16:31	
6	05:32 20:40	19:56 (AB05) 20:14 (AB05)	05:59 20:16	06:32 19:29	07:03 18:37	06:39 16:51	07:14 16:31	
7	05:33 20:40	19:57 (AB05) 20:14 (AB05)	06:00 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:30	
8	05:34 20:40	19:57 (AB05) 20:14 (AB05)	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30	
9	05:34 20:39	19:57 (AB05) 20:13 (AB05)	06:02 20:12	19:14 (AB06) 19:24 (AB06)	06:35 19:24	07:06 18:32	06:43 16:48	07:17 16:30
10	05:35 20:39	19:57 (AB05) 20:13 (AB05)	06:03 20:11	19:12 (AB06) 19:25 (AB06)	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30
11	05:36 20:38	19:58 (AB05) 20:13 (AB05)	06:05 20:09	19:11 (AB06) 19:27 (AB06)	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	05:36 20:38	19:57 (AB05) 20:12 (AB05)	06:06 20:08	19:10 (AB06) 19:27 (AB06)	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:31
13	05:37 20:37	19:58 (AB05) 20:12 (AB05)	06:07 20:06	19:09 (AB06) 19:28 (AB06)	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	19:58 (AB05) 20:12 (AB05)	06:08 20:05	19:08 (AB06) 19:28 (AB06)	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	05:39 20:36	19:59 (AB05) 20:11 (AB05)	06:09 20:04	19:07 (AB06) 19:29 (AB06)	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	05:40 20:36	19:59 (AB05) 20:11 (AB05)	06:10 20:02	19:07 (AB06) 19:29 (AB06)	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	19:59 (AB05) 20:10 (AB05)	06:11 20:01	19:07 (AB06) 19:28 (AB06)	06:43 19:10	07:16 18:19	06:53 16:40	07:24 16:32
18	05:41 20:34	20:00 (AB05) 20:09 (AB05)	06:12 19:59	19:07 (AB06) 19:28 (AB06)	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	05:42 20:34	20:01 (AB05) 20:09 (AB05)	06:13 19:58	19:07 (AB06) 19:28 (AB06)	06:45 19:06	07:18 18:16	06:55 16:38	07:25 16:32
20	05:43 20:33	20:02 (AB05) 20:08 (AB05)	06:14 19:56	19:07 (AB06) 19:27 (AB06)	06:46 19:04	07:19 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	20:03 (AB05) 20:08 (AB05)	06:15 19:55	19:07 (AB06) 19:26 (AB06)	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	05:45 20:31	20:04 (AB05) 20:07 (AB05)	06:16 19:53	19:08 (AB06) 19:25 (AB06)	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	05:46 20:30	06:17 19:52	06:17 19:52	19:09 (AB06) 19:23 (AB06)	06:49 18:59	07:22 18:10	07:00 16:36	07:27 16:34
24	05:47 20:30	06:18 19:50	06:18 19:50	19:11 (AB06) 19:20 (AB06)	06:50 18:57	07:24 18:08	07:01 16:35	07:28 16:35
25	05:48 20:29	06:19 19:49	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	07:28 16:35	07:28 16:35
26	05:48 20:28	06:20 19:47	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34	07:28 16:36	07:28 16:36
27	05:49 20:27	06:21 19:45	06:21 19:45	06:53 18:52	06:27 17:04	07:05 16:33	07:29 16:37	07:29 16:37
28	05:50 20:26	06:22 19:44	06:22 19:44	06:55 18:50	06:28 17:03	07:06 16:33	07:29 16:37	07:29 16:37
29	05:51 20:25	06:23 19:42	06:23 19:42	06:56 18:49	06:30 17:01	07:07 16:32	07:29 16:38	07:29 16:38
30	05:52 20:24	06:24 19:40	06:24 19:40	06:57 18:47	06:31 17:00	07:08 16:32	07:30 16:39	07:30 16:39
31	05:53 20:23	06:25 19:39	06:25 19:39	06:32 16:58	06:32 16:58	07:30 16:39	07:30 16:39	07:30 16:39
Potential sun hours	462	430		375	344	296	285	
Total, worst case	302		281					
Sun reduction	0,39		0,42					
Oper. time red.	0,88		0,88					
Wind dir. red.	0,73		0,68					
Total reduction	0,25		0,25					
Total, real	75		70					

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: WF Abruzzo shadow flickering real caseShadow receptor: R193 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (137)  
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

#### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:20	06:27 19:35	06:59 18:44	06:35 16:56	07:10 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:11 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:30	07:02 18:38	06:38 16:52	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	06:39 16:51	07:14 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:39	06:02 20:12	06:35 19:24	07:06 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	05:26 20:36	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:37	06:07 20:06	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	07:28 17:35	06:58 18:09	06:14 19:43	06:22 20:16	05:41 20:39	05:40 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:56 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:15 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:40 20:18	05:26 20:40	05:41 20:34	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:55 16:38	07:25 16:32
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:40	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:25 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:22	05:27 20:41	05:46 20:30	06:17 19:52	06:49 18:59	07:22 18:10	07:00 16:36	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:01 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:41	05:48 20:29	06:19 19:49	06:51 18:56	06:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:28 20:41	05:48 20:28	06:20 19:47	06:52 18:54	06:26 17:05	07:04 16:34	07:28 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:53 18:52	06:27 17:04	07:05 16:33	07:29 16:37
28	07:19 17:11	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	06:28 17:03	07:06 16:33	07:29 16:37
29	07:19 17:12	06:40 18:22	05:53 19:23	06:03 19:57	05:32 20:28	05:28 20:42	05:50 20:25	06:22 19:42	06:55 18:49	06:28 17:01	07:06 16:32	07:29 16:38
30	07:18 17:13	06:40 19:24	05:53 18:24	06:03 19:59	05:32 20:29	05:28 20:41	05:50 20:24	06:22 19:40	06:55 18:47	06:28 17:00	07:06 16:32	07:29 16:39
31	07:17 17:14	06:40 19:25	05:55 18:25	06:05 19:58	05:32 20:29	05:28 20:41	05:50 20:23	06:22 19:39	06:55 16:58	06:28 17:00	07:06 16:32	07:29 16:39
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

Day in month	Sun rise (hh:mm)	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: WF Abruzzo shadow flikering real caseShadow receptor: R194 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 0,0° (138)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	17:27 (AB10) 17:31 (AB10)	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:20	06:27 19:35	06:59 18:44	17:27 (AB10) 17:29 (AB10)	06:35 16:56	07:10 16:31
3	07:30 16:42	07:14 17:18	06:34 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	17:26 (AB10) 17:28 (AB10)	06:36 16:55	07:11 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32	05:31 20:41	05:57 20:18	06:30 19:32	06:30 18:40	17:26 (AB10) 17:27 (AB10)	06:37 16:53	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:30	06:31 18:38	17:26 (AB10) 17:27 (AB10)	06:38 16:52	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	17:27 (AB10) 17:28 (AB10)	06:39 16:51	07:14 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:14	06:33 19:27	07:04 18:35	17:28 (AB10) 17:29 (AB10)	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	17:29 (AB10) 17:30 (AB10)	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	16:49 (AB10) 06:33	05:49 20:08	05:26 20:36	05:34 20:39	06:02 20:12	06:35 19:24	07:06 18:32	17:31 (AB10) 17:32 (AB10)	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	16:50 (AB10) 06:31	05:48 20:09	05:26 20:36	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	17:33 (AB10) 17:34 (AB10)	06:44 16:47	07:18 16:30
11	07:29 16:49	07:04 17:29	06:22 18:03	16:48 (AB10) 06:30	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:28	17:35 (AB10) 17:36 (AB10)	06:46 16:46	07:19 16:30
12	07:29 16:50	07:03 17:29	06:21 18:04	16:49 (AB10) 06:28	05:46 20:11	05:26 20:37	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	17:37 (AB10) 17:38 (AB10)	06:47 16:45	07:20 16:31
13	07:29 16:52	07:02 17:31	06:19 18:05	16:48 (AB10) 06:26	05:45 20:13	05:26 20:38	05:37 20:37	06:07 20:06	06:39 19:17	07:11 18:25	17:39 (AB10) 17:40 (AB10)	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:32	06:17 18:06	16:48 (AB10) 06:25	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	17:41 (AB10) 17:42 (AB10)	06:49 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	16:48 (AB10) 06:23	05:42 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	17:43 (AB10) 17:44 (AB10)	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	16:50 (AB10) 06:22	05:41 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:11	07:14 18:20	17:45 (AB10) 17:46 (AB10)	06:52 16:41	07:23 16:31
17	07:27 16:57	06:56 17:36	06:12 18:10	16:50 (AB10) 06:20	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:15 18:19	17:47 (AB10) 17:48 (AB10)	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	16:50 (AB10) 06:18	05:40 20:18	05:26 20:40	05:41 20:34	06:12 19:59	06:44 19:08	07:17 18:17	17:49 (AB10) 17:50 (AB10)	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	16:52 (AB10) 06:17	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	17:51 (AB10) 17:52 (AB10)	06:55 16:38	07:25 16:32
20	07:25 17:01	06:52 17:40	06:07 18:13	16:53 (AB10) 06:15	05:38 20:20	05:26 20:40	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	17:53 (AB10) 17:54 (AB10)	06:57 16:38	07:25 16:30
21	07:25 17:02	06:51 17:41	06:05 18:14	16:54 (AB10) 06:14	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	17:55 (AB10) 17:56 (AB10)	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	17:57 (AB10) 17:58 (AB10)	06:59 16:36	07:27 16:34
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:22	05:27 20:41	05:46 20:30	06:17 19:52	06:49 18:59	07:22 18:10	17:59 (AB10) 18:00 (AB10)	07:00 16:36	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	07:24 18:08	18:01 (AB10) 18:02 (AB10)	07:01 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:41	05:48 20:29	06:19 19:49	06:51 18:56	07:25 17:07	18:03 (AB10) 18:04 (AB10)	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:28 20:41	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	18:05 (AB10) 18:06 (AB10)	07:04 16:34	07:28 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:53 18:52	07:27 17:04	18:07 (AB10) 18:08 (AB10)	07:05 16:33	07:29 16:37
28	07:19 17:11	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:28 17:03	18:09 (AB10) 18:10 (AB10)	07:06 16:33	07:29 16:37
29	07:19 17:12	06:39 17:51	05:52 18:23	06:02 19:57	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:29 17:01	18:11 (AB10) 18:12 (AB10)	07:07 16:32	07:29 16:38
30	07:18 17:13	06:38 17:52	05:51 18:24	06:01 19:59	05:30 20:29	05:29 20:41	05:52 20:24	06:24 19:40	06:57 18:47	07:30 17:00	18:13 (AB10) 18:14 (AB10)	07:08 16:32	07:30 16:39
31	07:17 17:14	06:37 17:53	05:50 18:25	06:00 19:58	05:29 20:30	05:28 20:42	05:53 20:23	06:25 19:39	07:00 18:46	07:31 17:01	18:15 (AB10) 18:16 (AB10)	07:09 16:33	07:31 16:40
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285	
Total, worst case									25		10		
Sun reduction									0,49		0,52		
Oper. time red.									0,88		0,88		
Wind dir. red.									0,59		0,59		
Total reduction									0,24		0,27		
Total, real									6		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: WF Abruzzo shadow flickering real caseShadow receptor: R196 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (139)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

## Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:20	06:27 19:35	06:59 18:44	06:35 16:56	07:10 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:11 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:30	07:02 18:38	06:38 16:52	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	06:39 16:51	07:14 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:39	06:02 20:12	06:35 19:24	07:06 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	05:26 20:36	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:37	06:07 20:06	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:32	06:17 18:06	06:25 19:41	05:44 20:14	05:26 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:49 16:43	07:21 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:23 19:42	05:42 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:43	05:41 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:56 17:36	06:12 18:10	06:20 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:15 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	06:18 19:45	05:40 20:18	05:26 20:40	05:41 20:34	06:12 19:59	06:44 19:08	07:17 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 19:46	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	06:55 16:38	07:25 16:32
20	07:25 17:01	06:52 17:40	06:07 18:13	06:15 19:48	05:38 20:20	05:26 20:40	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:25 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:12 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:23 17:04	06:48 17:44	06:02 18:16	06:11 19:51	05:35 20:22	05:27 20:41	05:46 20:30	06:17 19:52	06:49 18:59	07:22 18:10	07:00 16:36	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:09 19:52	05:34 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:01 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:08 19:53	05:34 20:24	05:27 20:41	05:48 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 19:54	05:33 20:25	05:28 20:41	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	07:28 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:05 19:55	05:32 20:26	05:28 20:42	05:49 20:27	06:21 19:45	06:53 18:52	07:27 17:04	07:05 16:33	07:29 16:37
28	07:19 17:11	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:28 17:03	07:06 16:33	07:29 16:37
29	07:19 17:12	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:28 17:03	07:06 16:33	07:29 16:37
30	07:18 17:13	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:28 17:03	07:06 16:33	07:29 16:37
31	07:17 17:14	06:40 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:28 17:03	07:06 16:33	07:29 16:37
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

Day in month	Sun rise (hh:mm)	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 Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:37/3.5.587

## SHADOW - Calendar

Calculation: WF Abruzzo shadow flikering real caseShadow receptor: R197 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (140)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	17:29 (AB10) 16:57 (AB10)	06:33 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:20	06:27 19:35	06:59 18:44	17:29 (AB10) 17:36 (AB10)	06:35 16:36
3	07:30 16:42	07:14 17:18	06:34 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	17:36 (AB10) 17:28 (AB10)	16:56 16:55
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32	05:31 20:41	05:57 20:18	06:30 19:32	06:30 18:40	17:28 (AB10) 17:33 (AB10)	06:37 16:53
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:30	06:31 18:38	17:29 (AB10) 17:33 (AB10)	06:38 16:52
6	07:30 16:45	07:10 17:22	06:31 17:57	16:53 (AB10) 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	17:33 (AB10) 17:31 (AB10)	06:39 16:51
7	07:30 16:46	07:09 17:23	06:29 17:58	16:52 (AB10) 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:14	06:33 19:27	07:04 18:35	17:29 (AB10) 17:30 (AB10)	06:41 16:50
8	07:30 16:47	07:08 17:25	06:27 17:59	16:51 (AB10) 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	17:29 (AB10) 17:30 (AB10)	06:42 16:49
9	07:30 16:48	07:07 17:26	06:26 18:00	16:52 (AB10) 19:35	05:49 20:08	05:26 20:36	05:34 20:39	06:02 20:12	06:35 19:24	07:06 18:32	17:30 (AB10) 17:31 (AB10)	06:43 16:48
10	07:30 16:49	07:06 17:27	06:24 18:02	16:54 (AB10) 19:36	05:48 20:09	05:26 20:36	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	17:31 (AB10) 17:32 (AB10)	06:44 16:47
11	07:29 16:49	07:04 17:27	06:22 18:03	16:50 (AB10) 19:38	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:28	17:32 (AB10) 17:33 (AB10)	06:46 16:46
12	07:29 16:50	07:03 17:29	06:21 18:03	16:51 (AB10) 19:38	05:46 20:10	05:26 20:37	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	17:33 (AB10) 17:34 (AB10)	06:47 16:45
13	07:29 16:51	07:02 17:30	06:19 18:04	16:50 (AB10) 19:39	05:45 20:12	05:26 20:37	05:37 20:38	06:07 20:08	06:39 19:18	07:11 18:25	17:34 (AB10) 17:35 (AB10)	06:48 16:44
14	07:28 16:52	07:01 17:31	06:17 18:05	16:50 (AB10) 19:40	05:44 20:13	05:26 20:38	05:38 20:37	06:08 20:06	06:40 19:17	07:12 18:25	17:35 (AB10) 17:36 (AB10)	06:49 16:44
15	07:28 16:53	07:01 17:32	06:16 18:06	16:50 (AB10) 19:41	05:42 20:14	05:26 20:38	05:39 20:37	06:09 20:05	06:41 19:15	07:13 18:24	17:36 (AB10) 17:37 (AB10)	06:51 16:43
16	07:28 16:54	07:01 17:33	06:16 18:07	16:50 (AB10) 19:42	05:42 20:15	05:26 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	17:37 (AB10) 17:38 (AB10)	06:52 16:42
17	07:27 16:55	07:01 17:35	06:14 18:09	16:51 (AB10) 19:43	05:41 20:16	05:26 20:39	05:40 20:36	06:10 20:02	06:42 19:11	07:14 18:20	17:38 (AB10) 17:39 (AB10)	06:52 16:41
18	07:27 16:56	07:01 17:36	06:12 18:10	16:50 (AB10) 19:44	05:40 20:17	05:26 20:40	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	17:39 (AB10) 17:40 (AB10)	06:53 16:40
19	07:27 16:57	07:01 17:37	06:10 18:11	16:51 (AB10) 19:45	05:40 20:18	05:26 20:40	05:41 20:34	06:12 19:59	06:44 19:08	07:17 18:17	17:40 (AB10) 17:41 (AB10)	06:54 16:39
20	07:26 16:58	07:01 17:38	06:09 18:12	16:52 (AB10) 19:46	05:39 20:19	05:26 20:40	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	17:41 (AB10) 17:42 (AB10)	06:55 16:38
21	07:26 16:59	07:01 17:39	06:09 18:12	16:52 (AB10) 19:46	05:38 20:19	05:26 20:40	05:43 20:34	06:14 19:58	06:46 19:06	07:19 18:16	17:42 (AB10) 17:43 (AB10)	06:57 16:38
22	07:25 17:01	07:01 17:40	06:07 18:13	16:52 (AB10) 19:48	05:38 20:20	05:26 20:40	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	17:43 (AB10) 17:44 (AB10)	06:57 16:38
23	07:25 17:02	07:01 17:41	06:05 18:14	16:53 (AB10) 19:49	05:37 20:21	05:26 20:41	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	17:44 (AB10) 17:45 (AB10)	06:58 16:37
24	07:24 17:03	07:01 17:42	06:04 18:15	16:53 (AB10) 19:50	05:36 20:22	05:26 20:41	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	17:45 (AB10) 17:46 (AB10)	06:59 16:36
25	07:23 17:04	07:01 17:43	06:02 18:16	16:55 (AB10) 19:51	05:35 20:22	05:27 20:41	05:46 20:30	06:17 19:52	06:49 18:59	07:22 18:10	17:46 (AB10) 17:47 (AB10)	07:00 16:36
26	07:23 17:05	07:01 17:44	06:00 18:17	16:56 (AB10) 19:52	05:34 20:23	05:27 20:41	05:47 20:30	06:18 19:50	06:50 18:57	07:23 18:08	17:47 (AB10) 17:48 (AB10)	07:01 16:35
27	07:22 17:06	07:01 17:45	05:58 18:18	16:58 (AB10) 19:53	05:34 20:24	05:27 20:41	05:48 20:29	06:19 19:49	06:51 18:56	07:24 18:07	17:48 (AB10) 17:49 (AB10)	07:03 16:35
28	07:22 17:07	07:01 17:46	05:57 18:19	17:00 (AB10) 19:54	05:33 20:25	05:28 20:41	05:49 20:27	06:20 19:45	06:52 18:52	07:25 18:08	17:49 (AB10) 17:50 (AB10)	07:04 16:34
29	07:21 17:08	07:01 17:47	05:57 18:20	17:01 (AB10) 19:55	05:33 20:26	05:28 20:42	05:50 20:27	06:22 19:45	06:55 18:52	07:26 18:09	17:51 (AB10) 17:52 (AB10)	07:05 16:33
30	07:19 17:11	07:01 17:50	05:53 18:22	06:03 19:56	05:32 20:27	05:28 20:42	05:50 20:26	06:22 19:44	06:55 18:50	07:27 18:10	17:52 (AB10) 17:53 (AB10)	07:06 16:33
31	07:19 17:12	07:01 17:51	05:52 18:23	06:02 19:57	05:31 20:28	05:29 20:42	05:51 20:25	06:23 19:42	06:56 18:49	07:28 18:11	17:53 (AB10) 17:54 (AB10)	07:07 16:32
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case										131		33
Sun reduction										0,46		0,52
Oper. time red.										0,88		0,88
Wind dir. red.										0,60		0,60
Total reduction										0,24		0,27
Total, real										32		9

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: WF Abruzzo shadow flickering real caseShadow receptor: R198 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (141)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:30 16:41	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	06:33 16:57	07:09 16:32
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31	05:30 20:41	05:55 20:20	06:27 19:35	06:59 18:44	06:35 16:56	07:10 16:31
3	07:30 16:42	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32	05:31 20:41	05:56 20:19	06:28 19:34	07:00 18:42	06:36 16:55	07:11 16:31
4	07:30 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	06:37 16:53	07:12 16:31
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:58 20:17	06:31 19:30	07:02 18:38	06:38 16:52	07:13 16:31
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:27 20:34	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	06:39 16:51	07:14 16:31
7	07:30 16:46	07:09 17:23	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:35	05:33 20:40	06:00 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:31
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:50 20:07	05:27 20:35	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33	06:42 16:49	07:16 16:30
9	07:30 16:48	07:07 17:26	06:26 18:00	06:33 19:35	05:49 20:08	05:26 20:36	05:34 20:39	06:02 20:12	06:35 19:24	07:06 18:32	06:43 16:48	07:17 16:30
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:36	05:48 20:09	05:26 20:36	05:35 20:39	06:03 20:11	06:36 19:22	07:08 18:30	06:44 16:47	07:18 16:30
11	07:29 16:50	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:28	06:46 16:46	07:19 16:30
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27	06:47 16:45	07:20 16:31
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:40	05:45 20:13	05:26 20:38	05:37 20:37	06:07 20:06	06:39 19:17	07:11 18:25	06:48 16:44	07:21 16:31
14	07:28 16:54	07:01 17:32	06:17 18:06	06:51 (AB10) 19:41	06:25 20:14	05:44 20:38	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	06:49 16:43	07:22 16:31
15	07:28 16:55	06:59 17:34	06:16 18:07	06:50 (AB10) 19:42	06:23 20:15	05:42 20:39	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	06:51 16:42	07:22 16:31
16	07:28 16:56	06:58 17:35	06:14 18:09	06:51 (AB10) 19:43	06:22 20:16	05:41 20:39	05:26 20:36	06:10 20:02	06:42 19:11	07:14 18:20	06:52 16:41	07:23 16:31
17	07:27 16:57	06:56 17:36	06:12 18:10	06:51 (AB10) 19:44	06:20 20:17	05:41 20:40	05:26 20:35	06:11 20:01	06:43 19:10	07:15 18:19	06:53 16:40	07:24 16:32
18	07:27 16:58	06:55 17:37	06:10 18:11	06:51 (AB10) 19:45	06:18 20:18	05:40 20:40	05:26 20:34	06:12 19:59	06:44 19:08	07:16 18:17	06:54 16:39	07:24 16:32
19	07:26 16:59	06:54 17:39	06:09 18:12	06:51 (AB10) 19:46	06:17 20:19	05:39 20:40	05:26 20:34	06:13 19:58	06:45 19:06	07:17 18:16	06:55 16:38	07:25 16:32
20	07:25 17:01	06:52 17:40	06:07 18:13	06:52 (AB10) 19:48	06:15 20:20	05:38 20:40	05:26 20:33	06:14 19:56	06:46 19:04	07:19 18:14	06:57 16:38	07:25 16:33
21	07:25 17:02	06:51 17:41	06:05 18:14	06:52 (AB10) 19:49	06:14 20:21	05:37 20:41	05:26 20:32	06:15 19:55	06:47 19:03	07:20 18:13	06:58 16:37	07:26 16:33
22	07:24 17:03	06:49 17:42	06:04 18:15	06:52 (AB10) 19:50	06:12 20:22	05:36 20:41	05:26 20:31	06:16 19:53	06:48 19:01	07:21 18:11	06:59 16:36	07:27 16:34
23	07:23 17:04	06:48 17:44	06:02 18:16	06:53 (AB10) 19:51	06:11 20:22	05:35 20:41	05:27 20:30	06:17 19:52	06:49 18:59	07:22 18:10	07:00 16:36	07:27 16:34
24	07:23 17:05	06:46 17:45	06:00 18:18	06:54 (AB10) 19:52	06:09 20:23	05:34 20:41	05:27 20:30	06:18 19:50	06:50 18:57	07:24 18:08	07:01 16:35	07:28 16:35
25	07:22 17:07	06:45 17:46	05:58 18:19	06:55 (AB10) 19:53	06:08 20:24	05:34 20:41	05:27 20:29	06:19 19:49	06:51 18:56	07:25 17:07	07:03 16:34	07:28 16:35
26	07:21 17:08	06:43 17:47	05:57 18:20	06:56 (AB10) 19:54	06:06 20:25	05:33 20:41	05:28 20:28	06:20 19:47	06:52 18:54	07:26 17:05	07:04 16:34	07:28 16:36
27	07:20 17:09	06:42 17:49	05:55 18:21	06:58 (AB10) 19:55	06:05 20:26	05:32 20:42	05:28 20:27	06:21 19:45	06:53 18:52	07:27 17:04	07:05 16:33	07:29 16:37
28	07:19 17:11	06:40 17:50	05:53 18:22	06:59 (AB10) 19:56	06:03 20:27	05:32 20:42	05:28 20:26	06:22 19:44	06:55 18:50	07:28 17:03	07:06 16:33	07:29 16:37
29	07:19 17:12	06:52 17:23	06:52 19:23	06:59 (AB10) 19:57	06:02 20:28	05:31 20:42	05:29 20:25	06:23 19:42	06:56 18:49	07:29 17:01	07:07 16:32	07:29 16:38
30	07:18 17:13	06:50 17:24	06:50 19:24	06:59 (AB10) 19:59	06:01 20:29	05:30 20:41	05:29 20:24	06:24 19:40	06:57 18:47	07:30 17:00	07:08 16:32	07:30 16:39
31	07:17 17:14	06:48 17:25	06:48 19:25	06:59 (AB10) 19:59	06:00 20:29	05:30 20:41	05:29 20:23	06:25 19:39	06:58 18:47	07:31 17:00	07:09 16:59	07:30 16:39
Potential sun hours	295	296	369	400	451	455	462	430	375	344	296	285
Total, worst case			63						65			
Sun reduction			0,49						0,46			
Oper. time red.			0,88						0,88			
Wind dir. red.			0,60						0,60			
Total reduction			0,26						0,24			
Total, real			16						16			

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)

Project:

WF Abruzzo Shoadow flikering

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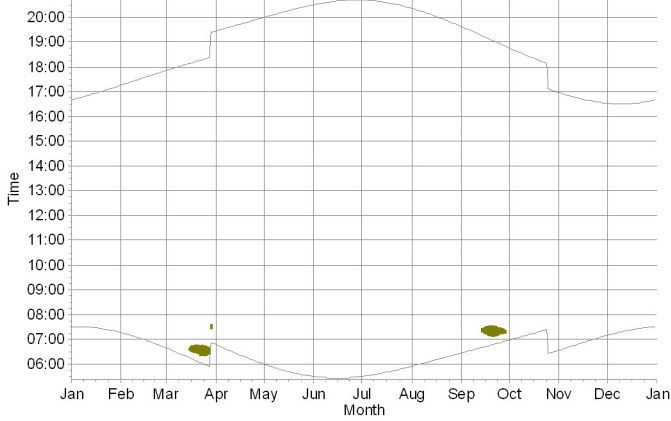
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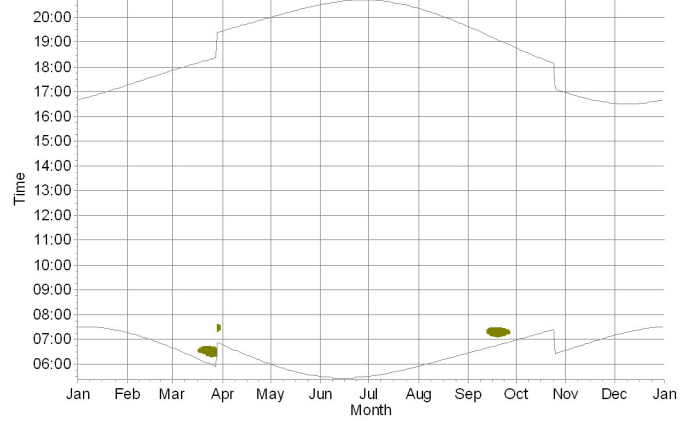
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering real case

