

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



**REGIONE
BASILICATA**

Progetto Definitivo

Parco Eolico Albano

Titolo elaborato:

Studio sugli effetti dello shadow flickering

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PROPONENTE



CLEAN ENERGY 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
ALSA122

Formato A4

Scala

Foglio 1 di 150

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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 "Albano" 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 54 MW ed è costituito da 9 aerogeneratori, ciascuno 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 cavi interrati in Media Tensione a 33 kV che convogliano l'elettricità presso una Stazione Elettrica Utente (SEU) di trasformazione 36/33 kV, collegata alla Stazione Elettrica (SE) 150/36 kV della Rete di Trasmissione Nazionale (RTN) Terna di Brindisi Montagna attraverso 2 cavi interrati a 36 kV.

L'impianto interessa prevalentemente i Comuni Albano di Lucania (PZ), dove ricadono 6 aerogeneratori, Tricarico (MT), dove ricadono 3 aerogeneratori, e il Comune di Brindisi Montagna, dove sono ubicate la SEU 36/33 kV e la SE della RTN Terna 150/36 kV (**Figura 2.1**).

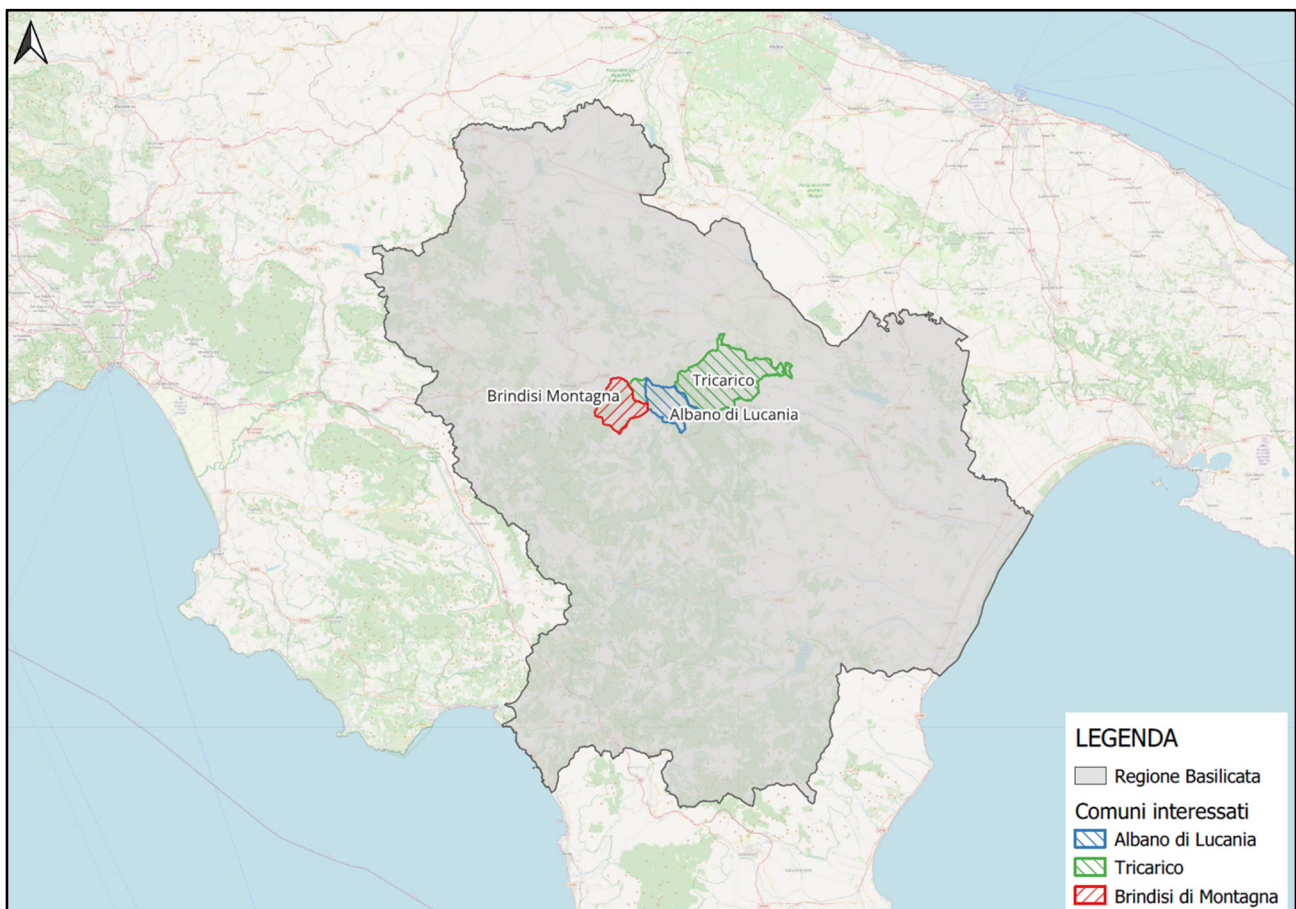


Figura 2.1: Inquadramento territoriale - Limiti amministrativi comuni interessati

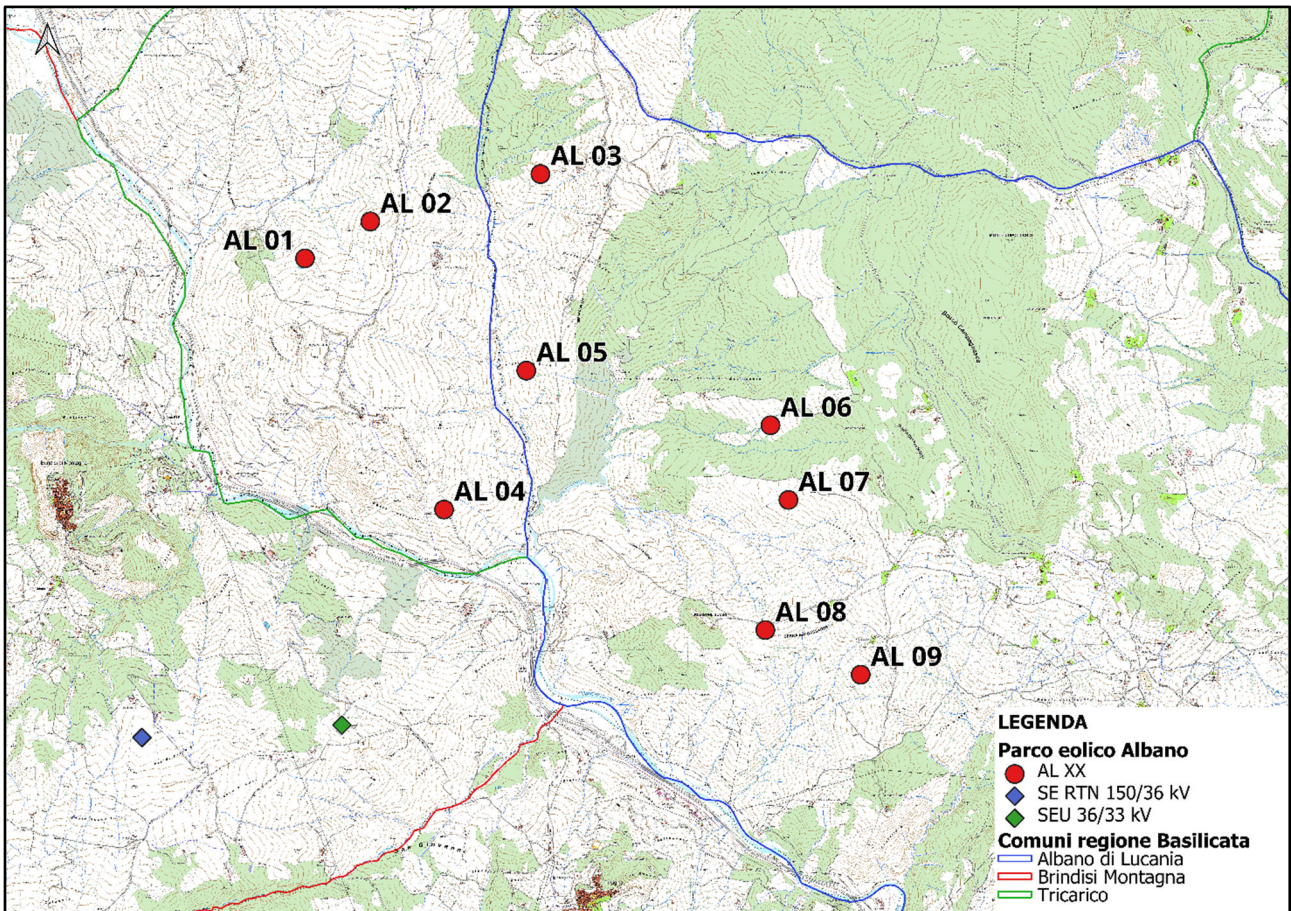


Figura 2.2: Layout d'impianto su CTR con i limiti amministrativi dei comuni interessati

Il parco eolico può essere inteso come suddiviso in due parti (**Figura 2.3**): la zona 1, ricadente nel territorio comunale di Tricarico (MT) e in parte nella zona occidentale del Comune di Albano di Lucania, costituita da 5 WTG (AL01, AL02, AL03, AL04, AL05), e la zona 2, ricadente interamente nel comune di Albano di Lucania a Nord - Ovest del centro abitato, costituita da 4 WTG (AL06, AL07, AL08, AL09).