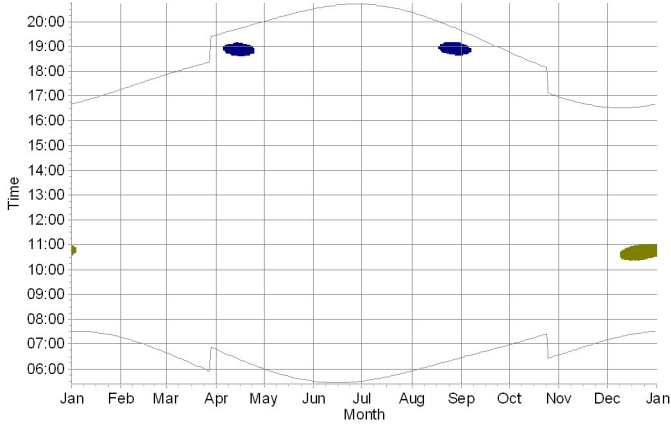
R002: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (72)



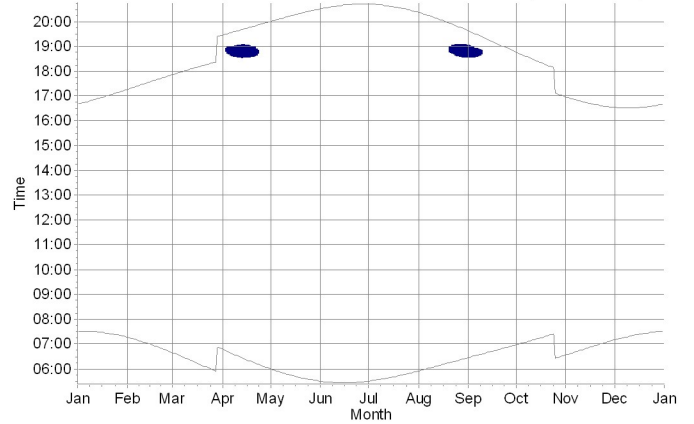
R003: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (73)



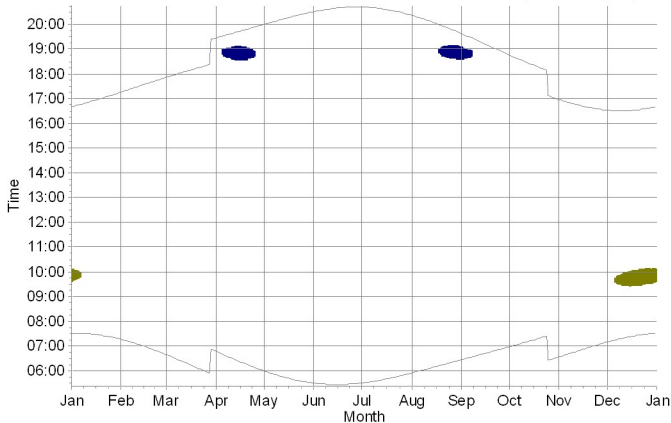
R008: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (74)



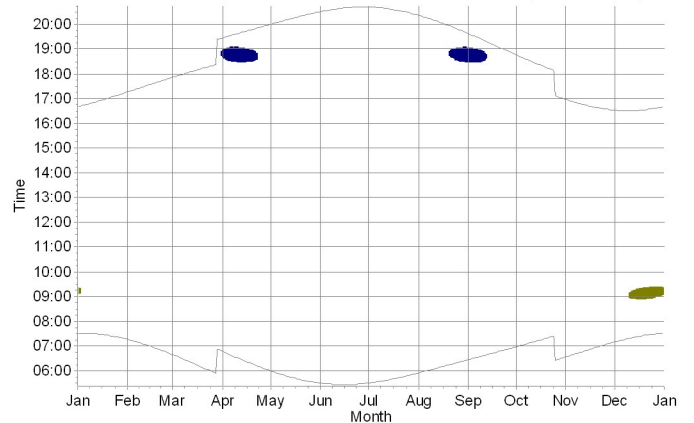
R009: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (75)



R010: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (76)



R011: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (77)



WTGs

AB07: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (7)

AB10: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (10)

Project:

WF Abruzzo Shoadow flikering

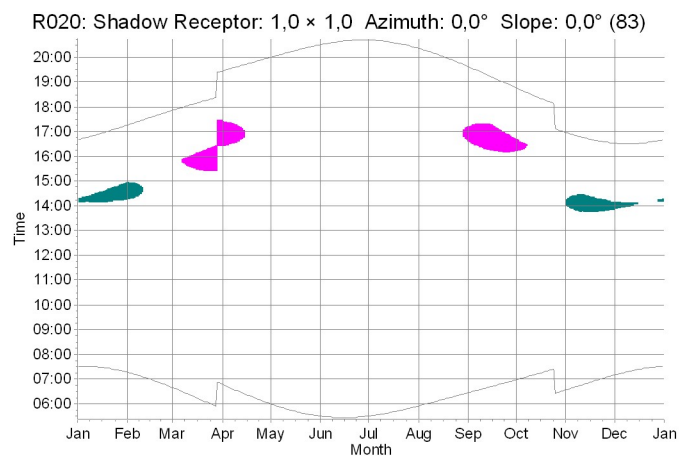
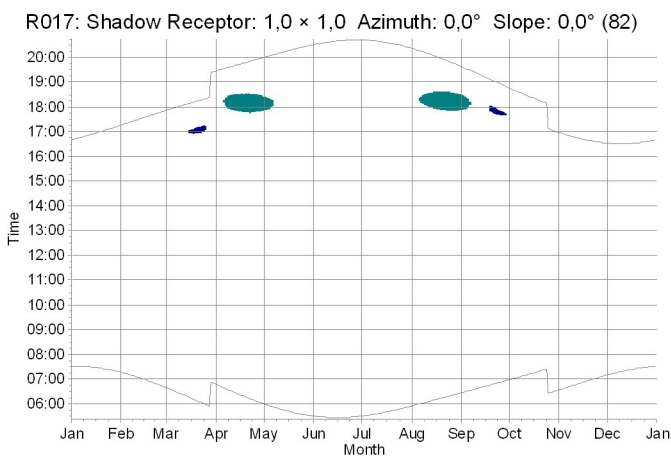
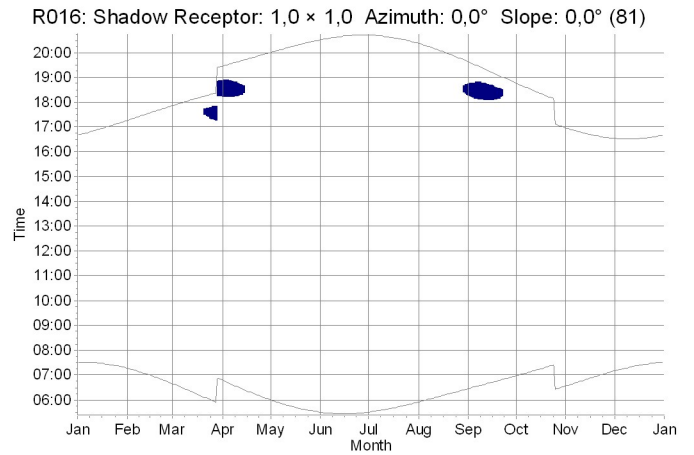
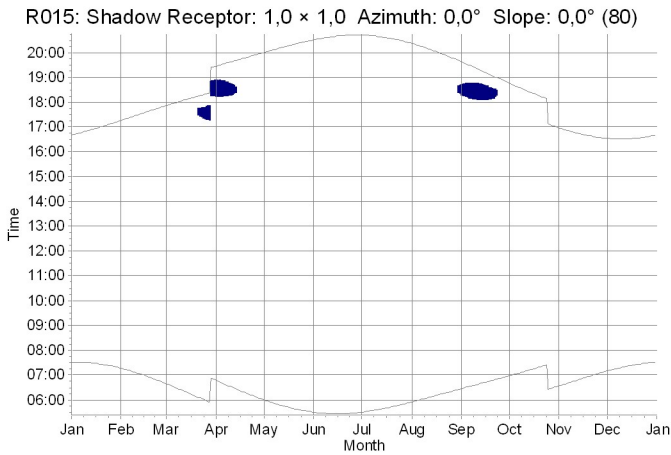
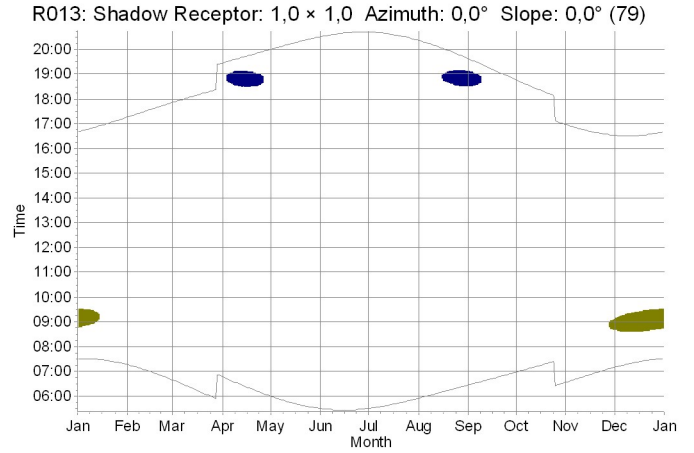
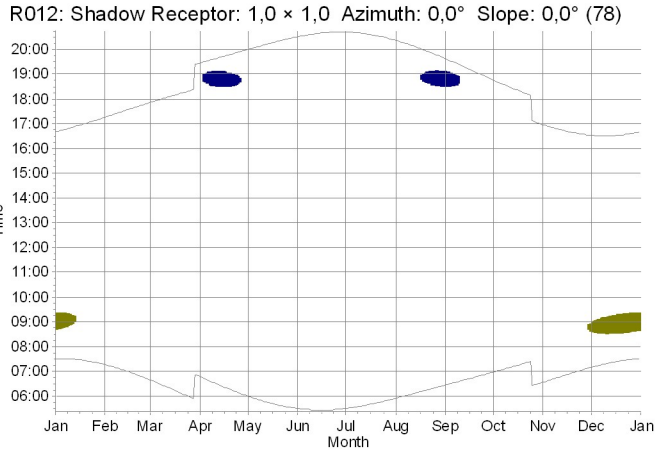
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IT-74023 Grottaglie (TA)

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## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering real case



WTGs

AB05: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (5)  
 AB06: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (6)

AB07: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (7)  
 AB10: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (10)



Project:

WF Abruzzo Shoadow flikering

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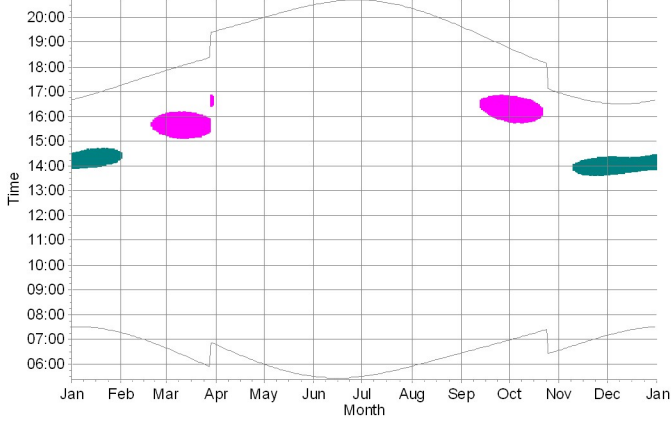
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Calculated:  
15/11/2023 18:37/3.5.587

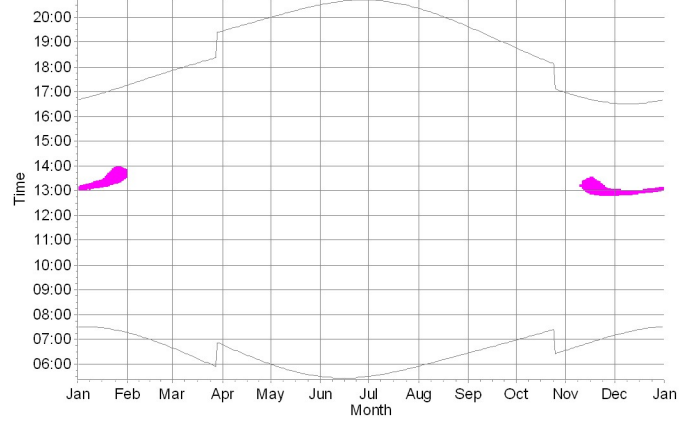
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering real case

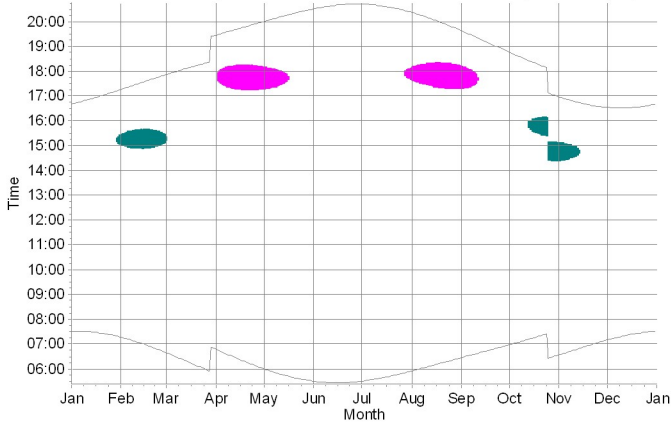
R023: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (84)



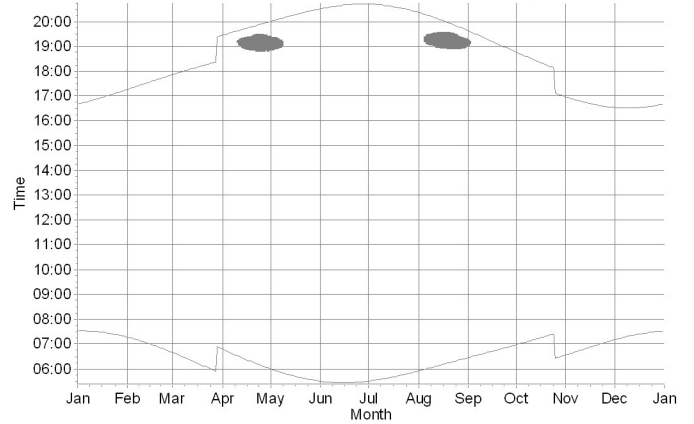
R024: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (85)



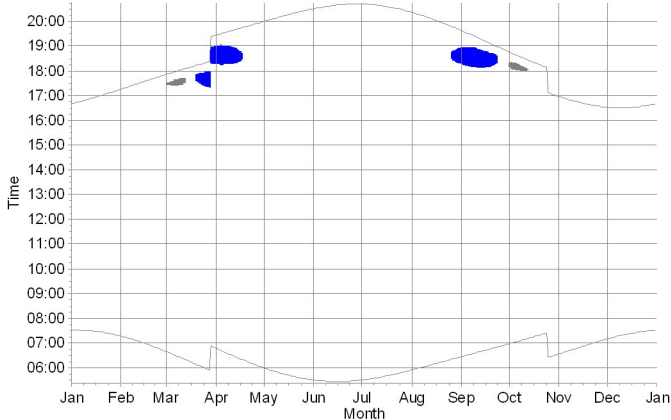
R025: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (86)



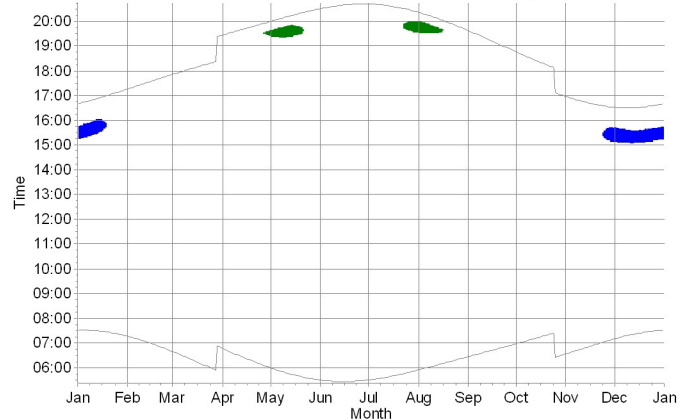
R028: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (87)



R031: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (88)



R039: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (89)



WTGs

- AB01: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (1)
- AB03: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (3)
- AB04: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (4)

- AB05: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (5)
- AB06: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (6)

Project:

WF Abruzzo Shoadow flikering

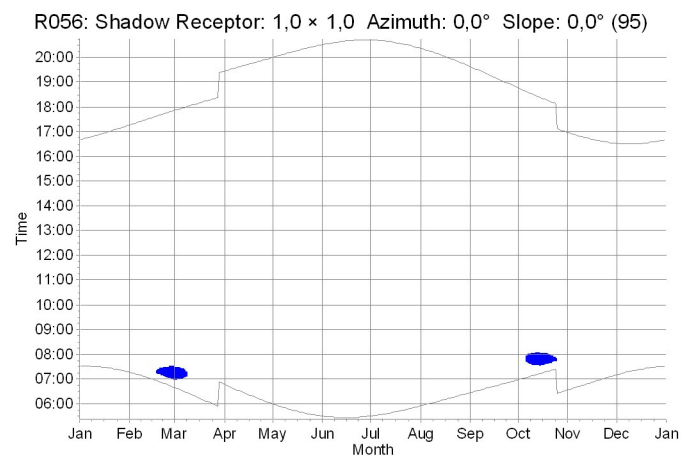
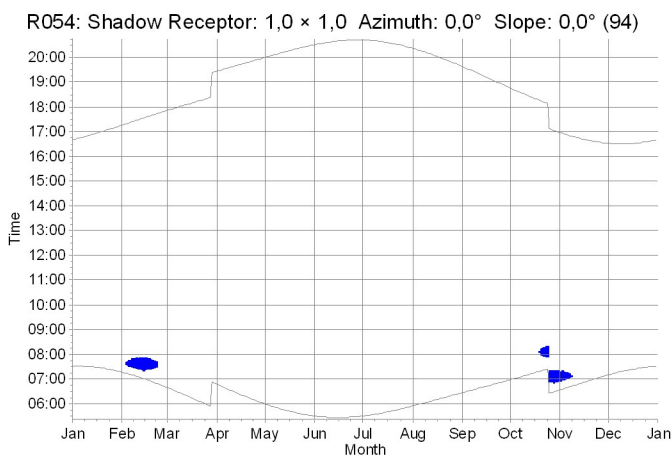
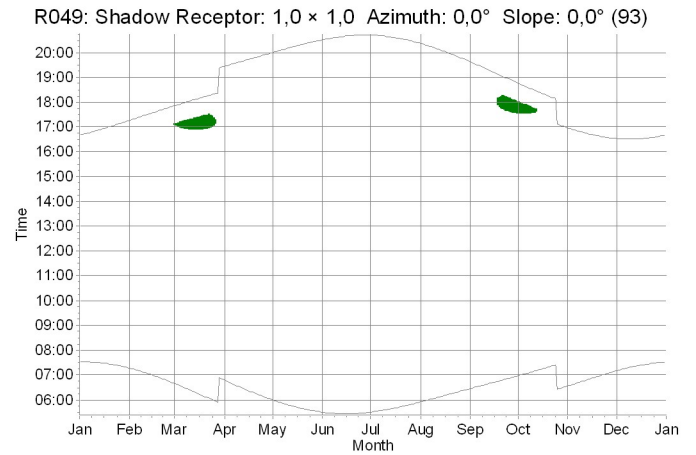
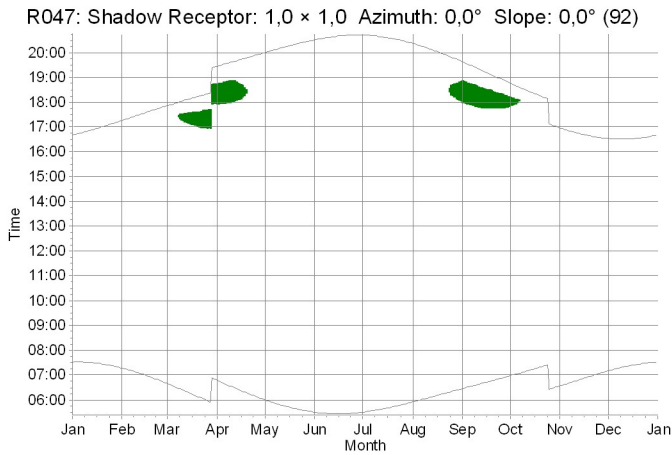
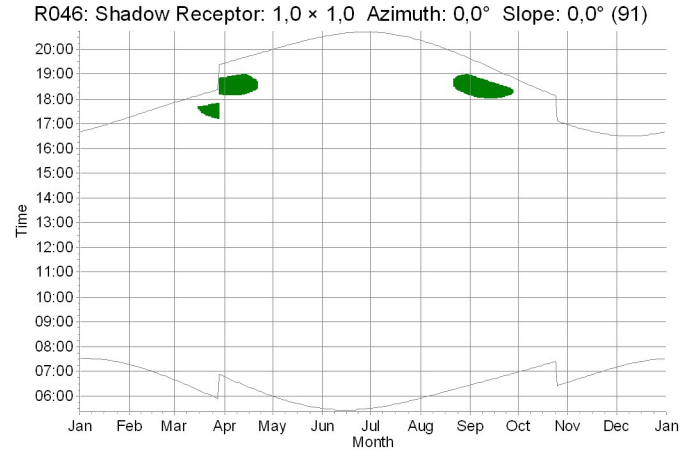
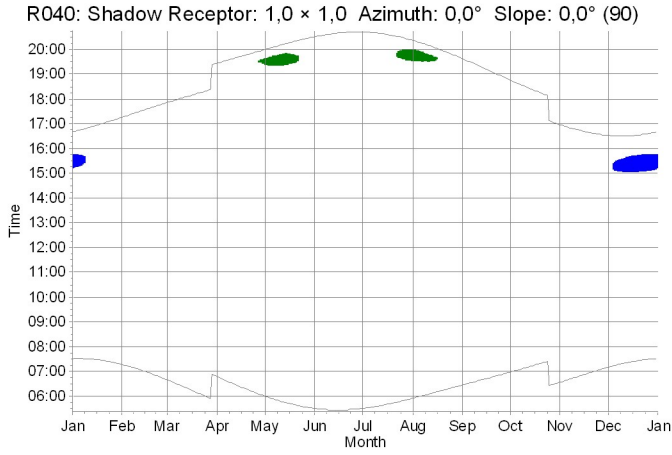
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IT-74023 Grottaglie (TA)

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## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering real case



WTGs

AB01: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (1)

AB03: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (3)

Project:

WF Abruzzo Shoadow flikering

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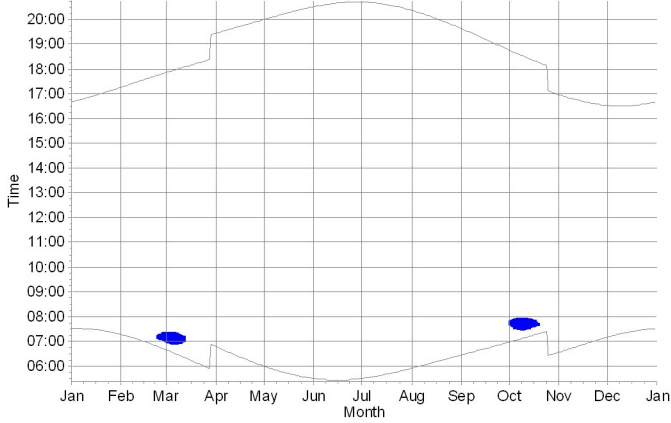
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IT-74023 Grottaglie (TA)

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Calculated:  
15/11/2023 18:37/3.5.587

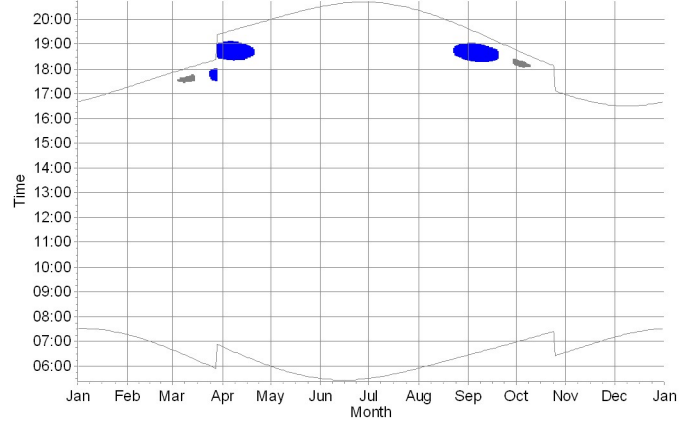
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering real case

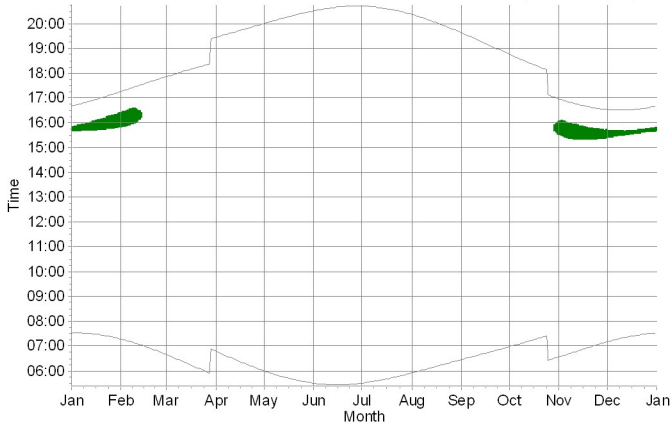
R057: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (96)



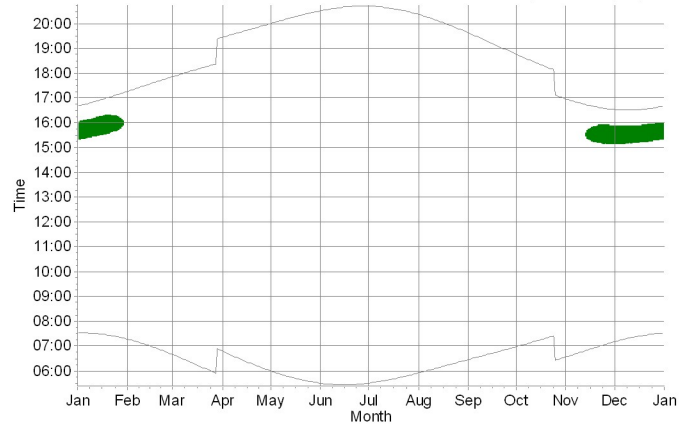
R061: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (97)



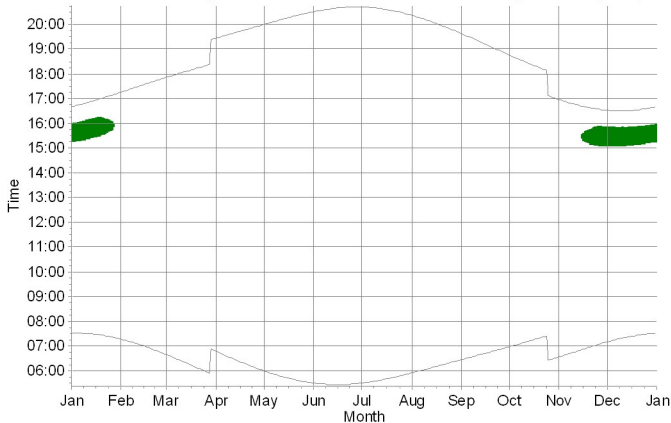
R065: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (98)



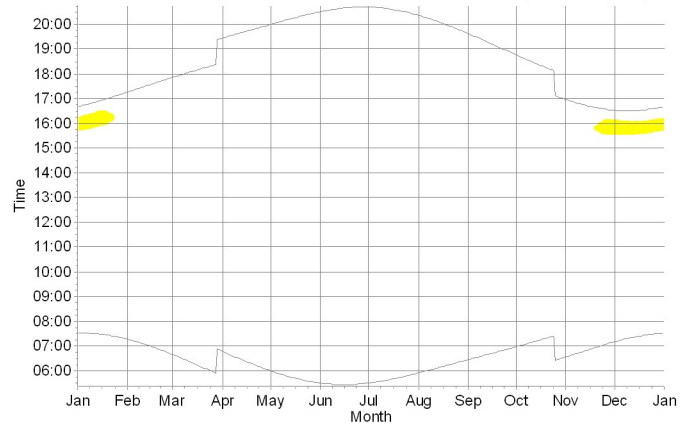
R066: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (99)



R067: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (100)



R079: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (101)



WTGs

- AB01: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (1)
- AB02: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (2)

- AB03: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (3)
- AB04: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (4)

Project:

WF Abruzzo Shoadow flickering

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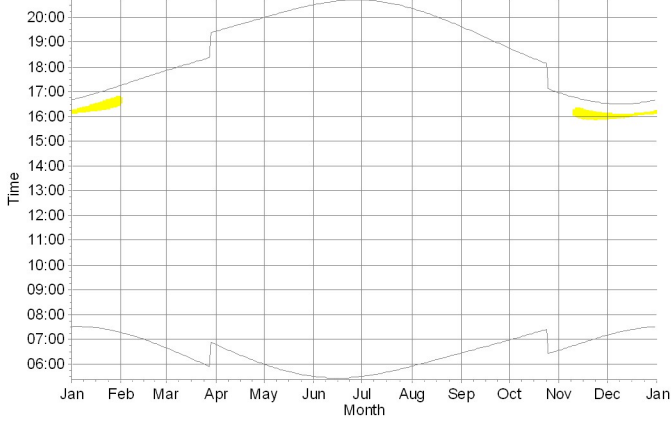
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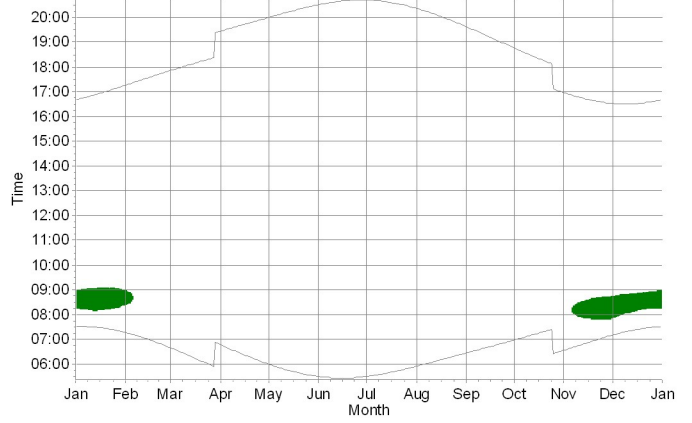
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flickering real case

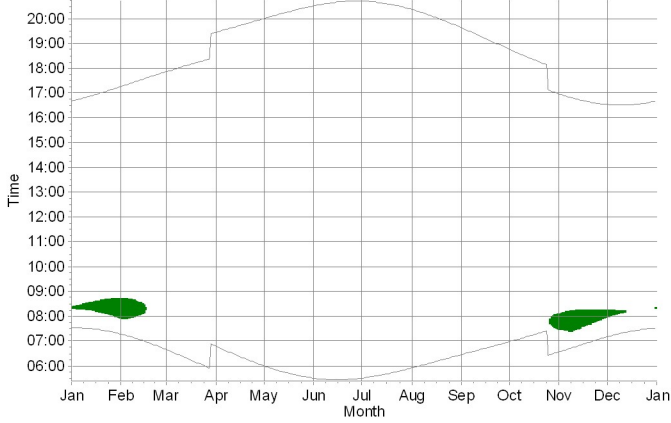
R080: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (102)



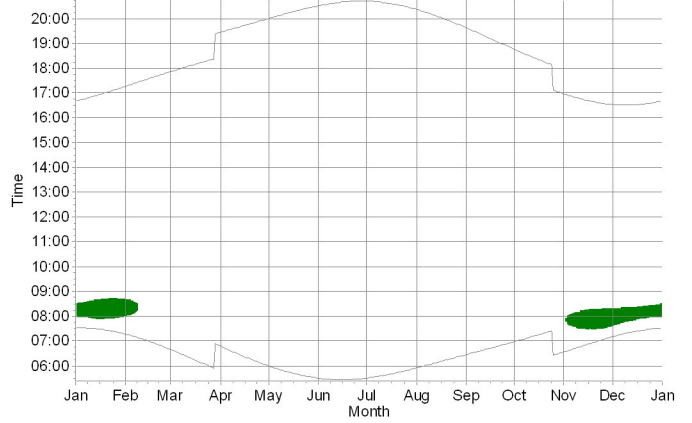
R082: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (103)



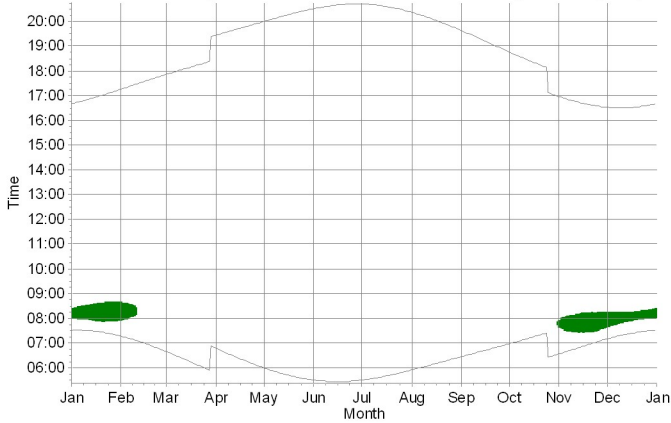
R083: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (104)



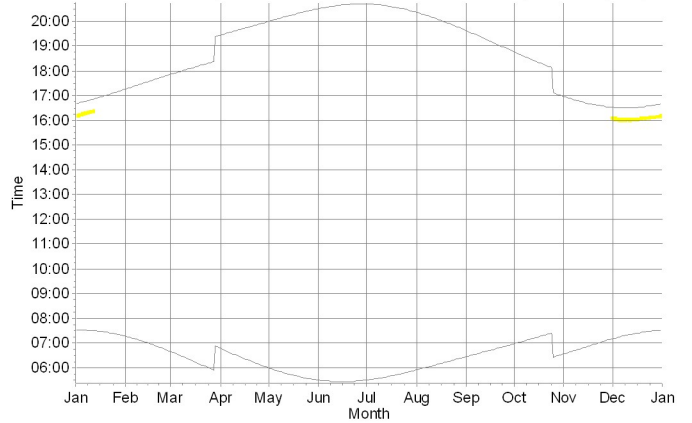
R084: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (105)



R085: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (106)



R088: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (107)



WTGs

AB01: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (1)

AB02: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (2)

Project:

WF Abruzzo Shoadow flikering

Licensed user:

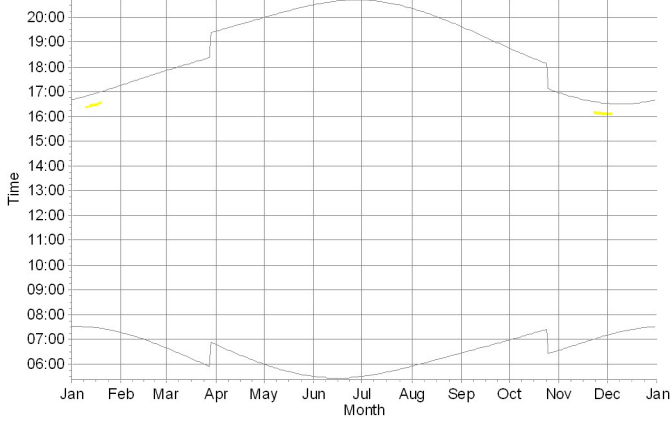
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Calculated:  
15/11/2023 18:37/3.5.587

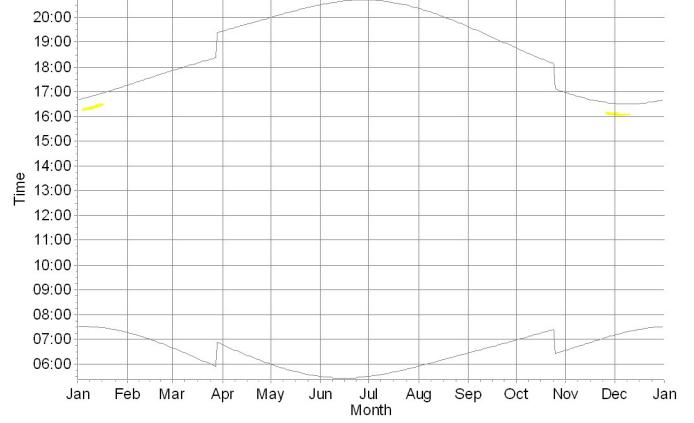
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering real case

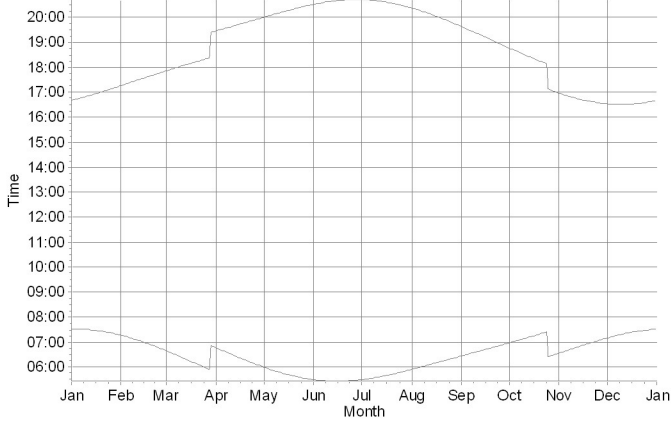
R089: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (108)



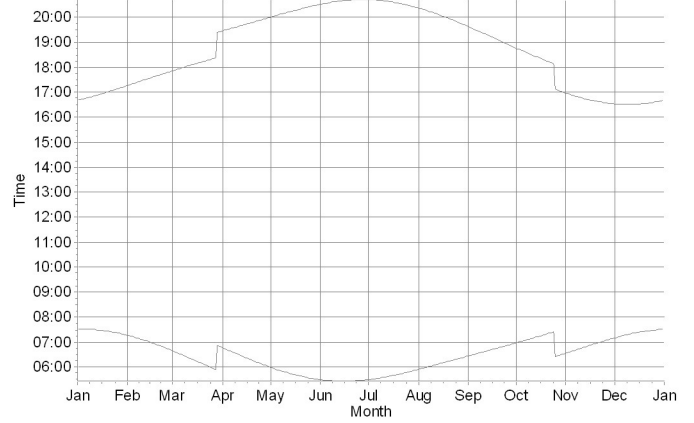
R090: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (109)



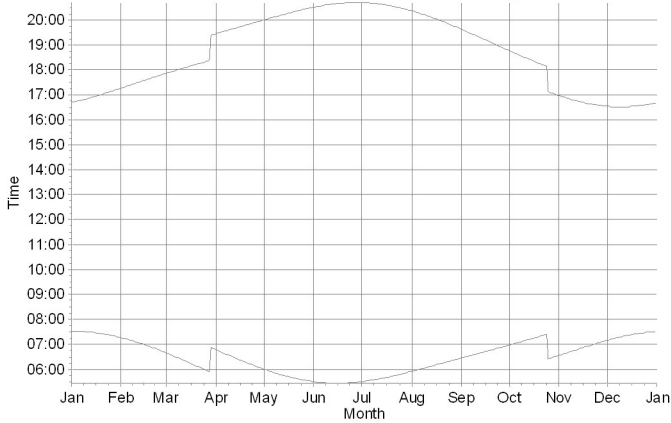
R094: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (110)



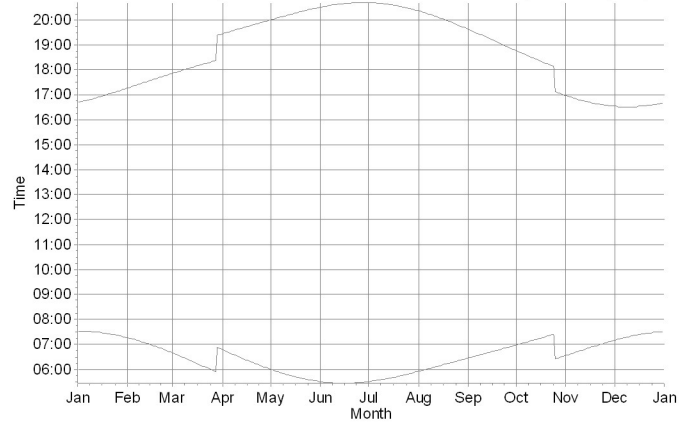
R095: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (111)



R098: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (112)



R114: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (113)



WTGs

AB02: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (2)

Project:

WF Abruzzo Shoadow flikering

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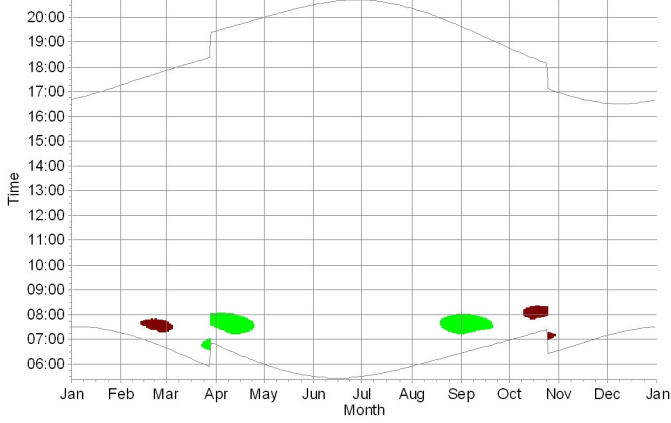
Ge.co.Dor srl  
Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

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Calculated:  
15/11/2023 18:37/3.5.587

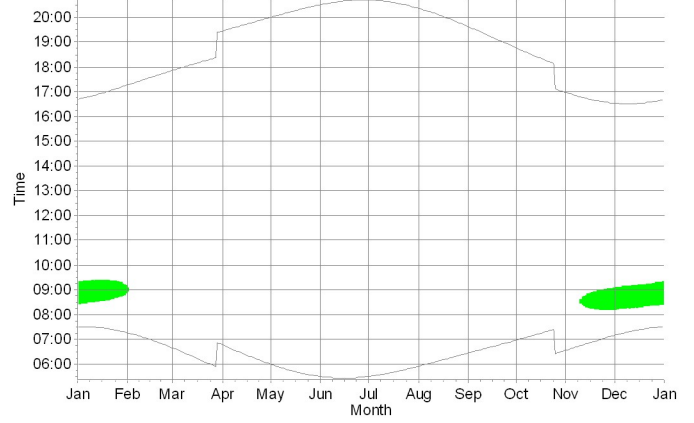
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering real case

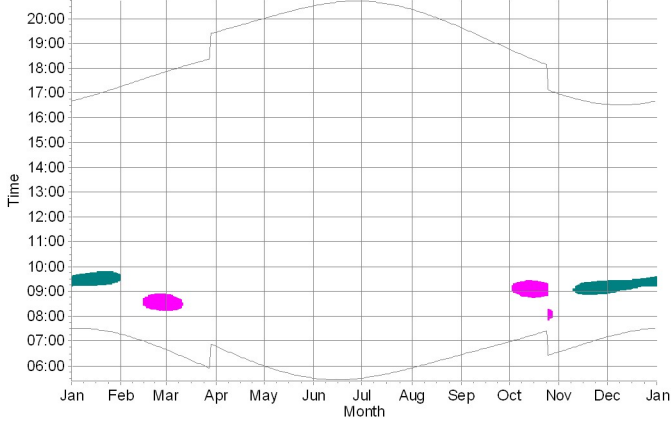
R117: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (114)



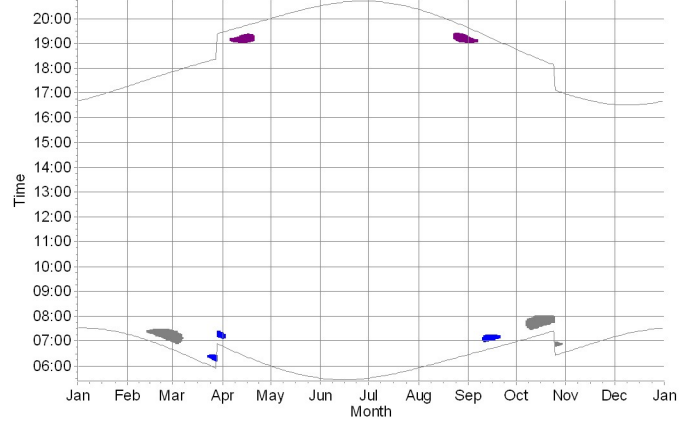
R120: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (115)



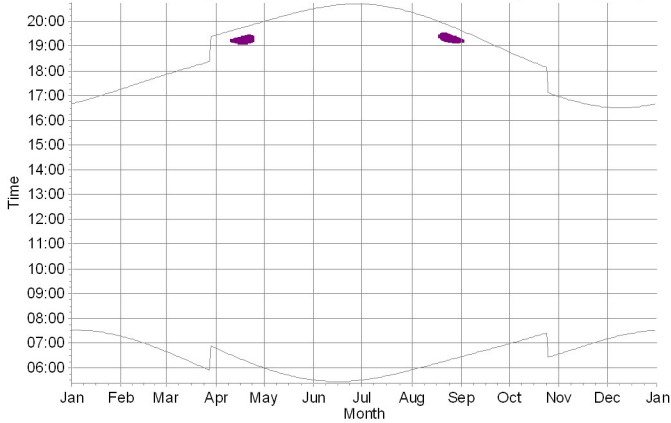
R126: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (116)



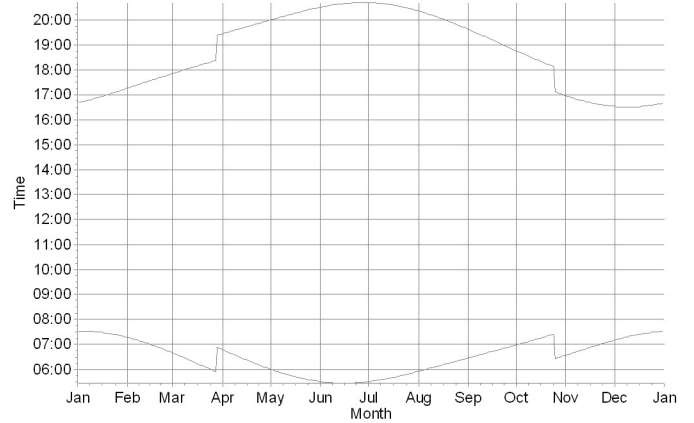
R129: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (117)



R130: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (118)



R145: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (119)



### WTGs

- AB03: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (3)
- AB04: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (4)
- AB05: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (5)
- AB06: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (6)

- AB08: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (8)
- AB09: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (9)
- AB11: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (11)

Project:

WF Abruzzo Shoadow flikering

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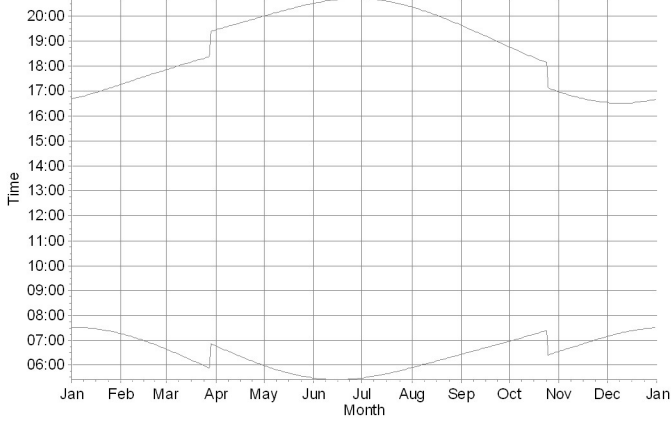
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Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

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Calculated:  
15/11/2023 18:37/3.5.587

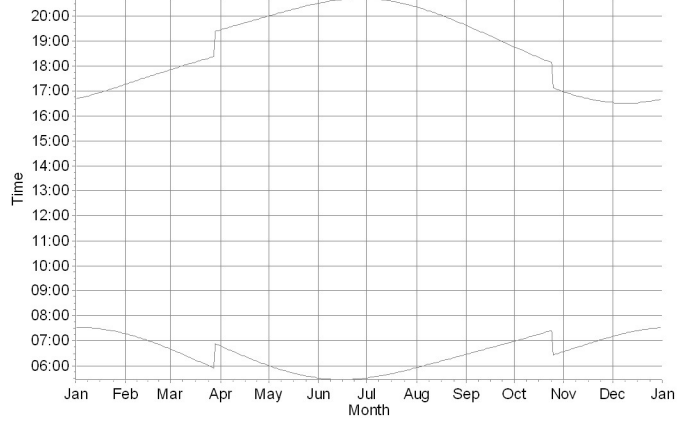
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering real case

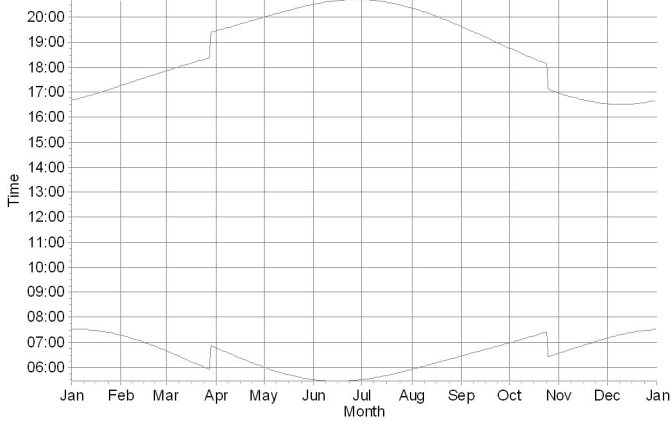
R146: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (120)



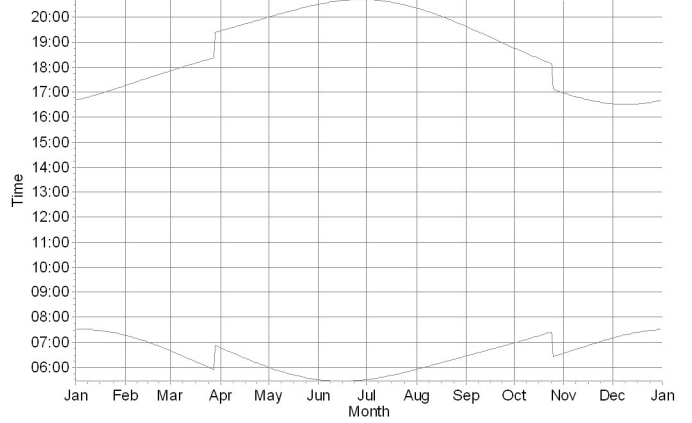
R148: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (121)



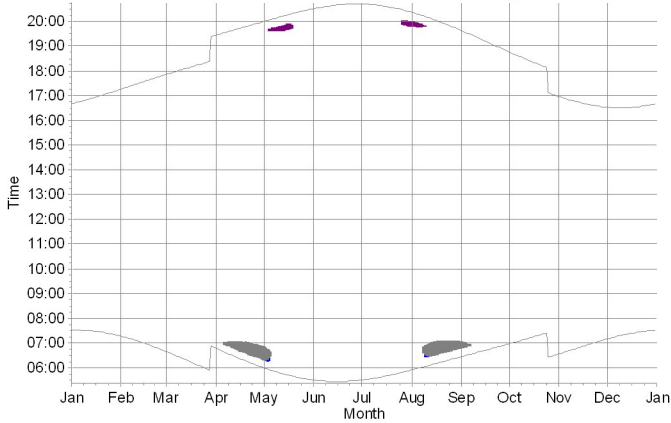
R149: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (122)



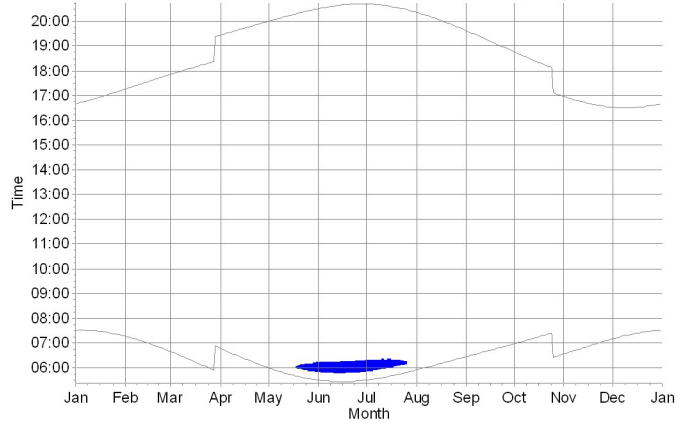
R150: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (123)




R155: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (124)




R159: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (125)



WTGs

 AB03: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (3)

 AB04: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (4)

 AB11: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (11)

Project:

WF Abruzzo Shoadow flikering

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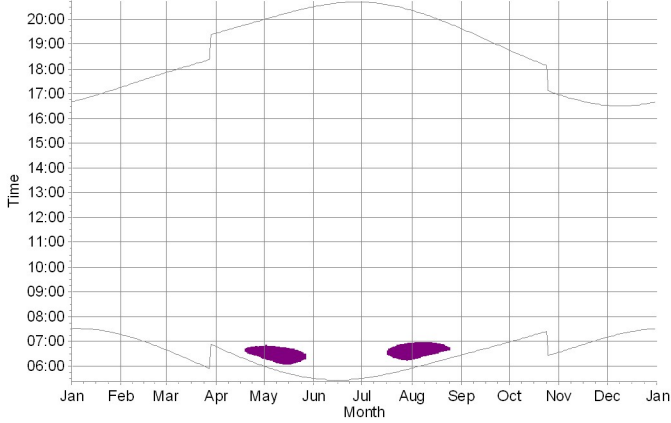
Gaetano D'Oronzio / info@gecodor.it  
Calculated:

15/11/2023 18:37/3.5.587

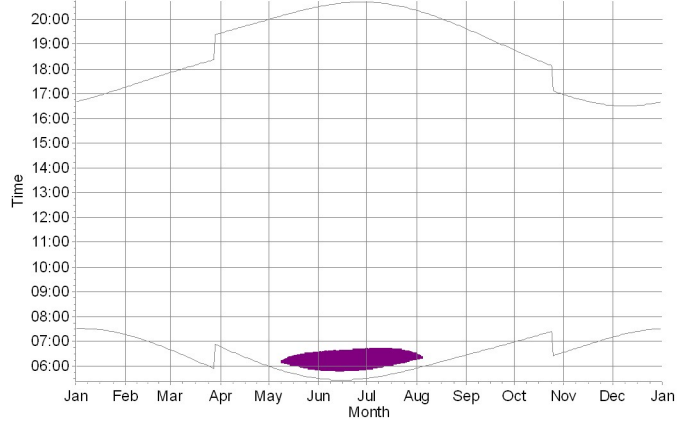
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering real case

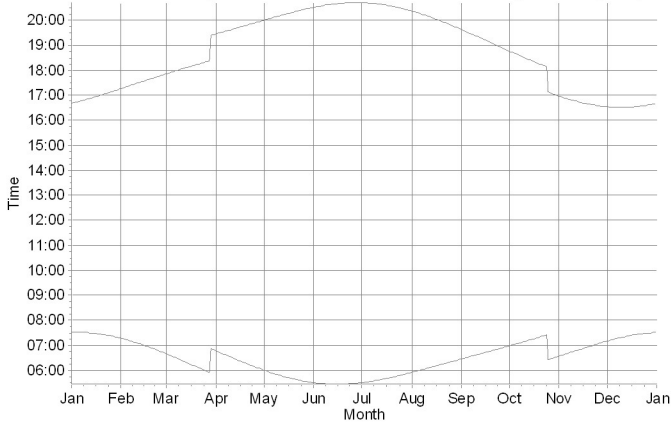
R170: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (126)



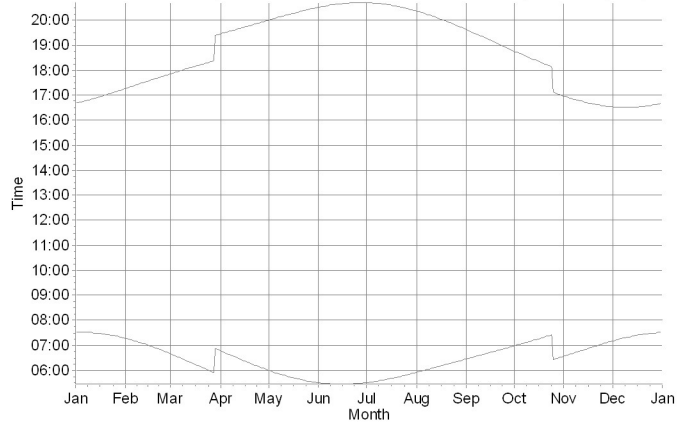
R171: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (127)



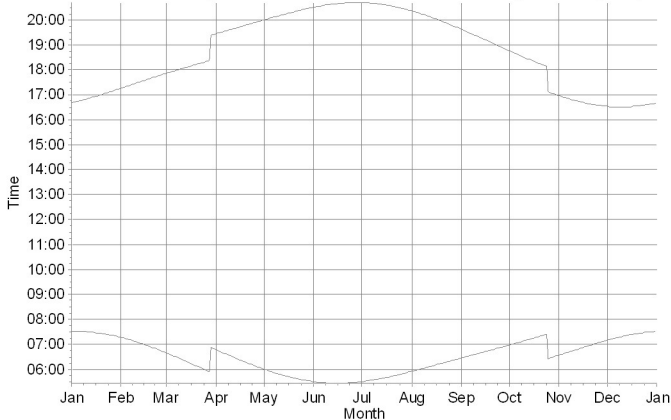
R172: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (128)