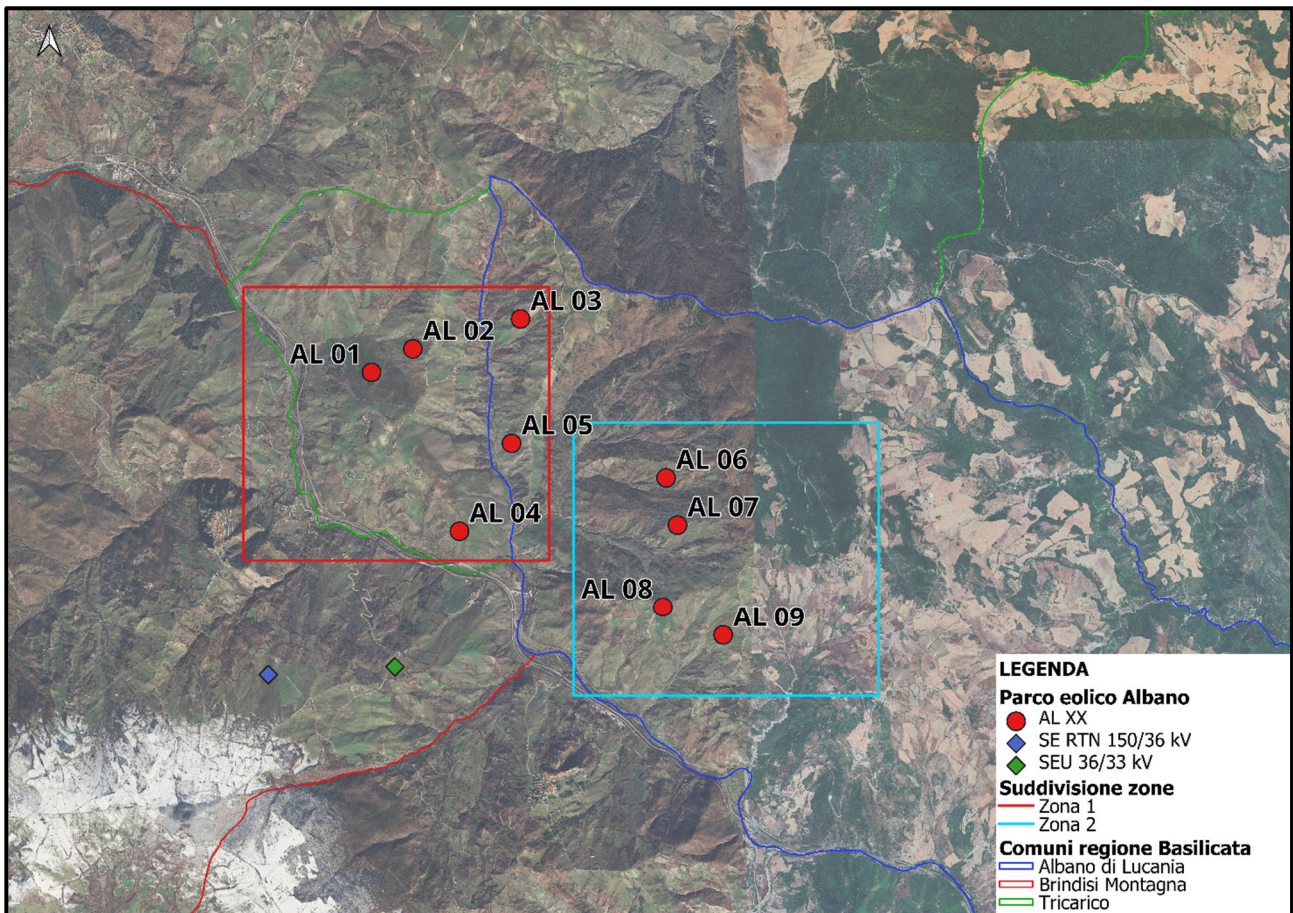


Figura 2.3: Layout d’impianto su ortofoto suddiviso in zone: Zona 1 (rettangolo rosso) e Zona 2 (rettangolo ciano)

Le turbine eoliche sono collegate mediante un sistema di linee elettriche interrate 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.

La SEU 36/33 kV è posizionata in prossimità del punto di connessione finale alla RTN, a Sud-Ovest rispetto alle citate due zone, ed è a sua volta collegata alla nuova SE della RTN Terna 150/36 kV, ubicata nel Comune di Brindisi di Montagna, mediante un sistema di 2 linee elettriche interrate a 36 kV.

La Soluzione Tecnica Minima Generale elaborata da Terna (CP 202101863) prevede che l’impianto eolico in progetto venga collegato in antenna a 36 kV sulla suddetta Stazione Elettrica della RTN a 150/36 kV, di futura realizzazione e da inserire in entra - esce alla linea RTN a 150 kV "Potenza Est - Salandra", previa realizzazione dei seguenti interventi:

- nuovo elettrodotto RTN a 150 kV tra le SSE Vaglio RT e la SE RTN a 150 kV “Vaglio”, come previsto dal Piano di Sviluppo Terna (intervento 532-P);

- raccordi della linea RTN a 150 kV “Campomaggiore-Salandra” alla SE RTN a 380/150 kV “Garaguso”, come previsto dal Piano di Sviluppo Terna (intervento 510-P);
- potenziamento/rifacimento della linea RTN a 150 kV "Potenza Est - Salandra", nel tratto compreso tra la CP Potenza Est e i raccordi suddetti, e rimozione dei relativi elementi limitanti.

La consegna in sito dei componenti degli aerogeneratori avverrà mediante l'utilizzo di mezzi di trasporto eccezionali, tra cui anche il blade lifter, al fine di ridurre gli impatti sui movimenti terra.

Il percorso ipotizzato prevede di partire dal Porto di Taranto ed arrivare in sito passando per la E90, la SP3, la SS7, la SS655, la SS96bis, la SP123 SP96 e la SS7 (**Figura 2.4**).



Figura 2.4: Layout d’impianto con viabilità di accesso dal Porto di Taranto (linee rosse) su immagine satellitare

Per maggiori dettagli si veda l’elaborato “ALEG024 Relazione viabilità di accesso al cantiere (road survey)”

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.

Il progetto prevede l’installazione di un aerogeneratore modello Siemens Gamesa SG170, di potenza nominale pari a 6,0 MW, 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.