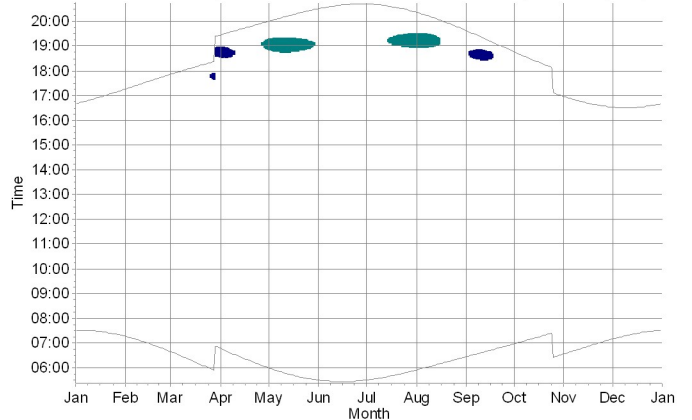
R173: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (129)



R178: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (130)



R185: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (131)



WTGs

AB06: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (6)  
 AB07: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (7)

AB11: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (11)



Project:

WF Abruzzo Shoadow flikering

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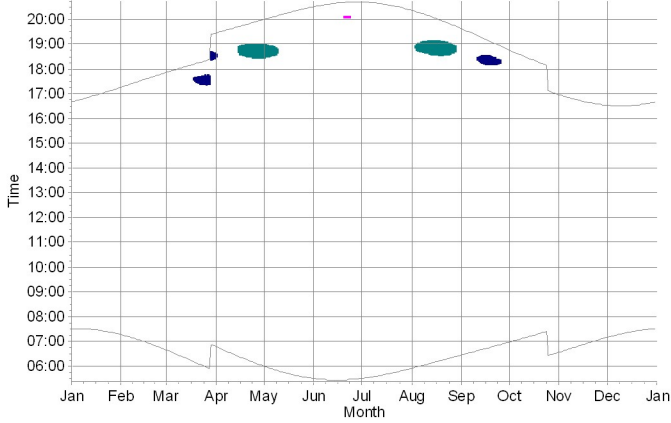
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Calculated:  
15/11/2023 18:37/3.5.587

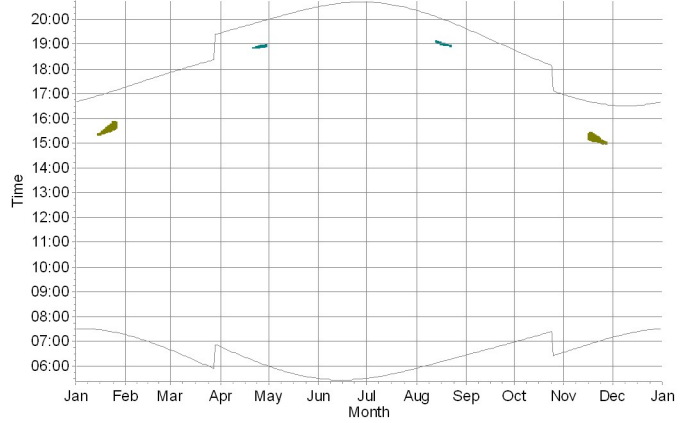
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering real case

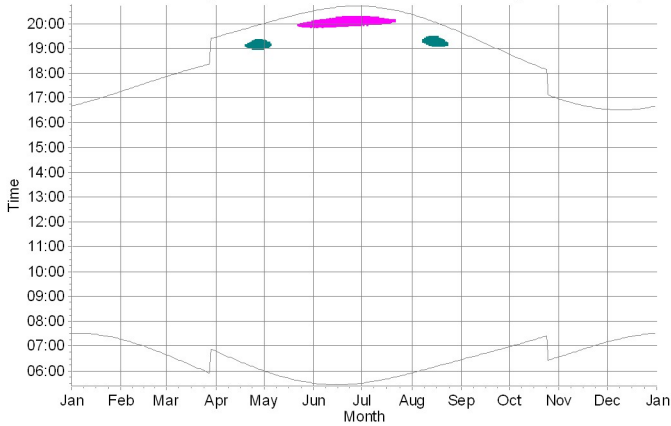
R186: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (132)



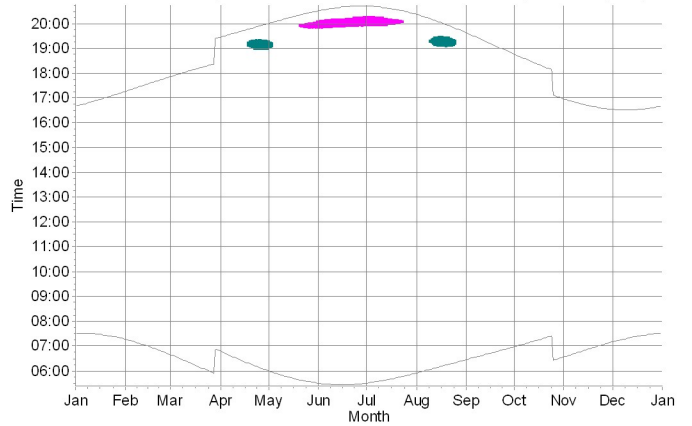
R189: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (133)



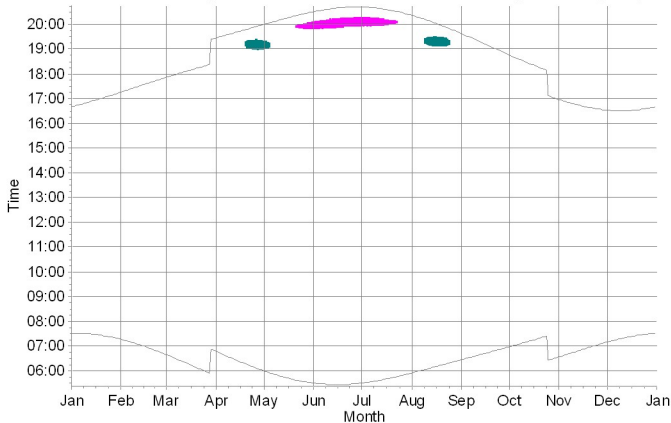
R190: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (134)



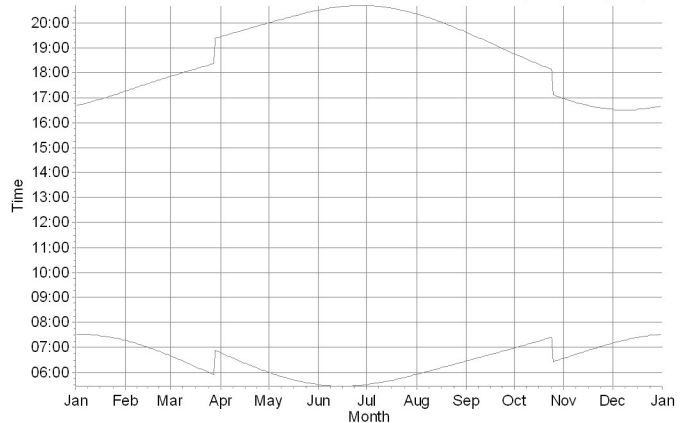
R191: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (135)



R192: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (136)



R193: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (137)



WTGs

AB05: Siemens Gamesa SG 6.0-170 6000 170.0 IOI hub: 135,0 m (TOT: 220,0 m) (5)  
 AB06: Siemens Gamesa SG 6.0-170 6000 170.0 IOI hub: 135,0 m (TOT: 220,0 m) (6)

AB07: Siemens Gamesa SG 6.0-170 6000 170.0 IOI hub: 135,0 m (TOT: 220,0 m) (7)  
 AB10: Siemens Gamesa SG 6.0-170 6000 170.0 IOI hub: 135,0 m (TOT: 220,0 m) (10)

Project:

WF Abruzzo Shoadow flikering

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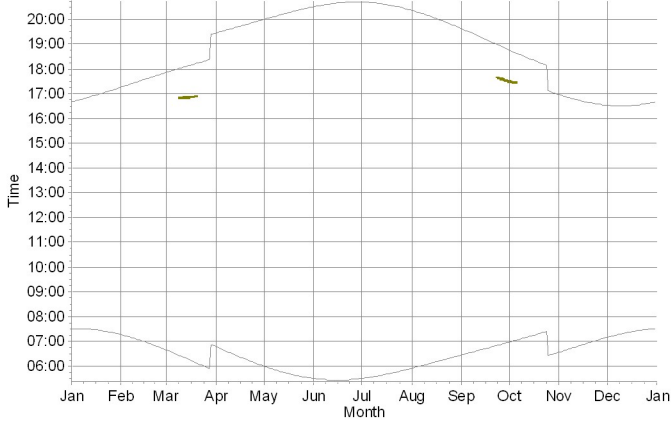
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Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

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Calculated:  
15/11/2023 18:37/3.5.587

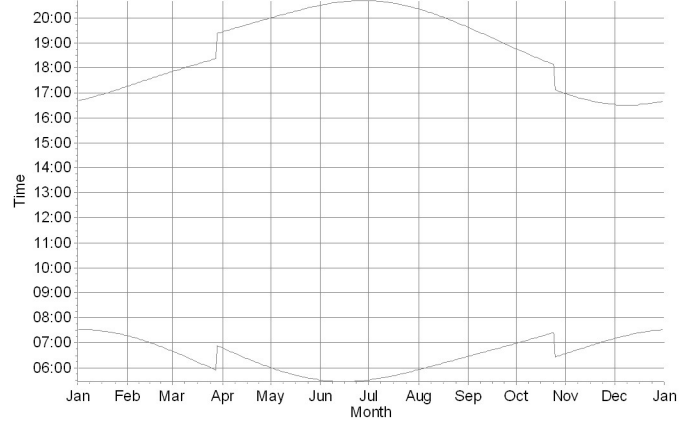
## SHADOW - Calendar, graphical

Calculation: WF Abruzzo shadow flikering real case

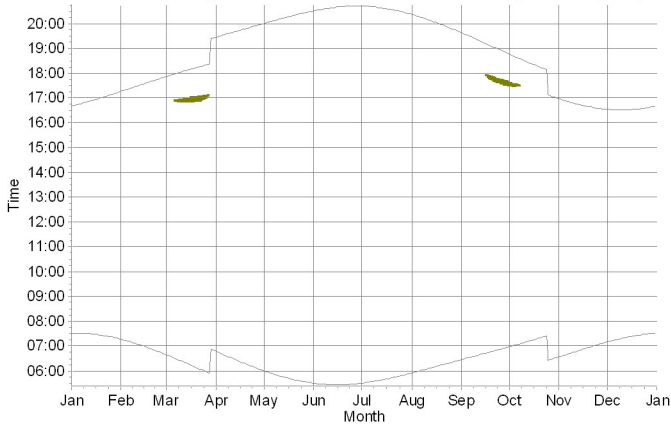
R194: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (138)



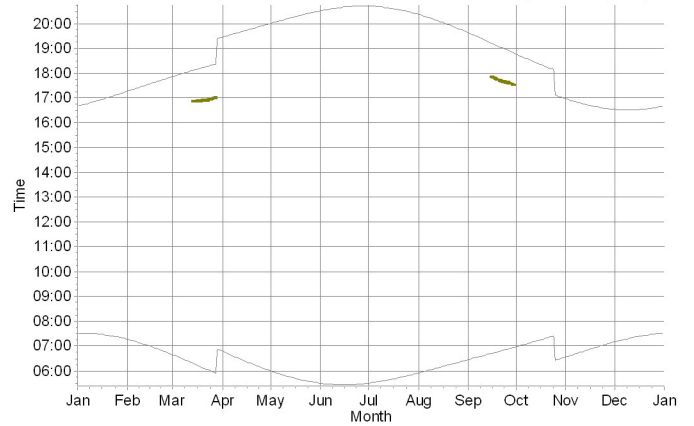
R196: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (139)



R197: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (140)



R198: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 0,0° (141)



WTGs

AB10: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (10)

## SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flickering real case WTG: AB01 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (1)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 07:58-08:57/59	07:16 07:54-08:56/62	06:39 17:06-17:07/1	06:46 17:56-18:51/55	05:59 19:25-19:37/12	05:29 20:30
	16:40 15:16-16:01/45	17:16 15:50-16:24/34	17:51	19:27	20:00	20:30
2	07:30 07:58-08:57/59	07:15 07:53-08:54/61	06:37 17:03-17:08/5	06:45 17:56-18:51/55	05:58 19:24-19:37/13	05:29 20:31
	16:41 15:16-16:01/45	17:17 15:51-16:26/35	17:52	19:28	20:01	20:31
3	07:30 07:58-08:58/60	07:14 07:54-08:52/58	06:35 17:02-17:10/8	06:43 17:57-18:52/55	05:57 19:23-19:38/15	05:28 20:32
	16:42 15:17-16:02/45	17:18 15:52-16:27/35	17:53	19:29	20:02	20:32
4	07:30 07:58-08:58/60	07:13 07:54-08:49/55	06:34 17:00-17:11/11	06:41 17:57-18:53/56	05:55 19:23-19:40/17	05:28 20:33
	16:43 15:18-16:03/45	17:19 15:53-16:29/36	17:55	19:30	20:03	20:33
5	07:30 07:58-08:59/61	07:12 07:55-08:44/49	06:32 16:59-17:11/12	06:40 17:57-18:53/56	05:54 19:23-19:41/18	05:27 20:33
	16:44 15:18-16:04/46	17:21 15:55-16:30/35	17:56	19:31	20:04	20:33
6	07:30 07:58-09:00/62	07:11 07:56-08:40/44	06:31 16:58-17:13/15	06:38 17:58-18:54/56	05:53 19:23-19:42/19	05:27 20:34
	16:45 15:19-16:05/46	17:22 15:56-16:32/36	17:57	19:32	20:05	20:34
7	07:30 07:58-09:00/62	07:09 07:57-08:40/43	06:29 16:57-17:14/17	06:36 17:59-18:55/56	05:51 19:22-19:42/20	05:27 20:35
	16:46 15:20-16:06/46	17:23 15:57-16:32/35	17:58	19:33	20:06	20:35
8	07:30 07:58-09:01/63	07:08 07:57-08:38/41	06:27 16:56-17:15/19	06:35 17:59-18:55/56	05:50 19:22-19:43/21	05:27 20:35
	16:47 15:21-16:07/46	17:25 15:58-16:34/36	17:59	19:34	20:07	20:35
9	07:30 07:57-09:01/64	07:07 07:58-08:37/39	06:26 16:56-17:16/20	06:33 18:00-18:56/56	05:49 19:22-19:44/22	05:26 20:36
	16:48 15:21-16:07/46	17:26 16:00-16:35/35	18:00	19:35	20:08	20:36
10	07:30 07:57-09:01/64	07:06 08:00-08:36/36	06:24 16:55-17:30/35	06:31 18:01-18:57/56	05:48 19:22-19:46/24	05:26 20:37
	16:49 15:22-16:09/47	17:27 16:03-16:33/30	18:02	19:37	20:10	20:37
11	07:30 07:56-09:02/66	07:05 08:00-08:34/34	06:22 16:54-17:30/36	06:30 18:01-18:57/56	05:47 19:23-19:47/24	05:26 20:37
	16:50 15:23-16:10/47	17:28 16:04-16:30/26	18:03	19:38	20:11	20:37
12	07:29 07:55-09:02/67	07:03 08:02-08:33/31	06:21 16:55-17:32/37	06:28 18:03-18:58/55	05:46 19:23-19:48/25	05:26 20:38
	16:51 15:23-16:10/47	17:30 16:08-16:28/20	18:04	19:39	20:12	20:38
13	07:29 07:55-09:02/67	07:02 08:04-08:32/28	06:19 16:54-17:32/38	06:26 18:04-18:58/54	05:44 19:24-19:49/25	05:26 20:38
	16:52 15:25-16:12/47	17:31 16:13-16:23/10	18:05	19:40	20:13	20:38
14	07:29 07:54-09:02/68	07:01 08:06-08:29/23	06:17 16:54-17:33/39	06:25 18:06-18:58/52	05:43 19:24-19:50/26	05:26 20:39
	16:53 15:25-16:12/47	17:32	18:06	19:41	20:14	20:39
15	07:28 07:54-09:03/69	06:59 08:09-08:26/17	06:16 16:54-17:33/39	06:23 18:07-18:56/49	05:42 19:25-19:49/24	05:26 20:39
	16:55 15:27-16:14/47	17:34	18:07	19:42	20:15	20:39
16	07:28 07:54-09:03/69	06:58 08:15-08:20/5	06:14 16:54-17:34/40	06:21 18:09-18:54/45	05:41 19:26-19:48/22	05:26 20:39
	16:56 15:27-16:14/47	17:35	18:09	19:43	20:16	20:39
17	07:27 07:54-09:03/69	06:57	06:12 16:54-17:41/47	06:20 18:12-18:53/41	05:40 19:26-19:47/21	05:26 20:40
	16:57 15:29-16:16/47	17:36	18:10	19:44	20:17	20:40
18	07:27 07:53-09:03/70	06:55	06:10 16:55-17:41/46	06:18 18:15-18:50/35	05:39 19:27-19:46/19	05:26 20:40
	16:58 15:30-16:17/47	17:37	18:11	19:45	20:18	20:40
19	07:26 07:53-09:04/71	06:54	06:09 16:56-17:43/47	06:17 18:21-18:48/27	05:38 19:28-19:45/17	05:26 20:40
	16:59 15:32-16:18/46	17:39	18:12	19:47	20:19	20:40
20	07:26 07:52-09:03/71	06:52	06:07 16:56-17:43/47	06:15 18:23-18:45/22	05:38 19:30-19:43/13	05:26 20:41
	17:00 15:33-16:18/45	17:40	18:13	19:48	20:20	20:41
21	07:25 07:52-09:03/71	06:51	06:05 16:57-17:43/46	06:14 18:27-18:41/14	05:37 19:33-19:42/9	05:26 20:41
	17:02 15:34-16:17/43	17:41	18:14	19:49	20:21	20:41
22	07:24 07:53-09:02/69	06:49	06:04 16:58-17:44/46	06:12	05:36	05:26 20:41
	17:03 15:35-16:16/41	17:42	18:15	19:50	20:22	20:41
23	07:24 07:53-09:03/70	06:48	06:02 16:59-17:45/46	06:11	05:35	05:26 20:41
	17:04 15:38-16:16/38	17:44	18:16	19:51	20:23	20:41
24	07:23 07:53-09:03/70	06:46	06:00 16:59-17:46/47	06:09	05:34	05:27 20:42
	17:05 15:40-16:15/35	17:45	18:18	19:52	20:24	20:42
25	07:22 07:53-09:02/69	06:45	05:58 16:58-17:46/48	06:08	05:34	05:27 20:42
	17:07 15:42-16:16/34	17:46	18:19	19:53	20:24	20:42
26	07:21 07:53-09:01/68	06:43	05:57 16:57-17:46/49	06:06	05:33	05:27 20:42
	17:08 15:45-16:17/32	17:47	18:20	19:54	20:25	20:42
27	07:20 07:54-09:01/67	06:42	05:55 16:58-17:48/50	06:05 19:30-19:32/2	05:32	05:28 20:42
	17:09 15:47-16:18/31	17:49	18:21	19:55	20:26	20:42
28	07:20 07:54-09:00/66	06:40	05:53 16:57-17:48/51	06:03 19:29-19:34/5	05:31	05:28 20:42
	17:10 15:48-16:19/31	17:50	18:22	19:56	20:27	20:42
29	07:19 07:54-08:59/65		06:52 17:56-18:49/53	06:02 19:26-19:34/8	05:31	05:28 20:42
	17:12 15:48-16:20/32		19:23	19:58	20:28	20:42
30	07:18 07:55-08:58/63		06:50 17:57-18:50/53	06:01 19:26-19:35/9	05:30	05:29 20:42
	17:13 15:49-16:22/33		19:24	19:59	20:29	20:42
31	07:17 07:55-08:57/62		06:48 17:57-18:50/53		05:30	
	17:14 15:50-16:23/33		19:25		20:30	
Potential sun hours	295	296	369	400	451	456
Sum of minutes with flicker	3348	1029	1117	1031	406	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: WF Abruzzo shadow flikering real caseWTG: AB01 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (1)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December
1	05:29 20:42	05:54 19:34-19:58/24 20:22	06:26 18:00-18:56/56 19:37	06:58 17:33-18:11/38 18:45	06:33 07:28-08:05/37 16:57 15:31-16:02/31	07:09 07:38-08:44/66 16:32 15:05-15:52/47
2	05:30 20:41	05:55 19:33-19:57/24 20:21	06:27 17:59-18:55/56 19:36	06:59 17:33-18:09/36 18:44	06:35 07:28-08:07/39 16:56 15:30-16:05/35	07:11 07:40-08:44/64 16:31 15:05-15:52/47
3	05:30 20:41	05:56 19:33-19:56/23 20:19	06:28 17:57-18:53/56 19:34	07:00 17:33-18:08/35 18:42	06:36 07:27-08:08/41 16:55 15:28-16:03/35	07:12 07:41-08:45/64 16:31 15:05-15:52/47
4	05:31 20:41	05:57 19:33-19:55/22 20:18	06:29 17:56-18:52/56 19:32	07:01 17:33-17:53/20 18:40 17:56-18:06/10	06:37 07:26-08:08/42 16:53 15:26-16:02/36	07:13 07:42-08:45/63 16:31 15:05-15:51/46
5	05:32 20:41	05:58 19:33-19:54/21 20:17	06:31 17:55-18:51/56 19:31	07:02 17:33-17:53/20 18:38 17:59-18:06/7	06:38 07:26-08:10/44 16:52 15:23-15:58/35	07:14 07:43-08:45/62 16:30 15:05-15:51/46
6	05:32 20:40	05:59 19:33-19:52/19 20:16	06:32 17:53-18:49/56 19:29	07:03 17:34-17:51/17 18:37 18:03-18:05/2	06:40 07:25-08:15/50 16:51 15:24-16:00/36	07:15 07:44-08:46/62 16:30 15:05-15:51/46
7	05:33 20:40	06:00 19:32-19:51/19 20:15	06:33 17:52-18:48/56 19:27	07:04 17:34-17:49/15 18:35	06:41 07:24-08:19/55 16:50 15:23-15:58/35	07:16 07:45-08:46/61 16:30 15:05-15:51/46
8	05:33 20:40	06:01 19:33-19:50/17 20:13	06:34 17:51-18:47/56 19:25	07:05 17:34-17:48/14 18:33	06:42 07:24-08:23/59 16:49 15:23-15:58/35	07:17 07:46-08:47/61 16:30 15:06-15:51/45
9	05:34 20:40	06:02 19:33-19:49/16 20:12	06:35 17:50-18:46/56 19:24	07:07 17:35-17:46/11 18:32	06:43 07:24-08:25/61 16:48 15:22-15:56/34	07:17 07:47-08:47/60 16:30 15:06-15:51/45
10	05:35 20:39	06:03 19:32-19:47/15 20:11	06:36 17:50-18:44/54 19:22	07:08 17:35-17:44/9 18:30	06:45 07:25-08:27/62 16:47 15:21-15:55/34	07:18 07:48-08:47/59 16:30 15:06-15:51/45
11	05:36 20:39	06:04 19:32-19:45/13 20:09	06:37 17:49-18:43/54 19:20	07:09 17:36-17:43/7 18:28	06:46 07:27-08:29/62 16:45 15:21-15:55/34	07:19 07:49-08:47/58 16:30 15:06-15:51/45
12	05:36 20:38	06:05 19:33-19:44/11 20:08	06:38 17:48-18:42/54 19:18	07:10 17:39-17:42/3 18:27	06:47 07:27-08:30/63 16:44 15:21-15:54/33	07:20 07:49-08:48/59 16:30 15:06-15:51/45
13	05:37 20:38	06:06 19:34-19:43/9 20:07	06:39 17:47-18:40/53 19:17	07:11 17:39-17:42/3 18:25	06:48 07:26-08:31/65 16:43 15:20-15:52/32	07:21 07:50-08:48/58 16:31 15:07-15:51/44
14	05:38 20:37	06:08 19:34-19:41/7 20:05	06:40 17:47-18:39/52 19:15	07:12 17:39-17:42/3 18:23	06:50 07:27-08:33/66 16:43 15:21-15:52/31	07:22 07:51-08:49/58 16:31 15:07-15:52/45
15	05:39 20:37	06:09 19:36-19:40/4 20:04	06:41 17:46-18:38/52 19:13	07:13 17:39-17:42/3 18:22	06:51 07:27-08:34/67 16:42 15:20-15:51/31	07:22 07:52-08:49/57 16:31 15:08-15:52/44
16	05:39 20:36	06:10 19:37-19:39/2 20:02	06:42 17:46-18:36/50 19:11	07:14 17:39-17:42/3 18:20	06:52 07:26-08:34/68 16:41 15:18-15:50/32	07:23 07:53-08:49/56 16:31 15:08-15:52/44
17	05:40 20:35	06:11 19:37-19:40/4 20:01	06:43 17:46-18:35/49 19:10	07:16 17:39-17:42/3 18:19	06:53 07:27-08:36/69 16:40 15:16-15:50/34	07:24 07:54-08:50/56 16:31 15:08-15:52/44
18	05:41 20:35	06:12 19:37-19:40/4 19:59	06:44 17:46-18:35/49 19:08	07:17 17:39-17:42/3 18:17	06:54 07:27-08:37/70 16:39 15:14-15:49/35	07:24 07:55-08:51/56 16:32 15:09-15:53/44
19	05:42 20:34	06:13 19:37-19:40/4 19:58	06:45 17:46-18:33/47 19:06	07:18 17:39-17:42/3 18:16	06:56 07:27-08:37/70 16:38 15:12-15:50/38	07:25 07:55-08:51/56 16:32 15:09-15:53/44
20	05:43 20:33	06:14 19:37-19:40/4 19:56	06:46 17:46-18:32/46 19:04	07:19 17:39-17:42/3 18:14	06:57 07:27-08:37/70 16:38 15:10-15:51/41	07:26 07:56-08:52/56 16:33 15:10-15:54/44
21	05:44 20:32	06:15 19:37-19:40/4 19:55	06:47 17:45-18:30/45 19:03	07:20 17:39-17:42/3 18:13	06:58 07:28-08:39/71 16:37 15:10-15:53/43	07:26 07:56-08:51/55 16:33 15:10-15:54/44
22	05:45 19:44-19:50/6 20:32	06:16 18:31-18:47/16 19:53	06:48 17:43-18:29/46 19:01	07:21 17:39-17:42/3 18:11	06:59 07:28-08:39/71 16:36 15:09-15:54/45	07:27 07:57-08:52/55 16:33 15:11-15:55/44
23	05:45 19:41-19:53/12 20:31	06:17 18:27-18:50/23 19:52	06:49 17:41-18:28/47 18:59	07:23 17:39-17:42/3 18:10	07:00 07:29-08:40/71 16:35 15:08-15:54/46	07:27 07:57-08:53/56 16:34 15:11-15:55/44
24	05:46 19:40-19:55/15 20:30	06:18 18:24-18:52/28 19:50	06:50 17:40-18:26/46 18:57	07:24 17:39-17:42/3 18:08	07:02 07:30-08:40/70 16:35 15:07-15:54/47	07:28 07:58-08:54/56 16:35 15:11-15:55/44
25	05:47 19:38-19:56/18 20:29	06:19 18:18-18:54/36 19:49	06:51 17:38-18:25/47 18:56	07:25 17:39-17:42/3 17:07	07:03 07:32-08:41/69 16:34 15:07-15:54/47	07:28 07:58-08:54/56 16:35 15:12-15:56/44
26	05:48 19:37-19:57/20 20:28	06:20 18:15-18:55/40 19:47	06:52 17:37-18:24/47 18:54	07:26 17:39-17:42/3 17:05	07:04 07:33-08:42/69 16:34 15:06-15:53/47	07:29 07:58-08:54/56 16:36 15:12-15:56/44
27	05:49 19:37-19:58/21 20:27	06:21 18:12-18:56/44 19:45	06:53 17:36-18:22/46 18:52	07:27 17:39-17:42/3 17:04	07:05 07:33-08:42/69 16:33 15:06-15:53/47	07:29 07:58-08:54/56 16:36 15:12-15:57/45
28	05:50 19:36-19:59/23 20:26	06:22 18:08-18:57/49 19:44	06:55 17:35-18:15/40 18:50	07:28 17:39-17:42/3 17:02	07:06 07:34-08:42/68 16:33 15:05-15:52/47	07:29 07:58-08:55/57 16:37 15:14-15:58/44
29	05:51 19:35-20:00/25 20:25	06:23 18:06-18:58/52 19:42	06:56 17:35-18:13/38 18:49	07:29 17:39-17:42/3 17:01 15:41-15:54/13	07:07 07:35-08:42/67 16:32 15:05-15:52/47	07:30 07:58-08:56/58 16:38 15:14-15:59/45
30	05:52 19:35-20:00/25 20:24	06:24 18:04-18:58/54 19:41	06:57 17:34-18:12/38 18:47	07:30 17:39-17:42/3 17:00 15:37-15:58/21	07:08 07:37-08:44/67 16:32 15:06-15:52/46	07:30 07:58-08:56/58 16:39 15:15-15:59/44
31	05:53 19:34-19:59/25 20:23	06:25 18:02-18:57/55 19:39	06:58 17:33-17:53/20 18:44	07:31 17:39-17:42/3 16:58 15:33-16:01/28	07:09 07:38-08:45/68 16:33 15:06-15:53/47	07:30 07:58-08:56/58 16:39 15:15-16:00/45
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	190	643	1504	453	3001	3203

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: WF Abruzzo shadow flickering real case WTG: AB02 - Siemens Gamesa SG 6.0-170 6000 170.0 !OI! hub: 135,0 m (TOT: 220,0 m) (2)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

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

### SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flikering real caseWTG: AB03 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (3)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 15:13-15:45/32 16:40	07:16 17:16	06:39 06:58-07:28/30 17:51	06:46 07:05-07:18/13 19:26 18:17-19:02/45	05:59 06:19-06:31/12 20:00	05:29 05:51-06:10/19 20:30
2	07:30 15:14-15:45/31 16:41	07:15 17:17	06:37 06:56-07:27/31 17:52	06:45 07:07-07:15/8 19:28 18:17-19:03/46	05:58 06:18-06:30/12 20:01	05:29 05:51-06:11/20 20:31
3	07:30 15:16-15:46/30 16:42	07:14 07:34-07:38/4 17:18	06:35 06:55-07:27/32 17:53	06:43 18:17-19:04/47 19:29	05:56 06:16-06:27/11 20:02	05:28 05:50-06:11/21 20:32
4	07:30 15:17-15:47/30 16:43	07:13 07:33-07:41/8 17:19	06:34 06:53-07:26/33 17:55	06:41 18:16-19:04/48 19:30	05:55 06:17-06:25/8 20:03	05:28 05:50-06:11/21 20:33
5	07:30 15:19-15:49/30 16:44	07:12 07:32-07:44/12 17:21	06:32 06:52-07:24/32 17:56	06:40 18:16-19:05/49 19:31	05:54 20:04	05:27 05:50-06:12/22 20:33
6	07:30 15:21-15:50/29 16:45	07:10 07:31-07:45/14 17:22	06:31 06:53-07:23/30 17:57	06:38 18:17-19:05/48 19:32	05:53 20:05	05:27 05:49-06:11/22 20:34
7	07:30 15:22-15:52/30 16:46	07:09 07:30-07:47/17 17:23	06:29 06:53-07:20/27 17:58	06:36 18:17-19:05/48 19:33	05:51 20:06	05:27 05:49-06:11/22 20:35
8	07:30 15:23-15:52/29 16:47	07:08 07:28-07:47/19 17:25	06:27 06:53-07:18/25 17:59	06:35 18:17-19:04/47 19:34	05:50 20:07	05:26 05:49-06:12/23 20:35
9	07:30 15:24-15:54/30 16:48	07:07 07:27-07:48/21 17:26	06:26 06:55-07:17/22 18:00	06:33 18:18-19:04/46 19:35	05:49 20:08	05:26 05:49-06:12/23 20:36
10	07:30 15:26-15:56/30 16:49	07:06 07:26-07:49/23 17:27	06:24 06:55-07:15/20 18:02	06:31 18:18-19:03/45 19:36	05:48 20:09	05:26 05:49-06:12/23 20:36
11	07:29 15:27-15:57/30 16:50	07:04 07:24-07:48/24 17:28	06:22 06:57-07:13/16 18:03	06:30 18:18-19:02/44 19:38	05:47 20:11	05:26 05:48-06:12/24 20:37
12	07:29 15:28-15:58/30 16:51	07:03 07:23-07:49/26 17:30	06:21 07:00-07:10/10 18:04	06:28 18:20-19:01/41 19:39	05:46 20:12	05:26 05:48-06:12/24 20:38
13	07:29 15:30-16:00/30 16:52	07:02 07:22-07:49/27 17:31	06:19 18:05	06:26 18:20-19:00/40 19:40	05:44 20:13	05:26 05:48-06:12/24 20:38
14	07:28 15:31-16:01/30 16:53	07:01 07:21-07:49/28 17:32	06:17 18:06	06:25 18:21-18:58/37 19:41	05:43 20:14	05:26 05:48-06:12/24 20:39
15	07:28 15:34-16:00/26 16:54	06:59 07:22-07:49/27 17:34	06:16 18:07	06:23 18:23-18:58/35 19:42	05:42 20:15	05:26 05:48-06:13/25 20:39
16	07:28 15:36-15:58/22 16:56	06:58 07:23-07:49/26 17:35	06:14 18:09	06:21 18:25-18:56/31 19:43	05:41 20:16	05:26 05:48-06:13/25 20:39
17	07:27 15:40-15:56/16 16:57	06:57 07:23-07:48/25 17:36	06:12 18:10	06:20 18:28-18:54/26 19:44	05:40 20:17	05:26 05:48-06:13/25 20:40
18	07:27 15:44-15:51/7 16:58	06:55 07:15-07:19/4 17:37 07:24-07:47/23	06:10 18:11	06:18 18:29-18:52/23 19:45	05:39 06:00-06:01/1 20:18	05:26 05:49-06:14/25 20:40
19	07:26 16:59 17:00	06:54 07:13-07:22/9 17:39 07:24-07:46/22	06:09 18:12	06:17 18:32-18:50/18 19:46	05:38 05:59-06:03/4 20:19	05:26 05:49-06:14/25 20:40
20	07:26 17:00 17:01	06:52 07:12-07:25/13 17:40 07:26-07:45/19	06:07 17:37-17:49/12 18:13	06:15 18:36-18:45/9 19:48	05:38 05:59-06:05/6 20:20	05:26 05:49-06:14/25 20:41
21	07:25 17:02 17:03	06:51 07:10-07:26/16 17:41 07:27-07:43/16	06:05 17:33-17:52/19 18:14	06:14 06:33-06:34/1 19:49	05:37 05:58-06:06/8 20:21	05:26 05:49-06:14/25 20:41
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24	07:23 17:05 17:06	06:46 07:06-07:28/22 17:45	06:00 06:19-06:24/5 18:18 17:26-17:54/28	06:09 06:28-06:34/6 19:52	05:34 05:56-06:08/12 20:24	05:27 05:50-06:15/25 20:41
25	07:22 17:07 17:08	06:45 07:04-07:28/24 17:46	05:58 06:17-06:24/7 18:19 17:24-17:57/33	06:08 06:27-06:34/7 19:53	05:33 05:55-06:08/13 20:24	05:27 05:50-06:15/25 20:42
26	07:21 17:08 17:09	06:43 07:03-07:29/26 17:47	05:57 06:16-06:24/8 18:20 17:22-17:58/36	06:06 06:26-06:35/9 19:54	05:33 05:54-06:08/14 20:25	05:27 05:50-06:15/25 20:42
27	07:20 17:09 17:10	06:42 07:01-07:29/28 17:48	05:55 06:14-06:24/10 18:21 17:22-18:00/38	06:05 06:24-06:34/10 19:55	05:32 05:54-06:09/15 20:26	05:28 05:51-06:16/25 20:42
28	07:20 17:10 17:11	06:40 07:00-07:29/29 17:50	05:53 06:12-06:23/11 18:22 17:20-18:00/40	06:03 06:23-06:33/10 19:56	05:31 05:53-06:09/16 20:27	05:28 05:51-06:15/24 20:42
29	07:19 17:12 17:13		06:51 07:10-07:22/12 19:23 18:19-19:00/41	06:02 06:21-06:32/11 19:58	05:31 05:53-06:10/17 20:28	05:28 05:52-06:16/24 20:42
30	07:18 17:13 17:14		06:50 07:09-07:22/13 19:24 18:18-19:01/43	06:01 06:20-06:32/12 19:59	05:30 05:52-06:10/18 20:29	05:29 05:52-06:16/24 20:42
31	07:17 17:14 17:15		06:48 07:07-07:20/13 19:25 18:18-19:02/44		05:30 05:52-06:11/19 20:30	
Potential sun hours	295	296	369	400	451	456
Sum of minutes with flicker	492	600	773	867	206	709

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

## SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flikering real caseWTG: AB03 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (3)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December
1	05:29 05:53-06:17/24 20:42	05:54 20:22	06:26 18:17-19:01/44 19:37	06:58 07:41-07:47/6 18:45	06:33 06:55-07:17/22 16:57	07:09 15:09-15:40/31 16:32
2	05:30 05:53-06:17/24 20:41	05:55 20:21	06:27 18:16-19:01/45 19:36	06:59 07:36-07:50/14 18:43	06:35 06:57-07:18/21 16:56	07:10 15:09-15:39/30 16:31
3	05:30 05:54-06:17/23 20:41	05:56 20:19	06:28 18:15-19:01/46 19:34	07:00 07:34-07:52/18 18:42	06:36 06:58-07:17/19 16:55	07:12 15:08-15:38/30 16:31
4	05:31 05:54-06:17/23 20:41	05:57 20:18	06:29 18:14-19:01/47 19:32	07:01 07:32-07:53/21 18:40	06:37 06:59-07:15/16 16:53	07:13 15:08-15:37/29 16:31
5	05:32 05:55-06:18/23 20:41	05:58 20:17	06:30 18:13-19:01/48 19:30	07:02 07:31-07:55/24 18:38	06:38 07:01-07:15/14 16:52	07:14 15:07-15:37/30 16:31
6	05:32 05:55-06:17/22 20:41	05:59 20:16	06:32 18:12-19:00/48 19:29	07:03 07:30-07:56/26 18:37	06:40 07:02-07:13/11 16:51	07:15 15:07-15:36/29 16:30
7	05:33 05:56-06:18/22 20:40	06:00 20:15	06:33 18:11-19:00/49 19:27	07:04 07:29-07:58/29 18:35	06:41 07:03-07:11/8 16:50	07:16 15:06-15:36/30 16:30
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9	05:34 05:57-06:18/21 20:39	06:02 06:26-06:36/10 20:12	06:35 18:10-18:57/47 19:24	07:06 07:28-08:00/32 18:32	06:43 16:48	07:17 15:05-15:35/30 16:30
10	05:35 05:58-06:18/20 20:39	06:03 06:26-06:38/12 20:11	06:36 07:01-07:08/7 19:22	07:08 07:28-08:00/32 18:30	06:45 16:46	07:18 15:04-15:35/31 16:30
11	05:36 05:59-06:19/20 20:39	06:04 06:27-06:39/12 20:09	06:37 06:58-07:11/13 19:20	07:09 07:29-08:01/32 18:28	06:46 16:45	07:19 15:03-15:35/32 16:30
12	05:36 05:59-06:18/19 20:38	06:05 06:28-06:40/12 20:08	06:38 06:59-07:12/13 19:18	07:10 07:31-08:02/31 18:27	06:47 16:44	07:20 15:03-15:36/33 16:30
13	05:37 06:00-06:18/18 20:38	06:06 06:29-06:41/12 20:07	06:39 07:00-07:13/13 19:17	07:11 07:32-08:02/30 18:25	06:48 16:43	07:21 15:03-15:37/34 16:30
14	05:38 06:01-06:19/18 20:37	06:08 06:30-06:41/11 20:05	06:40 07:01-07:13/12 19:15	07:12 07:33-08:01/28 18:23	06:49 16:43	07:22 15:03-15:38/35 16:31
15	05:39 06:02-06:19/17 20:36	06:09 06:31-06:41/10 20:04	06:41 07:02-07:13/11 19:13	07:13 07:34-08:01/27 18:22	06:51 16:42	07:22 15:03-15:38/35 16:31
16	05:39 06:02-06:18/16 20:36	06:10 06:32-06:41/9 20:02	06:42 07:03-07:13/10 19:11	07:14 07:35-08:00/25 18:20	06:52 16:41	07:23 15:03-15:40/37 16:31
17	05:40 06:03-06:18/15 20:35	06:11 06:33-06:41/8 20:01	06:43 07:04-07:13/9 19:10	07:16 07:37-08:01/24 18:19	06:53 16:40	07:24 15:04-15:41/37 16:31
18	05:41 06:04-06:18/14 20:35	06:12 06:34-06:41/7 19:59	06:44 07:05-07:12/7 19:08	07:17 07:38-08:00/22 18:17	06:54 16:39	07:24 15:03-15:41/38 16:32
19	05:42 06:05-06:18/13 20:34	06:13 06:35-06:41/6 19:58	06:45 07:06-07:11/5 19:06	07:18 07:39-07:59/20 18:16	06:56 16:38	07:25 15:04-15:42/38 16:32
20	05:43 06:06-06:17/11 20:33	06:14 06:36-06:40/4 19:56	06:46 07:07-07:10/3 19:04	07:19 07:40-07:57/17 18:14	06:57 16:37	07:26 15:05-15:43/38 16:32
21	05:44 06:07-06:17/10 20:32	06:15 06:37-06:39/2 19:55	06:47 18:15-18:39/24 19:03	07:20 07:41-07:56/15 18:13	06:58 16:37	07:26 15:05-15:43/38 16:33
22	05:45 06:08-06:16/8 20:31	06:16 19:53	06:48 18:17-18:38/21 19:01	07:21 07:43-07:55/12 18:11	06:59 16:36	07:27 15:06-15:44/38 16:33
23	05:45 06:08-06:15/7 20:31	06:17 18:39-18:49/10 19:52	06:49 18:20-18:35/15 18:59	07:23 07:44-07:52/8 18:10	07:00 16:35	07:27 15:06-15:44/38 16:34
24	05:46 06:09-06:14/5 20:30	06:18 18:35-18:53/18 19:50	06:50 18:57	07:24 07:45-07:47/2 18:08	07:02 15:22-15:28/6 16:35	07:28 15:06-15:44/38 16:34
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28	05:50 20:26	06:22 18:24-18:59/35 19:44	06:55 18:50	07:28 06:51-07:18/27 17:02	07:06 15:12-15:41/29 16:33	07:29 15:09-15:45/36 16:37
29	05:51 20:25	06:23 18:22-18:59/37 19:42	06:56 18:49	07:29 06:52-07:19/27 17:01	07:07 15:10-15:40/30 16:32	07:29 15:10-15:45/35 16:38
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31	05:53 20:23	06:25 18:19-19:00/41 19:39	06:58 18:44	07:31 06:54-07:18/24 16:58	07:09 15:08-15:38/29 16:31	07:30 15:12-15:45/33 16:39
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	417	376	1013	809	273	1060

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: WF Abruzzo shadow flikering real caseWTG: AB04 - Siemens Gamesa SG 6.0-170 6000 170.0 !OI! hub: 135,0 m (TOT: 220,0 m) (4)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:40	07:16 17:16	06:39 06:58-07:24/26 17:51	06:46 19:27	05:59 06:19-06:49/30	05:29 20:30
2	07:30 16:41	07:15 17:17	06:37 06:56-07:22/26 17:52 17:28-17:30/2	06:45 19:28	05:58 06:20-06:47/27	05:29 20:31
3	07:30 16:42	07:14 17:18	06:35 06:55-07:22/27 17:53 17:28-17:32/4	06:43 19:29	05:57 06:21-06:44/23	05:28 20:32
4	07:30 16:43	07:13 17:19	06:34 06:54-07:19/25 17:55 17:26-17:33/7	06:41 19:30	05:55 06:24-06:42/18	05:28 20:33
5	07:30 16:44	07:12 17:21	06:32 06:56-07:17/21 17:56 17:26-17:34/8	06:40 19:31	05:54 06:28-06:38/10	05:27 20:33
6	07:30 16:45	07:11 17:22	06:31 06:59-07:14/15 17:57 17:26-17:36/10	06:38 06:57-06:59/2 19:32	05:53 18:57-19:17/20	05:27 20:34
7	07:30 16:46	07:09 17:23	06:29 07:05-07:07/2 17:58 17:26-17:37/11	06:36 06:55-07:00/5 19:33	05:51 18:58-19:14/16	05:27 20:35
8	07:30 16:47	07:08 17:25	06:27 17:25-17:37/12 17:59	06:35 06:53-07:00/7 19:34	05:50 19:01-19:11/10	05:27 20:35
9	07:30 16:48	07:07 17:26	06:26 17:27-17:39/12 18:00	06:33 06:52-07:01/9 19:35	05:49	05:26 20:36
10	07:30 16:49	07:06 17:27	06:24 17:27-17:40/13 18:02	06:31 06:50-07:01/11 19:37 19:10-19:13/3	05:48 20:10	05:26 20:37
11	07:29 16:50	07:05 17:29	06:22 17:28-17:41/13 18:03	06:30 06:48-07:01/13 19:38 19:03-19:15/12	05:47 20:11	05:26 20:37
12	07:29 16:51	07:03 17:30	06:21 17:30-17:43/13 18:04	06:28 06:47-07:02/15 19:39 19:01-19:17/16	05:46 20:12	05:26 20:38
13	07:29 16:52	07:02 07:22-07:23/1 17:31	06:19 17:31-17:44/13 18:05	06:26 06:45-07:02/17 19:40 18:58-19:18/20	05:44 20:13	05:26 20:38
14	07:29 16:53	07:01 07:20-07:24/4 17:32	06:17 17:32-17:43/11 18:06	06:25 06:44-07:02/18 19:41 18:57-19:19/22	05:43 20:14	05:26 20:39
15	07:28 16:55	06:59 07:19-07:25/6 17:34	06:16 18:07	06:23 06:42-07:02/20 19:42 18:55-19:20/25	05:42 20:15	05:26 20:39
16	07:28 16:56	06:58 07:18-07:26/8 17:35	06:14 18:09	06:21 06:40-07:01/21 19:43 18:53-19:20/27	05:41 20:16	05:26 20:39
17	07:27 16:57	06:57 07:16-07:27/11 17:36	06:12 18:10	06:20 06:39-07:01/22 19:44 18:53-19:22/29	05:40 20:17	05:26 20:40
18	07:27 16:58	06:55 07:15-07:27/12 17:37	06:10 18:11	06:18 06:37-07:00/23 19:45 18:51-19:23/32	05:39 20:18	05:26 20:40
19	07:26 16:59	06:54 07:13-07:27/14 17:39	06:09 18:12	06:17 06:36-07:01/25 19:46 18:51-19:24/33	05:38 20:19	05:26 20:40
20	07:26 17:00	06:52 07:12-07:28/16 17:40	06:07 18:13	06:15 06:34-07:00/26 19:48 18:50-19:25/35	05:38 20:20	05:26 20:41
21	07:25 17:02	06:51 07:10-07:28/18 17:41	06:05 18:14	06:14 06:33-06:59/26 19:49 18:50-19:26/36	05:37 20:21	05:26 20:41
22	07:24 17:03	06:49 07:09-07:28/19 17:42	06:04 18:15	06:12 06:31-06:58/27 19:50 18:49-19:27/38	05:36 20:22	05:26 20:41
23	07:24 17:04	06:48 07:07-07:27/20 17:44	06:02 18:16	06:11 06:30-06:58/28 19:51 18:49-19:27/38	05:35 20:23	05:26 20:41
24	07:23 17:05	06:46 07:06-07:28/22 17:45	06:00 18:18	06:09 06:28-06:57/29 19:52 18:49-19:27/38	05:34 20:24	05:27 20:41
25	07:22 17:07	06:45 07:04-07:27/23 17:46	05:58 18:19	06:08 06:27-06:56/29 19:53 18:49-19:27/38	05:34 20:24	05:27 20:42
26	07:21 17:08	06:43 07:03-07:27/24 17:47	05:57 18:20	06:06 06:26-06:56/30 19:54 18:49-19:27/38	05:33 20:25	05:27 20:42
27	07:20 17:09	06:42 07:01-07:26/25 17:49	05:55 18:21	06:05 06:24-06:54/30 19:55 18:49-19:26/37	05:32 20:26	05:28 20:42
28	07:20 17:10	06:40 07:00-07:25/25 17:50	05:53 18:22	06:03 06:23-06:53/30 19:56 18:50-19:25/35	05:31 20:27	05:28 20:42
29	07:19 17:12		06:52 19:23	06:02 06:21-06:51/30 19:58 18:49-19:24/35	05:31 20:28	05:29 20:42
30	07:18 17:13		06:50 19:24	06:01 06:20-06:50/30 19:59 18:50-19:24/34	05:30 20:29	05:29 20:42
31	07:17 17:14		06:48 19:25		05:30 20:30	
Potential sun hours	295	296	369	400	451	456
Sum of minutes with flicker	0	248	271	1144	294	0

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
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## SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flickering real caseWTG: AB04 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (4)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December
1	05:29 20:42	05:54 20:22	06:26 06:48-07:01/13 19:37 19:02-19:14/12	06:58 18:09-18:22/13 18:45	06:33 16:57	07:09 16:32
2	05:30 20:41	05:55 20:21	06:27 06:49-07:00/11 19:36 19:08-19:11/3	06:59 18:07-18:20/13 18:44	06:35 16:56	07:11 16:31
3	05:30 20:41	05:56 20:19	06:28 06:50-06:59/9 19:34	07:00 18:05-18:18/13 18:42	06:36 16:55	07:12 16:31
4	05:31 20:41	05:57 20:18	06:29 06:51-06:58/7 19:32	07:01 18:04-18:17/13 18:40	06:37 16:53	07:13 16:31
5	05:32 20:41	05:58 19:11-19:23/12 20:17	06:31 06:52-06:57/5 19:31	07:02 18:02-18:15/13 18:38	06:38 16:52	07:14 16:31
6	05:32 20:41	05:59 19:08-19:25/17 20:16	06:32 06:53-06:56/3 19:29	07:03 18:02-18:14/12 18:37	06:40 16:51	07:15 16:30
7	05:33 20:40	06:00 19:06-19:27/21 20:15	06:33 19:27	07:04 07:37-07:48/11 18:35 18:02-18:12/10	06:41 16:50	07:16 16:30
8	05:33 20:40	06:01 06:36-06:49/13 20:13 19:04-19:28/24	06:34 19:25	07:05 07:33-07:51/18 18:33 18:01-18:10/9	06:42 16:49	07:16 16:30
9	05:34 20:40	06:02 06:32-06:52/20 20:12 19:03-19:30/27	06:35 19:24	07:07 07:30-07:53/23 18:32 18:01-18:08/7	06:43 16:48	07:17 16:30
10	05:35 20:39	06:03 06:30-06:55/25 20:11 19:02-19:31/29	06:36 19:22	07:08 07:28-07:54/26 18:30 18:01-18:07/6	06:45 16:47	07:18 16:30
11	05:36 20:39	06:04 06:28-06:56/28 20:09 19:00-19:31/31	06:37 19:20	07:09 07:29-07:56/27 18:28 18:01-18:05/4	06:46 16:46	07:19 16:30
12	05:36 20:38	06:05 06:28-06:58/30 20:08 18:59-19:32/33	06:38 19:18	07:10 07:31-07:57/26 18:27 18:02-18:03/1	06:47 16:44	07:20 16:30
13	05:37 20:38	06:07 06:29-06:59/30 20:07 18:59-19:33/34	06:39 19:17	07:11 07:32-07:58/26 18:25	06:48 16:44	07:21 16:31
14	05:38 20:37	06:08 06:30-07:00/30 20:05 18:58-19:33/35	06:40 19:15	07:12 07:33-07:58/25 18:23	06:50 16:43	07:22 16:31
15	05:39 20:37	06:09 06:31-07:01/30 20:04 18:57-19:33/36	06:41 19:13	07:13 07:34-07:58/24 18:22	06:51 16:42	07:22 16:31
16	05:39 20:36	06:10 06:32-07:02/30 20:02 18:57-19:33/36	06:42 19:11	07:14 07:35-07:59/24 18:20	06:52 16:41	07:23 16:31
17	05:40 20:35	06:11 06:33-07:03/30 20:01 18:56-19:33/37	06:43 19:10	07:16 07:37-07:59/22 18:19	06:53 16:40	07:24 16:31
18	05:41 20:35	06:12 06:34-07:03/29 19:59 18:56-19:33/37	06:44 19:08	07:17 07:38-07:59/21 18:17	06:54 16:39	07:24 16:32
19	05:42 20:34	06:13 06:35-07:04/29 19:58 18:55-19:33/38	06:45 19:06	07:18 07:39-07:59/20 18:16	06:56 16:38	07:25 16:32
20	05:43 20:33	06:14 06:36-07:04/28 19:56 18:55-19:33/38	06:46 19:04	07:19 07:40-07:59/19 18:14	06:57 16:38	07:26 16:33
21	05:44 20:32	06:15 06:37-07:04/27 19:55 18:55-19:32/37	06:47 19:03	07:20 07:41-07:58/17 18:13	06:58 16:37	07:26 16:33
22	05:45 20:31	06:16 06:38-07:04/26 19:53 18:55-19:31/36	06:48 19:01	07:21 07:43-07:59/16 18:11	06:59 16:36	07:27 16:33
23	05:46 20:31	06:17 06:39-07:04/25 19:52 18:55-19:29/34	06:49 18:59	07:23 07:44-07:58/14 18:10	07:00 16:35	07:27 16:34
24	05:46 20:30	06:18 06:40-07:04/24 19:50 18:55-19:28/33	06:50 18:57	07:24 07:45-07:57/12 18:08	07:02 16:35	07:28 16:35
25	05:47 20:29	06:19 06:41-07:04/23 19:49 18:55-19:26/31	06:51 18:56	06:25 06:46-06:56/10 17:07	07:03 16:34	07:28 16:35
26	05:48 20:28	06:20 06:42-07:04/22 19:47 18:55-19:24/29	06:52 18:54	06:26 06:48-06:56/8 17:05	07:04 16:34	07:29 16:36
27	05:49 20:27	06:21 06:43-07:04/21 19:45 18:55-19:22/27	06:53 18:52	06:27 06:49-06:55/6 17:04	07:05 16:33	07:29 16:36
28	05:50 20:26	06:22 06:44-07:04/20 19:44 18:56-19:21/25	06:55 18:50	06:29 06:50-06:53/3 17:02	07:06 16:33	07:29 16:37
29	05:51 20:25	06:23 06:45-07:03/18 19:42 18:57-19:19/22	06:56 18:14-18:23/9 18:49	06:30 06:52-06:53/1 17:01	07:07 16:32	07:29 16:38
30	05:52 20:24	06:24 06:46-07:03/17 19:41 18:58-19:17/19	06:57 18:11-18:24/13 18:47	06:31 17:00	07:08 16:32	07:30 16:39
31	05:53 20:23	06:25 06:47-07:02/15 19:39 19:00-19:16/16	06:58 18:45	06:32 16:58	07:30 16:39	07:30 16:39
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	0	1384	85	513	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: WF Abruzzo shadow flikering real caseWTG: AB05 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (5)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	
1	07:30 13:01-13:09/8 16:41	07:16 17:16	06:39 08:14-08:51/37 17:51 15:14-16:06/52	06:46 16:27-17:24/57 19:27	05:59 17:17-18:09/52 20:00	05:29 19:48-20:05/17 20:30	
2	07:30 13:02-13:10/8 16:41	07:15 17:17	06:37 08:14-08:50/36 17:52 15:13-16:06/53	06:45 17:37-17:56/19 19:28 16:27-17:23/56	05:58 17:18-18:08/50 20:01	05:29 19:49-20:06/17 20:31	
3	07:30 13:02-13:11/9 16:42	07:14 17:18	06:36 08:14-08:50/36 17:53 15:12-16:08/56	06:43 17:34-18:00/26 19:29 16:29-17:23/54	05:57 17:18-18:07/49 20:02	05:28 19:48-20:06/18 20:32	
4	07:30 13:03-13:12/9 16:43	07:13 17:20	06:34 08:14-08:49/35 17:55 15:11-16:08/57	06:41 17:31-18:03/32 19:30 16:29-17:21/52	05:55 17:19-18:06/47 20:03	05:28 19:49-20:07/18 20:33	
5	07:30 13:03-13:13/10 16:44	07:12 17:21	06:32 08:15-08:47/32 17:56 15:10-16:08/58	06:40 17:28-18:04/36 19:31 16:30-17:20/50	05:54 17:20-18:06/46 20:04	05:28 19:49-20:08/19 20:33	
6	07:30 13:04-13:14/10 16:45	07:11 17:22	06:31 08:16-08:46/30 17:57 15:10-16:09/59	06:38 17:26-18:07/41 19:32 16:31-17:20/49	05:53 17:22-18:05/43 20:05	05:27 19:49-20:08/19 20:34	
7	07:30 13:05-13:15/10 16:46	07:09 17:23	06:29 08:16-08:44/28 17:58 15:09-16:09/60	06:36 17:24-18:08/44 19:33 16:32-17:18/46	05:52 17:23-18:04/41 20:06	05:27 19:49-20:09/20 20:35	
8	07:30 13:04-13:16/12 16:47	07:08 17:25	06:27 08:17-08:42/25 17:59 15:08-16:09/61	06:35 17:22-18:08/46 19:34 16:33-17:16/43	05:50 17:23-18:02/39 20:07	05:27 19:50-20:09/19 20:35	
9	07:30 13:05-13:17/12 16:48	07:07 17:26	06:26 08:20-08:40/20 18:01 15:09-16:10/61	06:33 17:22-18:10/48 19:35 16:35-17:15/40	05:49 17:24-18:01/37 20:08	05:27 19:50-20:10/20 20:36	
10	07:30 13:06-13:18/12 16:49	07:06 17:27	06:24 08:22-08:37/15 18:02 15:08-16:09/61	06:31 17:20-18:10/50 19:37 16:37-17:13/36	05:48 17:26-18:00/34 20:10	05:26 19:51-20:11/20 20:36	
11	07:29 13:07-13:20/13 16:50	07:05 17:29	06:22 08:27-08:30/3 18:03 15:08-16:09/61	06:30 17:19-18:11/52 19:38 16:38-17:11/33	05:47 17:27-17:59/32 20:11	05:26 19:51-20:12/21 20:37	
12	07:29 13:07-13:20/13 16:51	07:03 17:30	06:21 15:08-16:10/62 18:04	06:28 17:18-18:12/54 19:39 16:41-17:09/28	05:46 17:29-17:58/29 20:12	05:26 19:51-20:11/20 20:38	
13	07:29 13:08-13:22/14 16:52	07:02 17:31	06:19 15:08-16:09/61 18:05	06:26 17:17-18:12/55 19:40 16:44-17:06/22	05:45 17:31-17:56/25 20:13	05:26 19:51-20:12/21 20:38	
14	07:28 13:08-13:23/15 16:54	07:01 17:32	06:17 15:08-16:08/60 18:06	06:25 17:17-18:13/56 19:41 16:48-17:02/14	05:44 17:33-17:54/21 20:14	05:26 19:51-20:12/21 20:38	
15	07:28 13:09-13:24/15 16:55	06:59 08:27-08:42/15 17:34	06:16 15:09-16:09/60 18:07	06:23 17:16-18:13/57 19:42	05:43 17:36-17:51/15 20:15	05:26 19:52-20:13/21 20:39	
16	07:28 13:09-13:26/17 16:56	06:58 08:25-08:45/20 17:35	06:14 15:09-16:08/59 18:09	06:22 17:16-18:13/57 19:43	05:42 17:40-17:47/7 20:16	05:26 19:52-20:13/21 20:39	
17	07:27 13:11-13:30/19 16:57	06:57 08:22-08:46/24 17:36	06:12 15:09-16:07/58 18:10	06:20 17:15-18:13/58 19:44	05:41 17:40-17:47/7 20:17	05:26 19:52-20:13/21 20:40	
18	07:27 13:11-13:33/22 16:58	06:55 08:21-08:48/27 17:38	06:11 15:09-16:09/60 18:11	06:18 17:14-18:13/59 19:45	05:40 17:40-17:47/7 20:18	05:26 19:53-20:14/21 20:40	
19	07:26 13:12-13:37/25 16:59	06:54 08:19-08:49/30 17:39	06:09 15:11-16:11/60 18:12	06:17 17:15-18:13/58 19:46	05:39 19:54-19:55/1 20:19	05:26 19:53-20:15/22 20:40	
20	07:26 13:13-13:41/28 17:01	06:52 08:18-08:50/32 17:40 15:37-15:44/7	06:07 15:11-16:12/61 18:13	06:15 17:14-18:13/59 19:48	05:38 19:54-19:55/1 20:20	05:26 19:53-20:15/22 20:41	
21	07:25 13:14-13:44/30 17:02	06:51 08:17-08:51/34 17:41 15:30-15:50/20	06:05 15:12-16:13/61 18:14	06:14 17:14-18:13/59 19:49	05:37 19:52-19:56/4 20:21	05:26 19:53-20:15/22 20:41	
22	07:24 13:15-13:48/33 17:03	06:49 08:17-08:52/35 17:43 15:27-15:55/28	06:04 15:12-16:15/63 18:15	06:12 17:14-18:12/58 19:50	05:36 19:51-19:57/6 20:22	05:26 19:53-20:15/22 20:41	
23	07:24 13:17-13:52/35 17:04	06:48 08:15-08:52/37 17:44 15:24-15:57/33	06:02 15:14-16:17/63 18:17	06:11 17:14-18:13/59 19:51	05:35 19:50-19:57/7 20:23	05:27 19:54-20:16/22 20:41	
24	07:23 13:18-13:55/37 17:06	06:46 08:15-08:52/37 17:45 15:22-15:59/37	06:00 15:15-16:18/63 18:18	06:09 17:14-18:12/58 19:52	05:34 19:50-19:59/9 20:24	05:27 19:54-20:15/21 20:41	
25	07:22 13:19-13:58/39 17:07	06:45 08:14-08:52/38 17:46 15:19-16:01/42	05:58 15:16-16:20/64 18:19	06:08 17:15-18:12/57 19:53	05:34 19:49-19:59/10 20:24	05:27 19:54-20:15/21 20:42	
26	07:21 13:20-13:58/38 17:08	06:43 08:15-08:52/37 17:47 15:18-16:03/45	05:57 15:19-16:22/63 18:20	06:06 17:15-18:12/57 19:54	05:33 19:48-20:00/12 20:25	05:28 19:55-20:16/21 20:42	
27	07:20 13:22-13:57/35 17:09	06:42 08:14-08:52/38 17:49 15:16-16:04/48	05:55 15:20-16:23/63 18:21	06:05 17:15-18:11/56 19:55	05:32 19:49-20:01/12 20:26	05:28 19:55-20:16/21 20:42	
28	07:20 13:24-13:56/32 17:11	06:40 08:14-08:52/38 17:50 15:16-16:05/49	05:53 15:22-16:25/63 18:22	06:03 17:16-18:11/55 19:56	05:32 19:48-20:02/14 20:27	05:28 19:54-20:15/21 20:42	
29	07:19 13:26-13:54/28 17:12		06:52 16:25-17:26/61 19:23	06:02 17:17-18:10/53 19:58	05:31 19:49-20:03/14 20:28	05:29 19:55-20:16/21 20:42	
30	07:18 13:29-13:52/23 17:13		06:50 16:27-17:26/59 19:24	06:01 17:16-18:09/53 19:59	05:30 19:48-20:03/15 20:29	05:29 19:55-20:15/20 20:42	
31	07:17 13:33-13:49/16 17:14		06:48 16:27-17:25/58 19:25		05:30 19:49-20:05/16 20:30		
	Potential sun hours Sum of minutes with flicker	295 627	296 751	369 2158	400 2052	451 687	455 610