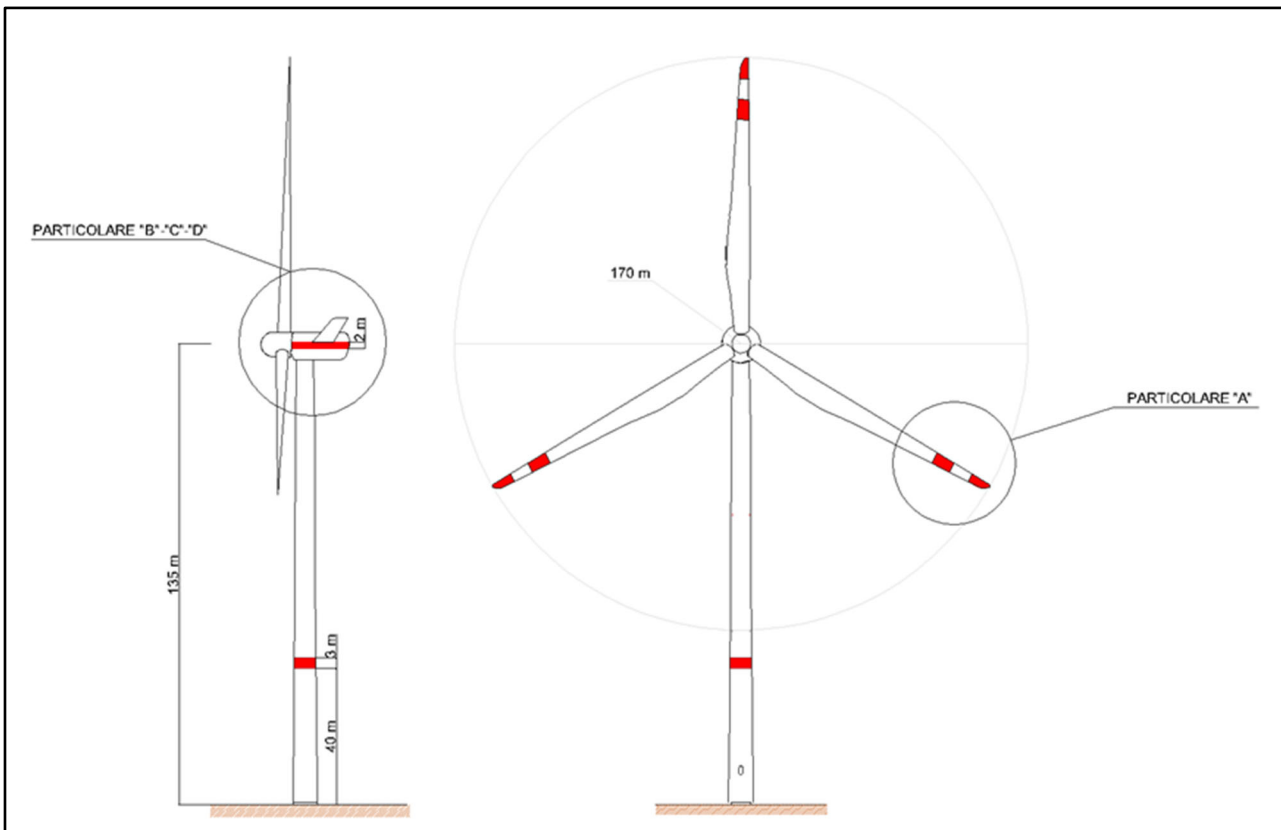


Figura 2.1.1: Profilo aerogeneratore SG170 – 6,0 MW – HH = 135 m – D = 170 m

Rotor		Grid Terminals (LV)	
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 ²	Yaw System	
Power regulation.....	Pitch & torque regulation with variable speed	Type.....	Active
Rotor tilt.....	6 degrees	Yaw bearing.....	Externally geared
Blade		Yaw drive.....	Electric gear motors
Type.....	Self-supporting	Yaw brake.....	Active friction brake
Single piece blade length	83,3 m	Controller	
Segmented blade length:		Type.....	Siemens Integrated Control System (SICS)
Inboard module.....	68,33 m	SCADA system.....	Consolidated SCADA (CSSS)
Outboard module.....	15,04 m	Tower	
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) Semi-gloss, < 30 / ISO2813	Corrosion protection.....	
Surface gloss.....	Light grey, RAL 7035 or	Surface gloss.....	Painted
Surface color.....	White, RAL 9018	Color.....	Semi-gloss, <30 / ISO-2813 Light grey, RAL 7035 or White, RAL 9018
Aerodynamic Brake		Operational Data	
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)
Load-Supporting Parts		Cut-out wind speed.....	25 m/s
Hub.....	Nodular cast iron	Restart wind speed.....	22 m/s
Main shaft.....	Nodular cast iron	Weight	
Nacelle bed frame.....	Nodular cast iron	Modular approach.....	Different modules depending on restriction
Mechanical Brake			
Type.....	Hydraulic disc brake		
Position.....	Gearbox rear end		
Nacelle Cover			
Type.....	Totally enclosed		
Surface gloss.....	Semi-gloss, <30 / ISO2813		
Color.....	Light Grey, RAL 7035 or White, RAL 9018		
Generator			
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.