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: WF Abruzzo shadow flickering real case WTG: AB05 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (5)  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December
1	05:30 19:55-20:16/21 20:41	05:54 17:39-18:09/30 20:22	06:26 17:19-18:11/52 19:37 16:38-17:11/33	06:58 15:47-16:48/61 18:45	06:33 16:57	07:09 12:49-13:02/13 16:32
2	05:30 19:55-20:15/20 20:41	05:55 17:37-18:10/33 20:21	06:28 17:19-18:09/50 19:36 16:36-17:12/36	06:59 15:46-16:48/62 18:44	06:35 16:56	07:10 12:49-13:01/12 16:32
3	05:31 19:56-20:16/20 20:41	05:56 17:36-18:11/35 20:19	06:29 17:20-18:08/48 19:34 16:33-17:13/40	07:00 09:01-09:13/12 18:42 15:46-16:47/61	06:36 16:55	07:12 12:49-13:01/12 16:31
4	05:31 19:55-20:15/20 20:41	05:57 17:34-18:12/38 20:18	06:30 17:20-18:06/46 19:32 16:31-17:14/43	07:01 08:58-09:17/19 18:40 15:45-16:47/62	06:37 16:54	07:13 12:50-13:01/11 16:31
5	05:32 19:56-20:15/19 20:41	05:58 17:33-18:13/40 20:17	06:31 17:21-18:05/44 19:31 16:29-17:15/46	07:02 08:56-09:19/23 18:38 15:46-16:47/61	06:38 16:52	07:14 12:50-13:00/10 16:31
6	05:32 19:55-20:14/19 20:40	05:59 17:32-18:14/42 20:16	06:32 17:22-18:03/41 19:29 16:28-17:16/48	07:03 08:54-09:20/26 18:37 15:46-16:46/60	06:40 16:51	07:15 12:50-13:00/10 16:31
7	05:33 19:56-20:14/18 20:40	06:00 17:31-18:15/44 20:15	06:33 17:24-18:01/37 19:27 16:26-17:16/50	07:04 08:52-09:21/29 18:35 15:46-16:45/59	06:41 16:50	07:16 12:50-13:00/10 16:31
8	05:34 19:56-20:14/18 20:40	06:01 17:30-18:16/46 20:13	06:34 17:26-17:58/32 19:25 16:24-17:16/52	07:05 08:51-09:22/31 18:33 15:45-16:44/59	06:42 16:49	07:16 12:51-13:00/9 16:30
9	05:34 19:55-20:13/18 20:39	06:03 17:29-18:16/47 20:12	06:35 17:28-17:55/27 19:24 16:23-17:17/54	07:07 08:49-09:23/34 18:32 15:45-16:43/58	06:43 16:48	07:17 12:51-13:00/9 16:30
10	05:35 19:56-20:13/17 20:39	06:04 17:28-18:17/49 20:11	06:36 17:31-17:51/20 19:22 16:22-17:17/55	07:08 08:48-09:23/35 18:30 15:46-16:42/56	06:45 13:12-13:13/1 16:47	07:18 12:51-12:59/8 16:30
11	05:36 19:56-20:13/17 20:39	06:05 17:27-18:17/50 20:09	06:37 17:38-17:43/5 19:20 16:20-17:17/57	07:09 08:48-09:24/36 18:28 15:46-16:41/55	06:46 13:05-13:22/17 16:46	07:19 12:51-12:59/8 16:31
12	05:36 19:56-20:12/16 20:38	06:06 17:26-18:18/52 20:08	06:38 16:19-17:17/58 19:18	07:10 08:48-09:25/37 18:27 15:47-16:40/53	06:47 13:01-13:24/23 16:45	07:20 12:52-12:59/7 16:31
13	05:37 19:56-20:12/16 20:38	06:07 17:25-18:18/53 20:07	06:39 16:18-17:17/59 19:17	07:11 08:47-09:25/38 18:25 15:48-16:39/51	06:48 12:58-13:26/28 16:44	07:21 12:53-13:00/7 16:31
14	05:38 19:57-20:12/15 20:37	06:08 17:24-18:18/54 20:05	06:40 16:17-17:17/60 19:15	07:12 08:47-09:25/38 18:24 15:48-16:37/49	06:49 12:57-13:29/32 16:43	07:22 12:53-13:00/7 16:31
15	05:39 19:57-20:11/14 20:36	06:09 17:23-18:18/55 20:04	06:41 16:13-17:15/62 19:13	07:13 08:46-09:24/38 18:22 15:49-16:36/47	06:51 12:55-13:30/35 16:42	07:22 12:53-12:59/6 16:31
16	05:40 19:58-20:11/13 20:36	06:10 17:23-18:19/56 20:02	06:42 16:10-17:13/63 19:12	07:14 08:46-09:24/38 18:20 15:50-16:34/44	06:52 12:53-13:31/38 16:41	07:23 12:54-13:00/6 16:31
17	05:40 19:58-20:10/12 20:35	06:11 17:22-18:19/57 20:01	06:43 16:08-17:11/63 19:10	07:16 08:47-09:24/37 18:19 15:52-16:31/39	06:53 12:52-13:31/39 16:40	07:24 12:55-13:00/5 16:32
18	05:41 19:58-20:09/11 20:34	06:12 17:21-18:19/58 19:59	06:44 16:05-17:08/63 19:08	07:17 08:47-09:24/37 18:17 15:54-16:30/36	06:54 12:52-13:29/37 16:39	07:24 12:54-13:00/6 16:32
19	05:42 19:59-20:09/10 20:34	06:13 17:21-18:18/57 19:58	06:45 16:03-17:06/63 19:06	07:18 08:47-09:23/36 18:16 15:56-16:27/31	06:56 12:51-13:26/35 16:38	07:25 12:55-13:01/6 16:32
20	05:43 20:00-20:08/8 20:33	06:14 17:20-18:18/58 19:56	06:46 16:01-17:04/63 19:04	07:19 08:47-09:22/35 18:14 15:58-16:24/26	06:57 12:50-13:23/33 16:38	07:26 12:56-13:02/6 16:33
21	05:44 20:01-20:08/7 20:32	06:15 17:20-18:18/58 19:55	06:47 15:59-17:02/63 19:03	07:20 08:48-09:21/33 18:13 16:02-16:20/18	06:58 12:50-13:20/30 16:37	07:26 12:56-13:02/6 16:33
22	05:45 20:02-20:07/5 20:31	06:16 17:19-18:18/59 19:53	06:48 15:57-16:59/62 19:01	07:21 08:49-09:21/32 18:11	06:59 12:49-13:17/28 16:36	07:27 12:57-13:03/6 16:34
23	05:46 20:02-20:05/3 20:31	06:17 17:19-18:17/58 19:52	06:49 15:56-16:57/61 18:59	07:23 08:50-09:19/29 18:10	07:00 12:49-13:14/25 16:36	07:27 12:57-13:03/6 16:34
24	05:47 20:30 20:30	06:18 17:18-18:17/59 19:50	06:50 15:54-16:55/61 18:57	07:24 08:51-09:17/26 18:08	07:02 12:48-13:11/23 16:35	07:28 12:57-13:03/6 16:35
25	05:48 20:29 20:29	06:19 17:18-18:17/59 19:49	06:51 15:53-16:53/60 18:56	06:25 07:52-08:15/23 17:07	07:03 12:49-13:08/19 16:34	07:28 12:58-13:04/6 16:35
26	05:49 20:28 20:28	06:20 17:18-18:16/58 19:47	06:52 15:52-16:50/58 18:54	06:26 07:55-08:14/19 17:05	07:04 12:49-13:05/16 16:34	07:28 12:59-13:04/5 16:36
27	05:49 20:27 20:27	06:21 17:18-18:15/57 19:45	06:54 15:51-16:49/58 18:52	06:27 07:58-08:11/13 17:04	07:05 12:48-13:03/15 16:33	07:29 12:59-13:05/6 16:37
28	05:50 17:49-18:00/11 20:26	06:22 17:18-18:15/57 19:44	06:55 15:50-16:49/59 18:51	06:29 17:03 17:03	07:06 12:48-13:03/15 16:33	07:29 13:00-13:06/6 16:37
29	05:51 17:45-18:03/18 20:25	06:23 17:18-18:14/56 19:42 16:49-17:03/14	06:56 15:49-16:49/60 18:49	06:30 17:01 17:01	07:07 12:48-13:02/14 16:33	07:29 13:00-13:07/7 16:38
30	05:52 17:43-18:05/22 20:24	06:24 17:18-18:13/55 19:41 16:44-17:07/23	06:57 15:48-16:49/61 18:47	06:31 17:00 17:00	07:08 12:48-13:01/13 16:32	07:30 13:01-13:07/6 16:39
31	05:53 17:41-18:07/26 20:23	06:25 17:18-18:12/54 19:39 16:41-17:09/28	06:58 15:47-16:48/61 18:46	06:32 16:59 16:59	07:09 12:48-13:01/13 16:32	07:30 13:01-13:08/7 16:40
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	414	1649	2073	1802	516	235

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: WF Abruzzo shadow flikering real caseWTG: AB06 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (6) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 09:13-09:35/22 16:41 13:53-14:29/36	07:16 15:01-15:26/25 17:16 14:17-14:56/39	06:39 15:13-15:21/8 17:51	06:46 19:27	05:59 18:27-19:18/51 20:00 17:53-18:23/30	05:29 20:30
2	07:30 09:14-09:36/22 16:41 13:53-14:30/37	07:15 15:00-15:28/28 17:17 14:18-14:55/37	06:37 17:52	06:45 19:28	05:58 18:28-19:18/50 20:01 17:54-18:22/28	05:29 20:31
3	07:30 09:14-09:37/23 16:42 13:54-14:31/37	07:14 14:59-15:30/31 17:18 14:19-14:55/36	06:36 17:53	06:43 19:29	05:57 18:28-19:17/49 20:02 17:55-18:20/25	05:28 20:32
4	07:30 09:14-09:38/24 16:43 13:54-14:32/38	07:13 14:58-15:31/33 17:20 14:20-14:54/34	06:34 17:55	06:41 19:30	05:55 18:29-19:18/49 20:03 17:56-18:18/22	05:28 20:33
5	07:30 09:14-09:39/25 16:44 13:54-14:33/39	07:12 14:57-15:33/36 17:21 14:21-14:54/33	06:32 17:56	06:40 19:31	05:54 18:30-19:18/48 20:04 17:59-18:16/17	05:28 20:33
6	07:30 09:14-09:40/26 16:45 13:55-14:35/40	07:11 14:57-15:34/37 17:22 14:23-14:53/30	06:31 17:57	06:38 18:12-18:13/1 19:32	05:53 18:32-19:19/47 20:05 18:02-18:14/12	05:27 20:34
7	07:30 09:14-09:41/27 16:46 13:55-14:36/41	07:09 14:55-15:34/39 17:23 14:24-14:51/27	06:29 17:58	06:36 18:04-18:20/16 19:33	05:52 18:33-19:19/46 20:06	05:27 20:35
8	07:30 09:14-09:40/26 16:47 13:55-14:36/41	07:08 14:55-15:35/40 17:25 14:27-14:49/22	06:27 17:59	06:35 18:00-18:22/22 19:34	05:50 18:34-19:19/45 20:07	05:27 20:35
9	07:30 09:14-09:41/27 16:48 13:55-14:37/42	07:07 14:55-15:36/41 17:26 14:30-14:47/17	06:26 18:01	06:33 17:58-18:25/27 19:35	05:49 18:37-19:19/42 20:08	05:27 20:36
10	07:30 09:14-09:42/28 16:49 13:56-14:38/42	07:06 14:55-15:37/42 17:27 14:34-14:44/10	06:24 18:02	06:31 17:56-18:26/30 19:37	05:48 18:46-19:19/33 20:09	05:26 20:36
11	07:29 09:15-09:43/28 16:50 13:57-14:39/42	07:05 14:54-15:37/43 17:29	06:22 18:03	06:30 17:54-18:26/32 19:38	05:47 18:46-19:19/33 20:11	05:26 20:37
12	07:29 09:14-09:43/29 16:51 13:57-14:38/41	07:03 14:54-15:37/43 17:30	06:21 18:04	06:28 17:53-18:28/35 19:39	05:46 18:46-19:19/33 20:12	05:26 20:37
13	07:29 09:15-09:44/29 16:52 13:57-14:39/42	07:02 14:54-15:38/44 17:31	06:19 18:05	06:26 17:52-18:28/36 19:40	05:45 18:46-19:19/33 20:13	05:26 20:38
14	07:28 09:15-09:44/29 16:54 13:57-14:39/42	07:01 14:53-15:37/44 17:32	06:17 18:06	06:25 17:51-18:29/38 19:41	05:44 18:46-19:19/33 20:14	05:26 20:38
15	07:28 09:15-09:45/30 16:55 13:58-14:40/42	06:59 14:54-15:38/44 17:34	06:16 18:07	06:23 18:39-18:52/13 19:42 17:50-18:29/39	05:43 18:47-19:19/32 20:15	05:26 20:39
16	07:28 09:15-09:45/30 16:56 13:58-14:40/42	06:58 14:54-15:38/44 17:35	06:14 18:09	06:22 18:35-18:54/19 19:43 17:49-18:29/40	05:42 18:47-19:18/31 20:16	05:26 20:39
17	07:27 09:16-09:46/30 16:57 13:59-14:41/42	06:57 14:54-15:38/44 17:36	06:12 18:10	06:20 18:34-18:56/22 19:44 17:49-18:30/41	05:41 18:47-19:18/31 20:17	05:26 20:40
18	07:27 09:16-09:46/30 16:58 14:00-14:40/40	06:55 14:55-15:38/43 17:38	06:11 18:11	06:18 19:05-19:14/9 17:48-18:29/41 19:45 18:32-18:57/25	05:40 18:48-19:17/29 20:18	05:26 20:40
19	07:26 09:17-09:47/30 16:59 14:00-14:40/40	06:54 14:55-15:37/42 17:39	06:09 18:12	06:17 19:03-19:17/14 17:48-18:30/42 19:46 18:31-18:58/27	05:39 18:48-19:17/29 20:19	05:26 20:40
20	07:25 09:17-09:47/30 17:01 14:01-14:41/40	06:52 14:56-15:37/41 17:40	06:07 18:13	06:15 19:01-19:18/17 19:48 17:48-18:59/71	05:38 18:50-19:17/27 20:20	05:26 20:41
21	07:25 09:17-09:47/30 17:02 14:02-14:41/39	06:51 14:56-15:36/40 17:41	06:05 18:14	06:14 17:48-19:20/92 19:49	05:37 18:50-19:16/26 20:21	05:26 20:41
22	07:24 09:17-09:46/29 17:03 14:02-14:41/39	06:49 14:58-15:36/38 17:43	06:04 18:15	06:12 17:47-19:20/93 19:50	05:36 18:51-19:15/24 20:22	05:26 20:41
23	07:24 09:18-09:47/29 17:04 14:04-14:43/39	06:48 14:58-15:34/36 17:44	06:02 18:17	06:11 17:48-19:21/93 19:51	05:35 18:51-19:14/23 20:23	05:27 20:41
24	07:23 09:19-09:47/28 17:06 14:05-14:45/40	06:46 15:00-15:34/34 17:45	06:00 18:18	06:09 17:48-19:21/93 19:52	05:34 18:53-19:14/21 20:23	05:27 20:41
25	07:22 09:19-09:46/27 17:07 14:05-14:46/41	06:45 15:01-15:32/31 17:46	05:58 18:19	06:08 17:48-19:21/93 19:53	05:34 18:54-19:13/19 20:24	05:27 20:42
26	07:21 09:20-09:46/26 17:08 14:06-14:47/41	06:43 15:03-15:31/28 17:47	05:57 18:20	06:06 17:49-19:22/93 19:54	05:33 18:54-19:12/18 20:25	05:28 20:42
27	07:20 09:21-09:45/24 17:09 14:08-14:49/41	06:42 15:05-15:28/23 17:49	05:55 18:21	06:05 17:49-19:21/92 19:55	05:32 18:56-19:11/15 20:26	05:28 20:42
28	07:20 09:22-09:44/22 17:11 14:09-14:50/41	06:40 15:08-15:26/18 17:50	05:53 18:22	06:04 18:27-19:21/54 19:56 17:50-18:26/36	05:32 18:58-19:09/11 20:27	05:28 20:42
29	07:19 09:23-09:43/20 14:11-14:51/40 17:12 15:09-15:17/8	06:52 19:23	06:52 19:23	06:02 18:27-19:21/54 19:58 17:51-18:25/34	05:31 19:01-19:08/7 20:28	05:29 20:42
30	07:18 09:25-09:41/16 14:13-14:53/40 17:13 15:05-15:21/16	06:50 19:24	06:50 19:24	06:01 18:27-19:19/52 19:59 17:51-18:24/33	05:30 20:29	05:29 20:42
31	07:17 09:27-09:39/12 14:15-14:54/39 17:14 15:03-15:24/21	06:48 19:25	06:48 19:25		05:30 20:30	
Potential sun hours	295	296	369	400	451	455
Sum of minutes with flicker	2099	1317	8	1569	1069	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: WF Abruzzo shadow flikering real case WTG: AB06 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (6) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December
1	05:30	05:54 18:57-19:30/33	06:26 17:54-18:26/32	06:58	06:33 14:23-15:06/43	07:09 08:57-09:25/28
	20:41	20:22	19:37	18:45	16:57 14:02-14:13/11	16:32 13:39-14:21/42
2	05:30	05:55 18:57-19:30/33	06:28 17:55-18:25/30	06:59	06:35 14:25-15:06/41	07:10 08:57-09:25/28
	20:41	20:21	19:36	18:44	16:56 13:59-14:18/19	16:32 13:39-14:21/42
3	05:31	05:56 18:50-18:55/5	06:29 17:56-18:23/27	07:00	06:36 14:25-15:05/40	07:12 08:58-09:26/28
	20:41	20:19 18:57-19:30/33	19:34	18:42	16:55 13:56-14:19/23	16:31 13:40-14:21/41
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	20:41	20:18	19:32	18:40	16:54 13:54-14:21/27	16:31 13:40-14:21/41
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	20:23	19:39		16:59		16:40 13:52-14:27/35
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	428	2120	130	706	2028	1753

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: WF Abruzzo shadow flickering real case WTG: AB07 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (7) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

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

Project:

WF Abruzzo Shoadow flikering

Licensed user:

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

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:37/3.5.587

### SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flikering real caseWTG: AB08 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (8)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

#### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:30 16:41	07:16 17:16	06:39 17:51	07:20-07:42/22 19:27	06:47 20:00	05:30 20:30	05:30 20:41	05:55 20:22	06:27 19:37	06:58 18:45	06:33 16:57	07:09 16:32	
2	07:30 16:42	07:15 17:17	06:37 17:52	07:21-07:40/19 19:28	06:45 20:01	05:58 20:31	05:29 20:41	05:30 20:20	06:28 19:36	06:59 18:44	06:35 16:56	07:10 16:32	
3	07:30 16:43	07:14 17:19	06:36 17:54	07:24-07:38/14 19:29	06:43 20:02	05:57 20:32	05:29 20:41	05:31 20:19	05:57 19:34	06:29 18:42	07:00 16:55	07:11 16:32	
4	07:30 16:44	07:13 17:20	06:34 17:55	07:27-07:33/6 19:30	06:42 20:03	05:56 20:32	05:28 20:41	05:32 20:18	05:58 19:32	06:30 18:40	07:01 16:54	07:12 16:31	
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33	05:32 20:41	05:59 20:17	06:31 19:31	07:02 18:39	06:38 16:53	07:13 16:31	
6	07:30 16:45	07:10 17:22	06:31 17:57	06:38 19:32	05:53 20:05	05:28 20:34	05:33 20:40	06:00 20:16	06:32 19:29	07:03 18:37	06:40 16:51	07:14 16:31	
7	07:30 16:46	07:09 17:24	06:29 17:58	06:36 19:33	05:52 20:06	05:27 20:34	05:33 20:40	06:01 20:14	06:33 19:27	07:04 18:35	06:41 16:50	07:15 16:31	
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:34	05:51 20:07	05:27 20:35	05:34 20:40	06:02 20:13	06:34 19:25	07:06 18:34	06:42 16:49	07:16 16:31	
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:35	05:49 20:08	05:27 20:36	05:35 20:39	06:03 20:12	06:35 19:24	07:07 18:32	06:43 16:48	07:17 16:31	
10	07:30 16:49	07:06 17:28	06:24 18:02	06:32 19:37	05:48 20:09	05:27 20:36	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30	07:59-08:10/11 16:47	07:18 16:31	
11	07:29 16:51	07:04 17:29	06:22 18:03	06:30 19:38	05:47 20:10	05:26 20:37	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:29	07:56-08:13/17 16:46	07:19 16:31	
12	07:29 16:52	07:03 17:30	06:21 18:04	06:28 19:39	05:46 20:12	05:26 20:37	05:37 20:38	06:06 20:08	06:38 19:19	07:10 18:27	07:55-08:15/20 16:45	07:20 16:31	
13	07:29 16:53	07:02 17:31	07:38-07:42/4 18:05	06:19 19:40	06:27 20:13	05:45 20:38	05:26 20:37	05:38 20:07	06:39 19:17	07:11 18:25	07:53-08:16/23 16:44	07:21 16:31	
14	07:28 16:54	07:01 17:33	07:36-07:43/7 18:06	06:17 19:41	06:25 20:14	05:44 20:38	05:28 20:37	06:08 20:09	06:40 19:15	07:12 18:24	07:51-08:17/26 16:43	07:22 16:31	
15	07:28 16:55	06:59 17:34	07:34-07:45/11 18:08	06:16 19:42	06:59 20:15	05:43 20:39	05:26 20:36	06:09 20:04	06:41 19:13	07:13 18:22	07:50-08:18/28 16:42	07:22 16:31	
16	07:28 16:56	06:58 17:35	07:33-07:46/13 18:09	06:14 19:43	06:22 20:16	05:42 20:39	05:26 20:36	06:10 20:02	06:42 19:12	07:14 18:21	07:50-08:18/28 16:41	07:23 16:32	
17	07:27 16:57	06:57 17:36	07:30-07:46/16 18:10	06:12 19:44	06:20 20:17	05:41 20:40	05:26 20:35	06:11 20:01	06:43 19:10	07:16 18:19	07:52-08:19/27 16:40	07:24 16:32	
18	07:27 16:58	06:55 17:38	07:28-07:47/19 18:11	06:11 19:45	05:40 20:18	05:26 20:40	05:42 20:34	06:12 19:59	06:44 19:08	07:17 18:17	07:53-08:19/26 16:39	07:24 16:32	
19	07:26 17:00	06:54 17:39	07:26-07:47/21 18:12	06:09 19:46	06:17 20:19	05:39 20:40	05:26 20:34	06:13 19:58	06:45 19:06	07:18 18:16	07:54-08:19/25 16:39	07:25 16:33	
20	07:25 17:01	06:52 17:40	07:25-07:48/23 18:13	06:07 19:48	06:16 20:20	05:38 20:40	05:26 20:33	06:14 19:56	06:46 19:05	07:19 18:14	07:54-08:18/24 16:38	07:25 16:33	
21	07:25 17:02	06:51 17:41	07:24-07:47/23 18:14	06:05 19:49	06:14 20:21	05:37 20:41	05:27 20:32	06:15 19:55	06:47 19:03	07:20 18:13	07:55-08:18/23 16:37	07:26 16:33	
22	07:24 17:03	06:49 17:43	07:24-07:48/24 18:15	06:04 19:50	06:12 20:22	05:36 20:41	05:27 20:31	06:16 19:53	06:48 19:01	07:21 18:11	07:56-08:18/22 16:37	07:27 16:34	
23	07:23 17:05	06:48 17:44	07:22-07:47/25 18:17	06:02 19:51	06:11 20:22	05:36 20:41	05:27 20:30	06:17 19:52	06:49 18:59	07:23 18:10	07:57-08:18/21 16:36	07:27 16:34	
24	07:23 17:06	06:46 17:45	07:21-07:47/26 18:18	06:00 19:52	06:09 20:23	05:35 20:41	05:27 20:30	06:18 19:50	06:50 18:58	07:24 18:08	07:59-08:17/18 16:35	07:28 16:35	
25	07:22 17:07	06:45 17:46	07:19-07:46/27 18:19	05:59 19:53	06:08 20:24	05:34 20:41	05:28 20:29	06:19 19:49	06:52 18:56	06:25 17:07	07:00-07:16/16 16:35	07:28 16:36	
26	07:21 17:08	06:43 17:48	07:18-07:46/28 18:20	05:57 19:54	06:07 20:25	05:33 20:41	05:28 20:28	06:20 19:47	06:53 18:54	06:26 17:06	07:03-07:15/12 16:34	07:28 16:36	
27	07:20 17:10	06:42 17:49	07:18-07:45/27 18:21	05:55 19:55	06:05 20:26	05:33 20:42	05:28 20:27	06:21 19:45	06:54 18:52	06:27 17:04	07:04-07:14/10 16:34	07:29 16:37	
28	07:20 17:11	06:40 17:50	07:19-07:44/25 18:22	05:53 19:56	06:04 20:27	05:32 20:42	05:29 20:26	06:22 19:44	06:55 18:51	06:29 17:03	07:06-07:12/6 16:33	07:29 16:38	
29	07:19 17:12	06:39 17:49	07:18-07:43/24 18:23	05:52 19:57	06:02 20:28	05:31 20:41	05:29 20:25	06:24 19:42	06:56 18:49	07:09-07:11/2 17:01	07:07-07:11/2 16:33	07:29 16:38	
30	07:18 17:13	06:38 17:48	07:17-07:42/23 18:24	05:51 19:58	06:01 20:29	05:30 20:41	05:29 20:41	06:25 19:41	06:57 18:47	07:01 17:00	07:08 16:32	07:30 16:39	
31	07:17 17:15	06:37 17:47	07:16-07:41/22 18:25	05:50 19:59	06:00 20:29	05:29 20:41	05:28 20:23	06:26 19:39	06:57 18:47	07:02 16:59	07:09 16:40	07:30 16:40	
Potential sun hours	295	296	319	61	400	451	455	462	430	375	344	296	285
Sum of minutes with flicker	0	0	319	61	0	0	0	0	0	0	385	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: WF Abruzzo shadow flikering real caseWTG: AB09 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (9)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 08:27-09:18/51 16:41	07:16 08:58-09:04/6 17:16	06:39 17:51	06:47 07:29-08:02/33 19:27	06:00 20:00	05:30 20:30
2	07:30 08:27-09:19/52 16:42	07:15 17:17	06:37 17:52	06:45 07:29-08:03/34 19:28	05:58 20:01	05:29 20:31
3	07:30 08:28-09:19/51 16:43	07:14 17:19	06:36 17:54	06:43 07:27-08:03/36 19:29	05:57 20:02	05:29 20:32
4	07:30 08:28-09:19/51 16:44	07:13 17:20	06:34 17:55	06:42 07:25-08:03/38 19:30	05:56 20:03	05:28 20:32
5	07:30 08:29-09:20/51 16:44	07:12 17:21	06:32 17:56	06:40 07:24-08:03/39 19:31	05:54 20:04	05:28 20:33
6	07:30 08:29-09:20/51 16:45	07:10 17:22	06:31 17:57	06:38 07:22-08:03/41 19:32	05:53 20:05	05:28 20:34
7	07:30 08:30-09:21/51 16:46	07:09 17:24	06:29 17:58	06:36 07:20-08:02/42 19:33	05:52 20:06	05:27 20:35
8	07:30 08:30-09:21/51 16:47	07:08 17:25	06:27 18:00	06:35 07:19-08:02/43 19:34	05:51 20:07	05:27 20:35
9	07:30 08:30-09:21/51 16:48	07:07 17:26	06:26 18:01	06:33 07:17-08:02/45 19:35	05:49 20:08	05:27 20:36
10	07:30 08:31-09:22/51 16:49	07:06 17:28	06:24 18:02	06:32 07:15-08:01/46 19:37	05:48 20:09	05:27 20:36
11	07:29 08:31-09:21/50 16:51	07:05 17:29	06:22 18:03	06:30 07:14-08:01/47 19:38	05:47 20:11	05:26 20:37
12	07:29 08:32-09:22/50 16:52	07:03 17:30	06:21 18:04	06:28 07:14-07:59/45 19:39	05:46 20:12	05:26 20:37
13	07:29 08:33-09:22/49 16:53	07:02 17:31	06:19 18:05	06:27 07:13-07:58/45 19:40	05:45 20:13	05:26 20:38
14	07:28 08:33-09:22/49 16:54	07:01 17:33	06:17 18:06	06:25 07:14-07:58/44 19:41	05:44 20:14	05:26 20:38
15	07:28 08:34-09:22/48 16:55	06:59 17:34	06:16 18:08	06:23 07:14-07:56/42 19:42	05:43 20:15	05:26 20:39
16	07:28 08:34-09:22/48 16:56	06:58 17:35	06:14 18:09	06:22 07:15-07:56/41 19:43	05:42 20:16	05:26 20:39
17	07:27 08:35-09:23/48 16:57	06:57 17:36	06:12 18:10	06:20 07:16-07:54/38 19:44	05:41 20:17	05:26 20:40
18	07:27 08:36-09:22/46 16:58	06:55 17:38	06:11 18:11	06:19 07:17-07:53/36 19:45	05:40 20:18	05:26 20:40
19	07:26 08:36-09:22/46 17:00	06:54 17:39	06:09 18:12	06:17 07:18-07:51/33 19:47	05:39 20:19	05:26 20:40
20	07:25 08:37-09:22/45 17:01	06:52 17:40	06:07 18:13	06:16 07:19-07:50/31 19:48	05:38 20:20	05:26 20:41
21	07:25 08:38-09:21/43 17:02	06:51 17:41	06:05 18:14	06:14 07:20-07:47/27 19:49	05:37 20:21	05:27 20:41
22	07:24 08:39-09:21/42 17:03	06:49 17:43	06:04 18:15	06:12 07:23-07:45/22 19:50	05:36 20:22	05:27 20:41
23	07:23 08:40-09:21/41 17:05	06:48 17:44	06:02 06:43-06:47/4 18:17	06:11 07:25-07:42/17 19:51	05:36 20:23	05:27 20:41
24	07:23 08:41-09:20/39 17:06	06:46 17:45	06:00 06:41-06:52/11 18:18	06:09 07:30-07:37/7 19:52	05:35 20:23	05:27 20:41
25	07:22 08:42-09:19/37 17:07	06:45 17:46	05:59 06:39-06:55/16 18:19	06:08 19:53	05:34 20:24	05:28 20:41
26	07:21 08:43-09:18/35 17:08	06:43 17:48	05:57 06:39-06:57/18 18:20	06:07 19:54	05:33 20:25	05:28 20:41
27	07:20 08:45-09:17/32 17:10	06:42 17:49	05:55 06:37-06:59/22 18:21	06:05 19:55	05:33 20:26	05:28 20:42
28	07:20 08:46-09:16/30 17:11	06:40 17:50	05:53 06:35-07:00/25 18:22	06:04 19:56	05:32 20:27	05:29 20:42
29	07:19 08:48-09:14/26 17:12		06:52 07:35-08:01/26 19:23	06:02 19:58	05:31 20:28	05:29 20:42
30	07:18 08:50-09:12/22 17:13		06:50 07:33-08:02/29 19:24	06:01 19:59	05:31 20:29	05:29 20:41
31	07:17 08:53-09:09/16 17:15		06:48 07:31-08:02/31 19:26		05:30 20:29	
Potential sun hours	295	296	369	400	451	455
Sum of minutes with flicker	1353	6	182	872	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: WF Abruzzo shadow flikering real caseWTG: AB09 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (9)  
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80	5,80

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
733	385	394	221	472	700	656	620	316	486	1.348	1.344	7.675

	July	August	September	October	November	December
1	05:30 20:41	05:55 20:22	06:27 07:13-08:00/47 19:37	06:58 18:45	06:33 16:57	07:09 08:13-09:03/50 16:32
2	05:30 20:41	05:56 20:21	06:28 07:14-08:00/46 19:36	06:59 18:44	06:35 16:56	07:10 08:14-09:05/51 16:32
3	05:31 20:41	05:57 20:19	06:29 07:15-08:00/45 19:34	07:00 18:42	06:36 16:55	07:11 08:14-09:05/51 16:32
4	05:32 20:41	05:58 20:18	06:30 07:16-07:59/43 19:32	07:01 18:40	06:37 16:54	07:12 08:15-09:06/51 16:31
5	05:32 20:41	05:59 20:17	06:31 07:17-07:59/42 19:31	07:02 18:39	06:38 16:53	07:13 08:15-09:06/51 16:31
6	05:33 20:40	06:00 20:16	06:32 07:18-07:59/41 19:29	07:03 18:37	06:40 16:51	07:14 08:15-09:07/52 16:31
7	05:33 20:40	06:01 20:15	06:33 07:19-07:58/39 19:27	07:04 18:35	06:41 16:50	07:15 08:16-09:07/51 16:31
8	05:34 20:40	06:02 20:13	06:34 07:20-07:58/38 19:25	07:06 18:34	06:42 16:49	07:16 08:16-09:08/52 16:31
9	05:35 20:39	06:03 20:12	06:35 07:21-07:57/36 19:24	07:07 18:32	06:43 16:48	07:17 08:17-09:08/51 16:31
10	05:35 20:39	06:04 20:11	06:36 07:22-07:56/34 19:22	07:08 18:30	06:45 08:29-08:36/7 16:47	07:18 08:16-09:08/52 16:31
11	05:36 20:38	06:05 20:09	06:37 07:22-07:55/33 19:20	07:09 18:29	06:46 08:25-08:41/16 16:46	07:19 08:17-09:08/51 16:31
12	05:37 20:38	06:06 20:08	06:38 07:23-07:54/31 19:19	07:10 18:27	06:47 08:22-08:44/22 16:45	07:20 08:17-09:09/52 16:31
13	05:38 20:37	06:07 20:07	06:39 07:24-07:53/29 19:17	07:11 18:25	06:48 08:20-08:46/26 16:44	07:21 08:18-09:10/52 16:31
14	05:38 20:37	06:08 20:05	06:40 07:25-07:52/27 19:15	07:12 18:24	06:49 08:19-08:49/30 16:43	07:21 08:19-09:10/51 16:31
15	05:39 20:36	06:09 20:04	06:41 07:25-07:50/25 19:13	07:13 18:22	06:51 08:17-08:50/33 16:42	07:22 08:18-09:10/52 16:31
16	05:40 20:36	06:10 20:02	06:42 07:26-07:48/22 19:12	07:14 18:21	06:52 08:16-08:51/35 16:41	07:23 08:19-09:11/52 16:32
17	05:41 20:35	06:11 20:01	06:43 07:27-07:46/19 19:10	07:16 18:19	06:53 08:15-08:52/37 16:40	07:24 08:20-09:11/51 16:32
18	05:42 20:34	06:12 19:59	06:44 07:27-07:44/17 19:08	07:17 18:17	06:54 08:15-08:54/39 16:39	07:24 08:20-09:11/51 16:32
19	05:42 20:34	06:13 07:35-07:44/9 19:58	06:45 07:28-07:40/12 19:06	07:18 18:16	06:56 08:14-08:55/41 16:39	07:25 08:21-09:12/51 16:33
20	05:43 20:33	06:14 07:30-07:48/18 19:56	06:46 07:29-07:36/7 19:05	07:19 18:14	06:57 08:14-08:56/42 16:38	07:26 08:21-09:12/51 16:33
21	05:44 20:32	06:15 07:27-07:50/23 19:55	06:47 19:03	07:20 18:13	06:58 08:14-08:57/43 16:37	07:26 08:22-09:13/51 16:33
22	05:45 20:31	06:16 07:25-07:52/27 19:53	06:48 19:01	07:21 18:11	06:59 08:13-08:58/45 16:37	07:27 08:22-09:13/51 16:34
23	05:46 20:31	06:17 07:23-07:54/31 19:52	06:49 18:59	07:23 18:10	07:00 08:13-08:59/46 16:36	07:27 08:23-09:14/51 16:34
24	05:47 20:30	06:18 07:21-07:55/34 19:50	06:50 18:58	07:24 18:08	07:01 08:13-08:59/46 16:35	07:28 08:23-09:14/51 16:35
25	05:48 20:29	06:19 07:20-07:56/36 19:49	06:52 18:56	07:25 17:07	07:03 08:13-09:01/48 16:35	07:28 08:24-09:15/51 16:36
26	05:49 20:28	06:20 07:18-07:57/39 19:47	06:53 18:54	07:26 17:06	07:04 08:13-09:01/48 16:34	07:28 08:24-09:15/51 16:36
27	05:50 20:27	06:21 07:17-07:58/41 19:45	06:54 18:52	07:27 17:04	07:05 08:13-09:02/49 16:34	07:29 08:24-09:16/52 16:37
28	05:51 20:26	06:22 07:16-07:58/42 19:44	06:55 18:51	07:28 17:03	07:06 08:13-09:02/49 16:33	07:29 08:24-09:16/52 16:38
29	05:52 20:25	06:24 07:15-07:59/44 19:42	06:56 18:49	07:30 17:01	07:07 08:13-09:02/49 16:33	07:29 08:26-09:17/51 16:38
30	05:53 20:24	06:25 07:14-07:59/45 19:41	06:57 18:47	07:31 17:00	07:08 08:13-09:03/50 16:32	07:30 08:26-09:17/51 16:39
31	05:54 20:23	06:26 07:14-07:59/45 19:39		06:32 16:59		07:30 08:26-09:18/52 16:40
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	0	434	633	0	801	1590

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: WF Abruzzo shadow flickering real case WTG: AB10 - Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (10) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 08:41-09:29/48 10:36-10:56/20 16:41 09:37-10:05/28	07:16 17:16	06:39 17:51	06:46 19:26	05:59 20:00	05:29 20:30
2	07:30 08:42-09:29/47 10:38-10:55/17 16:41 09:39-10:04/25	07:15 17:17	06:37 17:52	06:45 19:28	05:58 20:01	05:29 20:31
3	07:30 08:43-09:29/46 10:41-10:52/11 16:42 09:40-10:03/23	07:14 17:18	06:35 17:53	06:43 19:29	05:57 20:02	05:28 20:32
4	07:30 08:44-09:29/45 16:43 09:42-10:02/20	07:13 17:20	06:34 17:55	06:41 19:30	05:55 20:03	05:28 20:32
5	07:30 08:45-09:28/43 16:44 09:45-10:01/16	07:12 17:21	06:32 17:56	06:40 19:31	05:54 20:04	05:28 20:33
6	07:30 08:47-09:28/41 16:45 09:48-09:58/10	07:10 17:22	06:31 16:53-16:54/1 17:57	06:38 19:32	05:53 20:05	05:27 20:34
7	07:30 08:48-09:28/40 16:46	07:09 17:23	06:29 16:52-16:54/2 17:58	06:36 19:33	05:52 20:06	05:27 20:35
8	07:30 08:49-09:27/38 16:47	07:08 17:25	06:27 16:51-16:54/3 17:59	06:35 19:34	05:50 20:07	05:27 20:35
9	07:30 08:50-09:26/36 16:48	07:07 17:26	06:26 16:52-16:56/4 18:01 16:49-16:50/1	06:33 19:35	05:49 20:08	05:26 20:36
10	07:30 08:52-09:26/34 16:49	07:06 17:27	06:24 16:51-16:56/5 18:02 16:48-16:50/2	06:31 19:36	05:48 20:09	05:26 20:36
11	07:29 08:54-09:24/30 16:50	07:04 17:29	06:22 16:48-16:57/9 18:03	06:30 19:38	05:47 20:10	05:26 20:37
12	07:29 08:57-09:23/26 16:51	07:03 17:30	06:21 16:49-16:58/9 18:04	06:28 19:39	05:46 20:12	05:26 20:37
13	07:29 09:00-09:21/21 16:52	07:02 17:31	06:19 16:48-16:59/11 18:05	06:26 19:40	05:45 20:13	05:26 20:38
14	07:28 09:07-09:17/10 16:54	07:01 17:32	06:17 16:48-16:59/11 18:06	06:25 19:41	05:44 20:14	05:26 20:38
15	07:28 15:20-15:22/2 16:55	06:59 17:34	06:16 16:48-16:59/11 18:07 06:35-06:38/3	06:23 19:42	05:43 20:15	05:26 20:39
16	07:28 15:21-15:24/3 16:56	06:58 17:35	06:14 16:50-17:01/11 18:09 06:33-06:41/8	06:22 19:43	05:42 20:16	05:26 20:39
17	07:27 15:22-15:28/6 16:57	06:57 17:36	06:12 16:50-17:01/11 18:10 06:31-06:43/12	06:20 19:44	05:41 20:17	05:26 20:40
18	07:27 15:23-15:31/8 16:58	06:55 17:37	06:10 16:50-17:01/11 18:11 06:29-06:43/14	06:18 19:45	05:40 20:18	05:26 20:40
19	07:26 15:24-15:34/10 16:59	06:54 17:39	06:09 16:51-17:02/11 18:12 06:28-06:45/17	06:17 19:46	05:39 20:19	05:26 20:40
20	07:25 15:26-15:37/11 17:01	06:52 17:40	06:07 16:52-17:02/10 18:13 06:26-06:45/19	06:15 19:48	05:38 20:20	05:26 20:41
21	07:25 15:27-15:40/13 17:02	06:51 17:41	06:05 16:52-17:03/11 18:14 06:24-06:45/21	06:14 19:49	05:37 20:21	05:26 20:41
22	07:24 15:28-15:43/15 17:03	06:49 17:42	06:04 16:52-17:03/11 18:15 06:22-06:44/22	06:12 19:50	05:36 20:22	05:26 20:41
23	07:23 15:29-15:47/18 17:04	06:48 17:44	06:02 16:53-17:04/11 18:16 06:21-06:45/24	06:11 19:51	05:35 20:22	05:27 20:41
24	07:23 15:32-15:51/19 17:06	06:46 17:45	06:00 16:54-17:05/11 18:18 06:19-06:44/25	06:09 19:52	05:34 20:23	05:27 20:41
25	07:22 15:34-15:52/18 17:07	06:45 17:46	05:58 16:55-17:05/10 18:19 06:18-06:43/25	06:08 19:53	05:34 20:24	05:27 20:41
26	07:21 15:37-15:49/12 17:08	06:43 17:47	05:57 16:56-17:05/9 18:20 06:19-06:42/23	06:06 19:54	05:33 20:25	05:28 20:42
27	07:20 17:09	06:42 17:49	05:55 16:58-17:01/3 06:19-06:40/21 18:21 17:04-17:07/3	06:05 19:55	05:32 20:26	05:28 20:42
28	07:19 17:11	06:40 17:50	05:53 16:59-17:01/2 18:22 06:20-06:38/18	06:03 19:56	05:32 20:27	05:28 20:42
29	07:19 17:12	06:42 17:50	05:52 07:21-07:35/14 19:23	06:02 19:57	05:31 20:28	05:29 20:42
30	07:18 17:13	06:42 17:50	05:50 07:23-07:33/10 19:24	06:01 19:59	05:30 20:29	05:29 20:41
31	07:17 17:14	06:42 17:50	05:48 19:25	06:01 19:59	05:30 20:29	05:29 20:41
Potential sun hours	295	296	369	400	451	455
Sum of minutes with flicker	810	0	470	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: WF Abruzzo shadow flikering real case WTG: AB10 - Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (10) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December		
1	05:30 20:41	05:54 20:22	06:26 19:37	06:58 18:45	17:27-17:37/10	06:33 16:57	07:09 16:32	08:36-09:06/30
2	05:30 20:41	05:55 20:20	06:27 19:36	06:59 18:44	17:27-17:36/9	06:35 16:56	07:10 16:31	08:36-09:08/32
3	05:31 20:41	05:56 20:19	06:29 19:34	07:00 18:42	17:26-17:34/8	06:36 16:55	07:11 16:31	08:35-09:10/35
4	05:31 20:41	05:57 20:18	06:30 19:32	07:01 18:40	17:28-17:33/5	06:37 16:53	07:12 16:31	08:34-09:11/37
5	05:32 20:41	05:58 20:17	06:31 19:30	07:02 18:38	17:29-17:33/4	06:38 16:52	07:13 16:31	08:33-09:13/40
6	05:32 20:40	05:59 20:16	06:32 19:29	07:03 18:37	17:29-17:31/2	06:40 16:51	07:14 16:31	08:33-09:14/41
7	05:33 20:40	06:00 20:14	06:33 19:27	07:04 18:35	17:29-17:30/1	06:41 16:50	07:15 16:31	08:32-09:15/43
8	05:34 20:40	06:01 20:13	06:34 19:25	07:05 18:33		06:42 16:49	07:16 16:30	08:32-09:17/45
9	05:34 20:39	06:02 20:12	06:35 19:24	07:07 18:32		06:43 16:48	07:17 16:30	08:32-09:18/46
10	05:35 20:39	06:04 20:11	06:36 19:22	07:08 18:30		06:44 16:47	07:18 16:30	08:31-09:18/47
11	05:36 20:38	06:05 20:09	06:37 19:20	07:09 18:28		06:46 16:46	07:19 16:31	08:31-09:19/48
12	05:36 20:38	06:06 20:08	06:38 19:18	07:10 18:27		06:47 16:45	07:20 16:31	08:32-09:20/48
13	05:37 20:37	06:07 20:07	06:39 19:17	07:11 18:25	07:15-07:23/8	06:48 16:44	07:21 16:31	08:32-09:21/49
14	05:38 20:37	06:08 20:05	06:40 19:15	07:12 18:24	07:12-07:26/14	06:49 16:43	07:21 16:31	08:32-09:22/50
15	05:39 20:36	06:09 20:04	06:41 19:13	07:13 18:22	17:49-17:51/2	06:51 16:42	07:22 16:31	08:32-09:22/50
16	05:40 20:36	06:10 20:02	06:42 19:11	07:14 18:20	17:43-17:54/11	06:52 16:41	07:23 16:31	08:32-09:23/51
17	05:40 20:35	06:11 20:01	06:43 19:10	07:16 18:19	17:45-17:49/4	06:53 16:40	07:24 16:32	08:33-09:24/51
18	05:41 20:34	06:12 19:59	06:44 19:08	07:17 18:17	17:50-17:55/5	06:54 16:39	07:24 16:32	08:33-09:24/51
19	05:42 20:34	06:13 19:58	06:45 19:06	07:18 18:16	07:07-07:29/20	06:55 16:38	07:25 16:32	08:33-09:25/52
20	05:43 20:33	06:14 19:56	06:46 19:04	07:19 18:14	17:43-17:54/11	06:57 16:38	07:26 16:33	08:33-09:25/52
21	05:44 20:32	06:15 19:55	06:47 19:03	07:20 18:13	07:07-07:31/24	06:58 16:37	07:26 16:33	08:34-09:26/52
22	05:45 20:31	06:16 19:53	06:48 19:01	07:21 18:11	17:39-17:50/11	06:59 16:36	07:27 16:34	08:34-09:26/52
23	05:46 20:30	06:17 19:52	06:49 18:59	07:23 18:10	07:08-07:31/23	07:00 16:36	07:27 16:34	08:35-09:27/52
24	05:47 20:30	06:18 19:50	06:50 18:57	07:24 18:08	17:35-17:46/11	07:01 16:35	07:28 16:35	08:35-09:27/52
25	05:48 20:29	06:19 19:49	06:51 18:56	07:25 17:07	17:37-17:48/11	07:03 16:34	07:28 16:35	08:36-09:28/52
26	05:48 20:28	06:20 19:47	06:52 18:54	07:26 17:05	17:34-17:45/11	07:04 16:34	07:28 16:36	08:37-09:28/51
27	05:49 20:27	06:21 19:45	06:54 18:52	07:27 17:04	17:33-17:44/11	07:05 16:33	07:29 16:37	08:37-09:28/51
28	05:50 20:26	06:22 19:44	06:55 18:50	07:29 17:03	17:31-17:42/11	07:06 16:33	07:29 16:37	08:38-08:57/9
29	05:51 20:25	06:23 19:42	06:56 18:49	07:30 17:01	17:30-17:41/11	07:07 16:33	07:29 16:38	08:39-09:29/50
30	05:52 20:24	06:24 19:41	06:57 18:47	07:31 17:00	17:29-17:40/11	07:08 16:32	07:30 16:39	08:40-09:29/49
31	05:53 20:23	06:25 19:39		07:32 16:59			07:30 16:40	08:40-09:29/49
Potential sun hours	462	430	375	344	296	285		
Sum of minutes with flicker	0	0	438	41	192	2911		