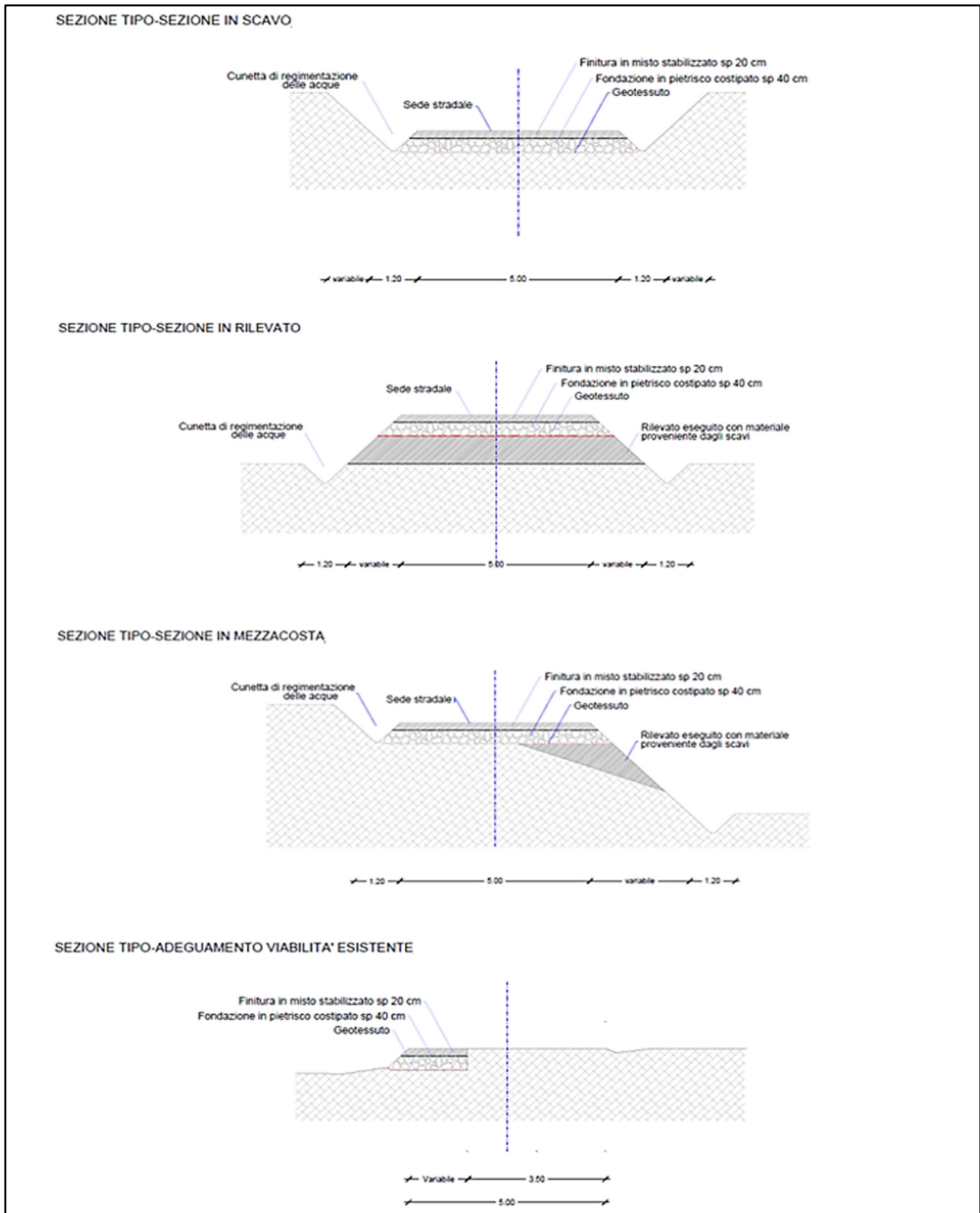


Figura 2.2.1: Sezioni tipo viabilità parco eolico

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**).