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

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

## SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flickering real case WTG: AB11 - Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (11) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	January	February	March	April	May	June
1	07:30 16:41	07:16 17:16	06:39 17:51	06:47 19:27	05:59 06:19-06:47/28 20:00	05:29 05:51-06:33/42 20:31
2	07:30 16:41	07:15 17:17	06:37 17:52	06:45 19:28	05:58 06:18-06:48/30 20:01	05:29 05:51-06:34/43 20:31
3	07:30 16:42	07:14 17:18	06:36 17:53	06:43 19:29	05:57 06:16-06:47/31 20:02	05:28 05:50-06:33/43 20:32
4	07:31 16:43	07:13 17:20	06:34 17:55	06:41 19:30	05:55 06:15-06:47/32 20:03	05:28 05:50-06:34/44 20:33
5	07:30 16:44	07:12 17:21	06:32 17:56	06:40 19:31	05:54 06:14-06:47/33 20:04	05:28 05:50-06:35/45 20:33
6	07:30 16:45	07:11 17:22	06:31 17:57	06:38 19:08-19:11/3 19:32	05:53 06:13-06:47/34 20:05	05:27 05:49-06:34/45 20:34
7	07:30 16:46	07:10 17:23	06:29 17:58	06:36 19:06-19:11/5 19:33	05:52 06:12-06:47/35 20:06	05:27 05:49-06:35/46 20:35
8	07:30 16:47	07:08 17:25	06:27 17:59	06:35 19:04-19:12/8 19:34	05:50 06:10-06:45/35 20:08	05:27 05:49-06:35/46 20:35
9	07:30 16:48	07:07 17:26	06:26 18:01	06:33 19:04-19:14/10 19:36	05:49 06:09-06:45/36 20:09	05:26 05:49-06:36/47 20:36
10	07:30 16:49	07:06 17:27	06:24 18:02	06:31 19:03-19:15/12 19:37	05:48 06:08-06:45/37 20:10	05:26 05:49-06:36/47 20:37
11	07:30 16:50	07:05 17:29	06:22 18:03	06:30 19:02-19:15/13 19:38	05:47 06:07-06:44/37 20:11	05:26 05:49-06:37/48 20:37
12	07:29 16:51	07:03 17:30	06:21 18:04	06:28 19:02-19:17/15 19:39	05:46 06:06-06:44/38 20:12	05:26 05:48-06:36/48 20:38
13	07:29 16:52	07:02 17:31	06:19 18:05	06:26 19:01-19:18/17 19:40	05:45 06:05-06:43/38 20:13	05:26 05:48-06:36/48 20:38
14	07:29 16:54	07:01 17:32	06:17 18:06	06:25 19:02-19:19/17 19:41	05:44 06:04-06:43/39 20:14	05:26 05:48-06:37/49 20:39
15	07:28 16:55	06:59 17:34	06:16 18:08	06:23 19:02-19:20/18 19:42	05:42 06:03-06:42/39 20:15	05:26 05:48-06:37/49 20:39
16	07:28 16:56	06:58 17:35	06:14 18:09	06:22 19:01-19:20/19 19:43	05:41 06:02-06:41/39 20:16	05:26 05:48-06:37/49 20:40
17	07:27 16:57	06:57 17:36	06:12 18:10	06:20 19:03-19:22/19 19:44	05:40 06:01-06:40/39 20:17	05:26 05:49-06:38/49 20:40
18	07:27 16:58	06:55 17:38	06:11 18:11	06:18 19:03-19:23/20 19:46	05:40 06:00-06:40/40 20:18	05:26 05:49-06:38/49 20:40
19	07:26 16:59	06:54 17:39	06:09 18:12	06:17 06:36-06:40/4 19:47	05:39 06:00-06:40/40 20:19	05:26 05:49-06:38/49 20:41
20	07:26 17:01	06:52 17:40	06:07 18:13	06:15 06:34-06:41/7 19:48	05:38 05:59-06:38/39 20:20	05:26 05:49-06:38/49 20:41
21	07:25 17:02	06:51 17:41	06:05 18:14	06:14 06:33-06:43/10 19:49	05:37 05:58-06:37/39 20:21	05:26 05:49-06:38/49 20:41
22	07:24 17:03	06:50 17:43	06:04 18:15	06:12 06:31-06:43/12 19:50	05:36 05:57-06:36/39 20:22	05:26 05:49-06:38/49 20:41
23	07:24 17:04	06:48 17:44	06:02 18:17	06:11 06:30-06:45/15 19:51	05:35 05:56-06:34/38 20:23	05:27 05:50-06:39/49 20:41
24	07:23 17:05	06:47 17:45	06:00 18:18	06:09 06:29-06:46/17 19:52	05:34 05:56-06:33/37 20:24	05:27 05:50-06:39/49 20:42
25	07:22 17:07	06:45 17:46	05:59 18:19	06:08 06:27-06:46/19 19:53	05:34 05:55-06:31/36 20:25	05:27 05:50-06:39/49 20:42
26	07:21 17:08	06:43 17:47	05:57 18:20	06:06 06:26-06:47/21 19:54	05:33 05:54-06:30/36 20:26	05:27 05:51-06:40/49 20:42
27	07:21 17:09	06:42 17:49	05:55 18:21	06:05 06:24-06:46/22 19:55	05:32 05:54-06:31/37 20:26	05:28 05:51-06:40/49 20:42
28	07:20 17:11	06:40 17:50	05:53 18:22	06:03 06:23-06:47/24 19:57	05:32 05:53-06:31/38 20:27	05:28 05:51-06:40/49 20:42
29	07:19 17:12		06:52 19:23	06:02 06:22-06:47/25 19:58	05:31 05:53-06:32/39 20:28	05:29 05:52-06:40/48 20:42
30	07:18 17:13		06:50 19:24	06:01 06:20-06:47/27 19:59	05:30 05:52-06:32/40 20:29	05:29 05:52-06:40/48 20:42
31	07:17 17:14		06:48 19:26		05:30 05:52-06:33/41 20:30	
Potential sun hours	295	296	369	400	451	456
Sum of minutes with flicker	0	0	0	481	1254	1423

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

## SHADOW - Calendar per WTG

Calculation: WF Abruzzo shadow flickering real case WTG: AB11 - Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (11) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80 5,80

### Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
733 385 394 221 472 700 656 620 316 486 1.348 1.344 7.675

	July	August	September	October	November	December
1	05:30 05:53-06:41/48	05:54 06:17-06:55/38	06:26 19:02-19:15/13	06:58	06:34	07:10
	20:42	20:22 19:48-19:58/10	19:37	18:45	16:57	16:32
2	05:30 05:53-06:40/47	05:55 06:18-06:55/37	06:28 19:02-19:13/11	06:59	06:35	07:11
	20:42	20:21 19:48-19:57/9	19:36	18:44	16:56	16:31
3	05:31 05:54-06:41/47	05:56 06:19-06:56/37	06:29 19:02-19:12/10	07:00	06:36	07:12
	20:41	20:20 19:48-19:56/8	19:34	18:42	16:55	16:31
4	05:31 05:54-06:41/47	05:57 06:20-06:56/36	06:30 19:02-19:10/8	07:01	06:37	07:13
	20:41	20:18 19:47-19:55/8	19:32	18:40	16:53	16:31
5	05:32 05:55-06:41/46	05:58 06:21-06:56/35	06:31 19:03-19:08/5	07:02	06:39	07:14
	20:41	20:17 19:47-19:54/7	19:31	18:39	16:52	16:31
6	05:32 05:55-06:41/46	05:59 06:22-06:56/34	06:32 19:04-19:07/3	07:03	06:40	07:15
	20:41	20:16 19:47-19:52/5	19:29	18:37	16:51	16:31
7	05:33 05:56-06:41/45	06:00 06:23-06:56/33	06:33	07:04	06:41	07:16
	20:40	20:15 19:47-19:51/4	19:27	18:35	16:50	16:30
8	05:34 05:57-06:41/44	06:01 06:24-06:57/33	06:34	07:06	06:42	07:17
	20:40	20:13 19:48-19:50/2	19:26	18:33	16:49	16:30
9	05:34 05:57-06:41/44	06:02 06:25-06:56/31	06:35	07:07	06:43	07:18
	20:40	20:12 19:48-19:49/1	19:24	18:32	16:48	16:30
10	05:35 05:58-06:41/43	06:04 06:26-06:56/30	06:36	07:08	06:45	07:18
	20:39	20:11	19:22	18:30	16:47	16:30
11	05:36 05:59-06:41/42	06:05 06:27-06:56/29	06:37	07:09	06:46	07:19
	20:39	20:09	19:20	18:28	16:46	16:30
12	05:36 06:00-06:42/42	06:06 06:28-06:56/28	06:38	07:10	06:47	07:20
	20:38	20:08	19:19	18:27	16:45	16:31
13	05:37 06:00-06:41/41	06:07 06:29-06:56/27	06:39	07:11	06:48	07:21
	20:38	20:07	19:17	18:25	16:44	16:31
14	05:38 06:01-06:41/40	06:08 06:30-06:55/25	06:40	07:12	06:50	07:22
	20:37	20:05	19:15	18:24	16:43	16:31
15	05:39 06:02-06:41/39	06:09 06:31-06:55/24	06:41	07:13	06:51	07:23
	20:37	20:04	19:13	18:22	16:42	16:31
16	05:40 06:03-06:41/38	06:10 06:32-06:54/22	06:42	07:15	06:52	07:23
	20:36	20:02	19:12	18:20	16:41	16:31
17	05:40 06:03-06:40/37	06:11 06:33-06:53/20	06:43	07:16	06:53	07:24
	20:35	20:01	19:10	18:19	16:40	16:32
18	05:41 06:04-06:40/36	06:12 06:34-06:52/18	06:44	07:17	06:55	07:25
	20:35	20:00 19:21-19:26/5	19:08	18:17	16:39	16:32
19	05:42 06:05-06:42/37	06:13 06:35-06:51/16	06:45	07:18	06:56	07:25
	20:34	19:58 19:17-19:29/12	19:06	18:16	16:38	16:32
20	05:43 06:06-06:44/38	06:14 06:36-06:50/14	06:46	07:19	06:57	07:26
	20:33	19:57 19:15-19:31/16	19:05	18:14	16:38	16:33
21	05:44 06:07-06:45/38	06:15 06:37-06:49/12	06:47	07:20	06:58	07:26
	20:32	19:55 19:13-19:32/19	19:03	18:13	16:37	16:33
22	05:45 06:08-06:47/39	06:16 06:38-06:47/9	06:48	07:22	06:59	07:27
	20:32	19:53 19:12-19:31/19	19:01	18:11	16:36	16:34
23	05:46 06:09-06:48/39	06:17 06:39-06:46/7	06:49	07:23	07:01	07:27
	20:31	19:52 19:11-19:29/18	18:59	18:10	16:36	16:34
24	05:47 06:09-06:48/39	06:18 06:40-06:44/4	06:50	07:24	07:02	07:28
	20:30	19:50 19:09-19:28/19	18:58	18:08	16:35	16:35
25	05:48 06:10-06:50/40	06:19 19:07-19:26/19	06:51	06:25	07:03	07:28
	20:29	19:49	18:56	17:07	16:34	16:35
26	05:48 06:11-06:51/40	06:20 19:05-19:25/20	06:53	06:26	07:04	07:29
	20:28	19:54-20:02/8	18:54	17:05	16:34	16:36
27	05:49 06:12-06:51/39	06:21 19:04-19:23/19	06:54	06:27	07:05	07:29
	20:27	19:52-20:02/10	18:52	17:04	16:33	16:37
28	05:50 06:13-06:52/39	06:22 19:03-19:22/19	06:55	06:29	07:06	07:29
	20:26	19:51-20:02/11	18:51	17:03	16:33	16:37
29	05:51 06:14-06:53/39	06:23 19:03-19:20/17	06:56	06:30	07:07	07:30
	20:25	19:50-20:01/11	18:49	17:01	16:32	16:38
30	05:52 06:15-06:54/39	06:24 19:02-19:18/16	06:57	06:31	07:09	07:30
	20:24	19:49-20:00/11	18:47	17:00	16:32	16:39
31	05:53 06:16-06:54/38	06:25 19:02-19:17/15		06:32		07:30
	20:23	19:49-19:59/10	19:39	16:59		16:39
Potential sun hours	462	430	375	344	296	285
Sum of minutes with flicker	1337	886	50	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 Abruzzo Shoadow flikering

Licensed user:

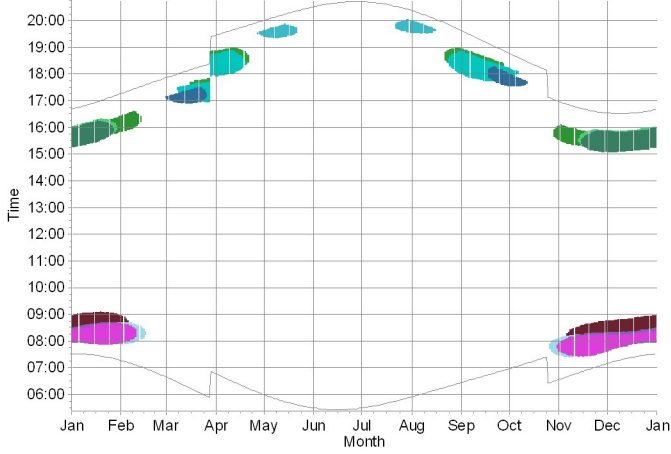
Ge.co.Dor srl  
Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:37/3.5.587

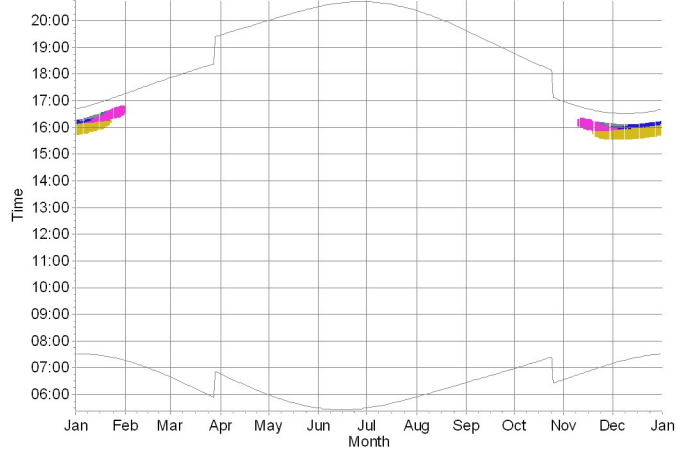
## SHADOW - Calendar per WTG, graphical

Calculation: WF Abruzzo shadow flikering real case

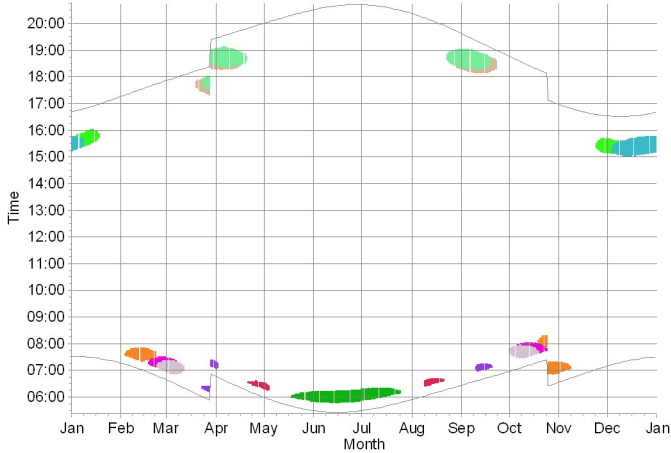
AB01: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 2



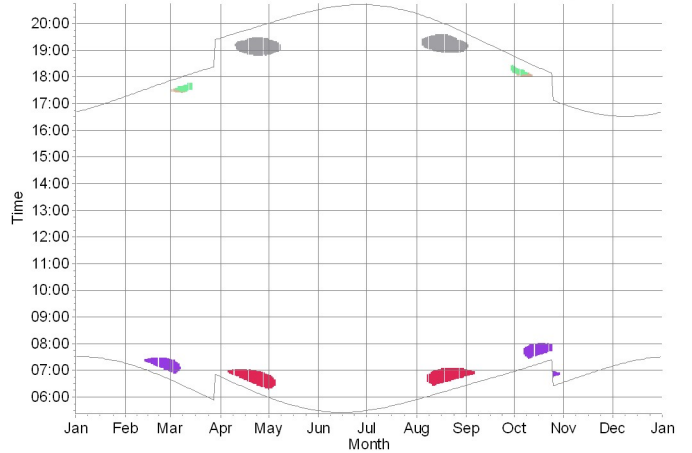
AB02: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m)



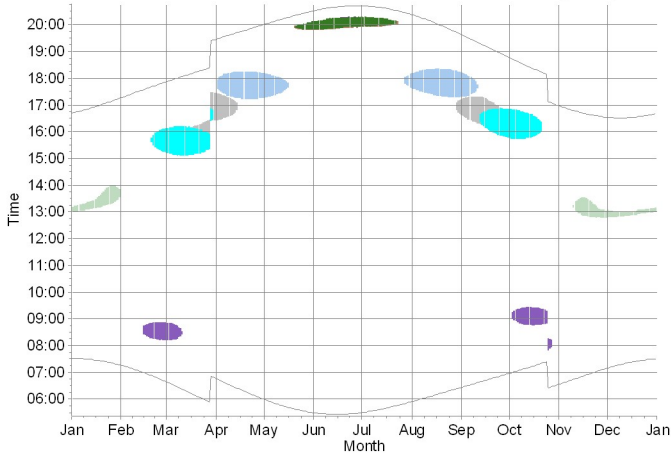
AB03: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 2



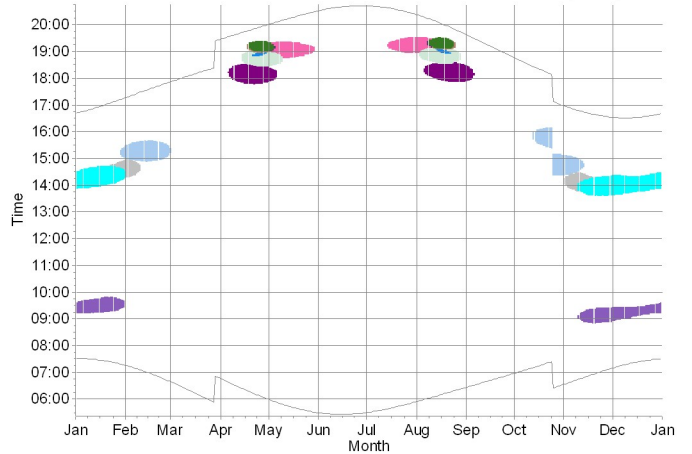
AB04: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m)



AB05: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 2



AB06: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m)



Shadow receptors

- R017: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (82)
- R047: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (92)
- R080: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (102)
- R155: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (124)
- R020: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (83)
- R049: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (93)
- R082: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (103)
- R159: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (125)
- R023: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (84)
- R054: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (94)
- R084: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (104)
- R185: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (131)
- R024: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (85)
- R056: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (95)
- R085: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (105)
- R186: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (132)
- R025: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (86)
- R061: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (96)
- R088: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (106)
- R189: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (133)
- R028: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (87)
- R066: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (98)
- R089: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (108)
- R190: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (134)
- R031: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (88)
- R067: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (99)
- R099: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (109)
- R191: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (135)
- R039: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (89)
- R067: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (99)
- R126: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (116)
- R192: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (136)
- R040: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (90)
- R067: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (99)
- R129: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (117)
- R046: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (91)
- R079: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (101)

Project:

WF Abruzzo Shoadow flikering

Licensed user:

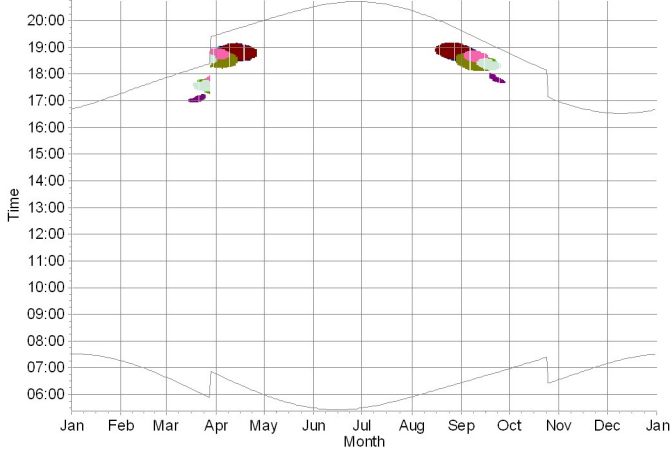
Ge.co.Dor srl  
Via G. Garibaldi, 15  
IT-74023 Grottaglie (TA)

Gaetano D'Oronzio / info@gecodor.it  
Calculated:  
15/11/2023 18:37/3.5.587

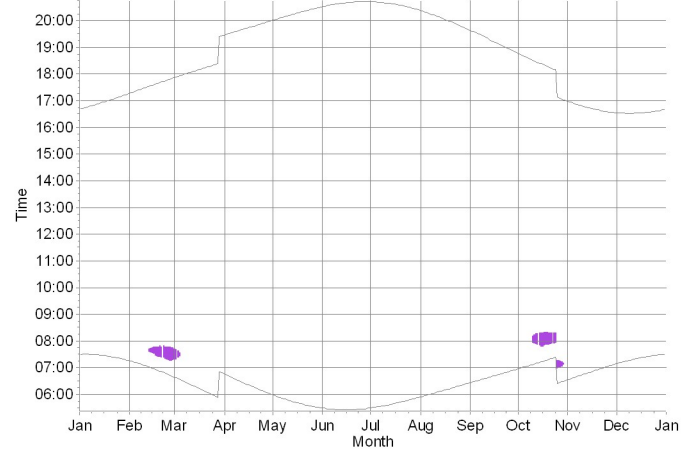
## SHADOW - Calendar per WTG, graphical

Calculation: WF Abruzzo shadow flikering real case

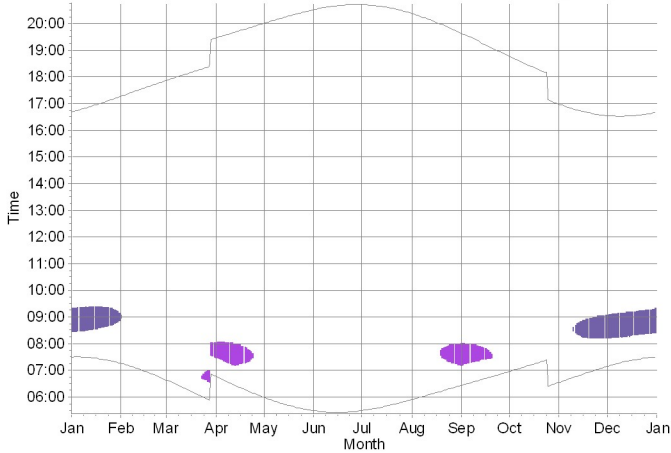
AB07: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 2



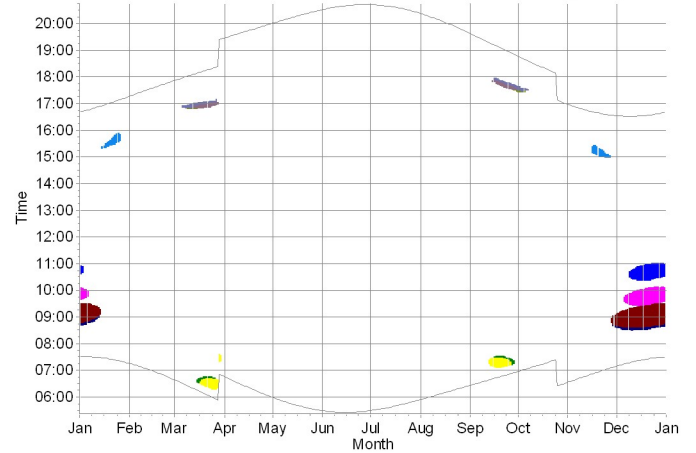
AB08: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m)



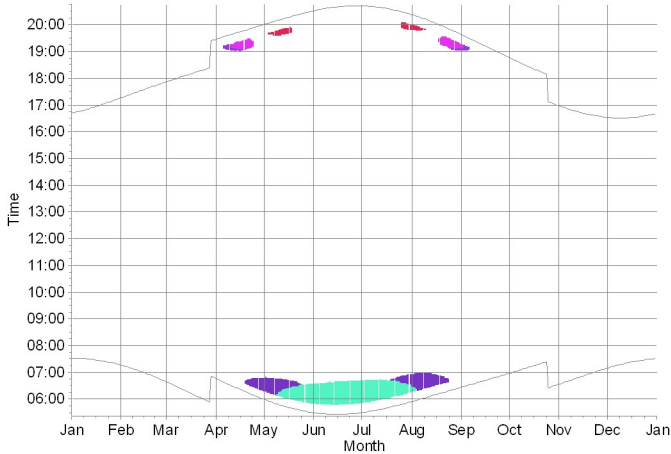
AB09: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 2



AB10: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m)



AB11: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (11)

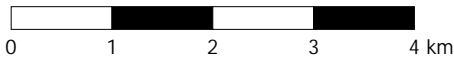
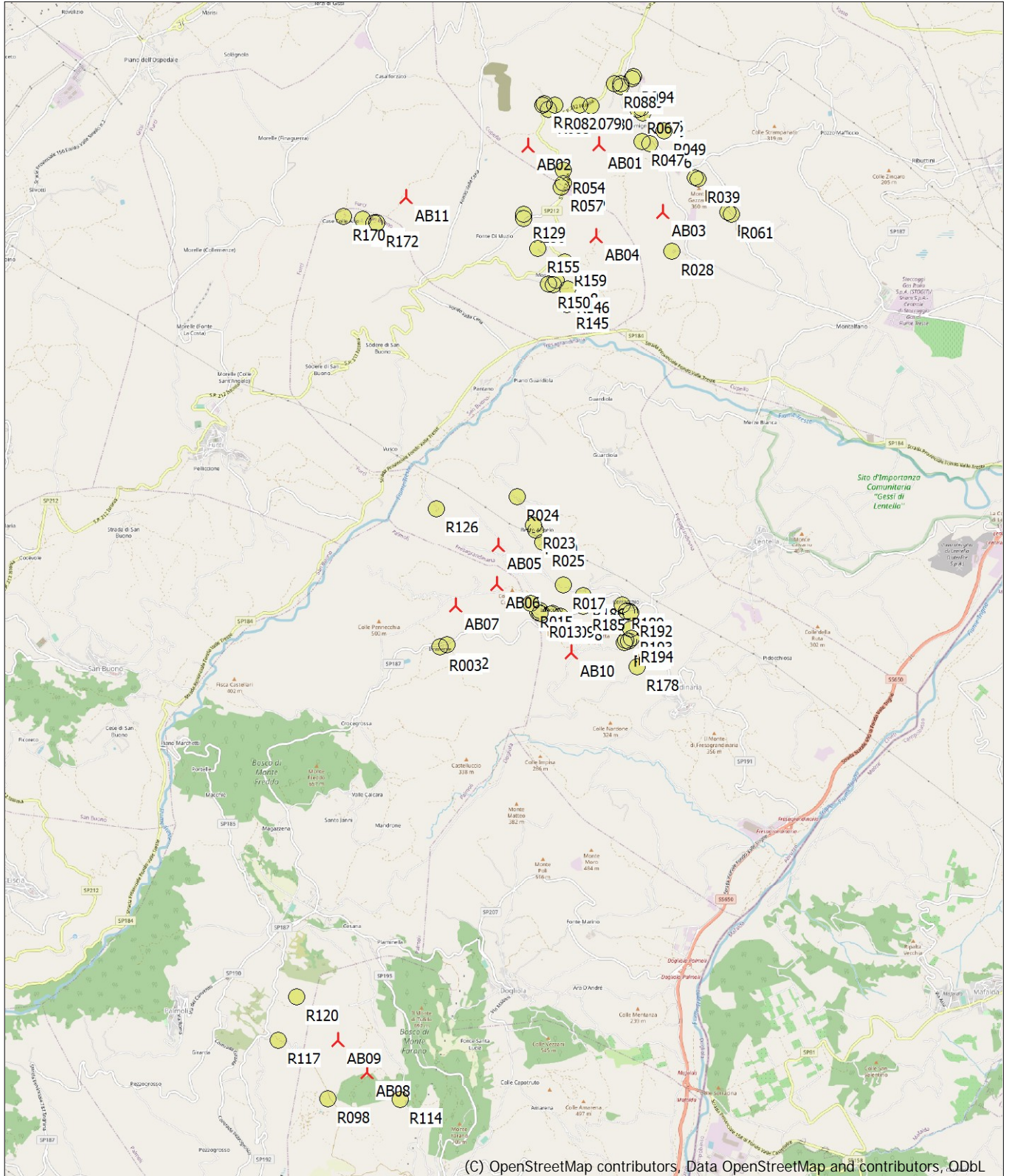


Shadow receptors

R002: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (72)	R012: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (78)	R120: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (115)	R185: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (131)
R003: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (73)	R013: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (79)	R129: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (117)	R186: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (132)
R008: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (74)	R015: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (80)	R130: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (118)	R188: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (133)
R009: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (75)	R016: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (81)	R155: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (124)	R194: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (138)
R010: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (76)	R017: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (82)	R170: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (126)	R197: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (140)
R011: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (77)	R117: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (114)	R171: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (127)	R198: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 0.0° (141)

## SHADOW - Map

Calculation: WF Abruzzo shadow flikering real case



Map: EMD OpenStreetMap , Print scale 1:75.000, Map center Geo WGS84 East: 14,634950° E North: 41,990435° N

New WTG

Shadow receptor

Flicker map level: Elevation Grid Data Object: WF Abruzzo Shoadow flikering\_EMDGrid\_0.wpg (1)