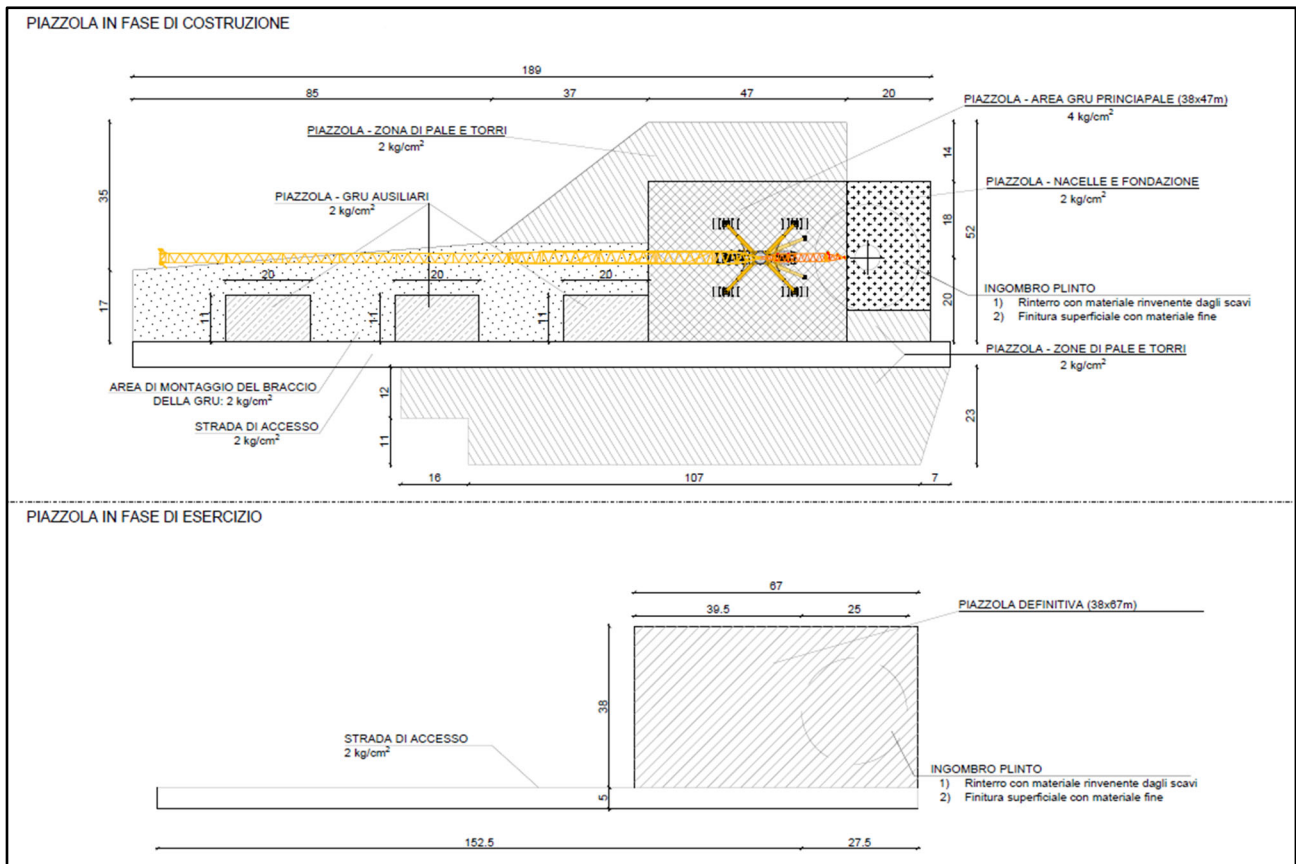


Figura 2.2.2: Planimetria piazzola tipo per la fase di installazione e fase di esercizio e manutenzione

3. CARATTERISTICHE PRINCIPALI DEL PARCO EOLICO

L'impianto eolico sarà costituito essenzialmente da 9 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 "ALEG011 Piano Particellare di esproprio descrittivo".

4. FENOMENO DI SHADOW FLIKERING

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**.

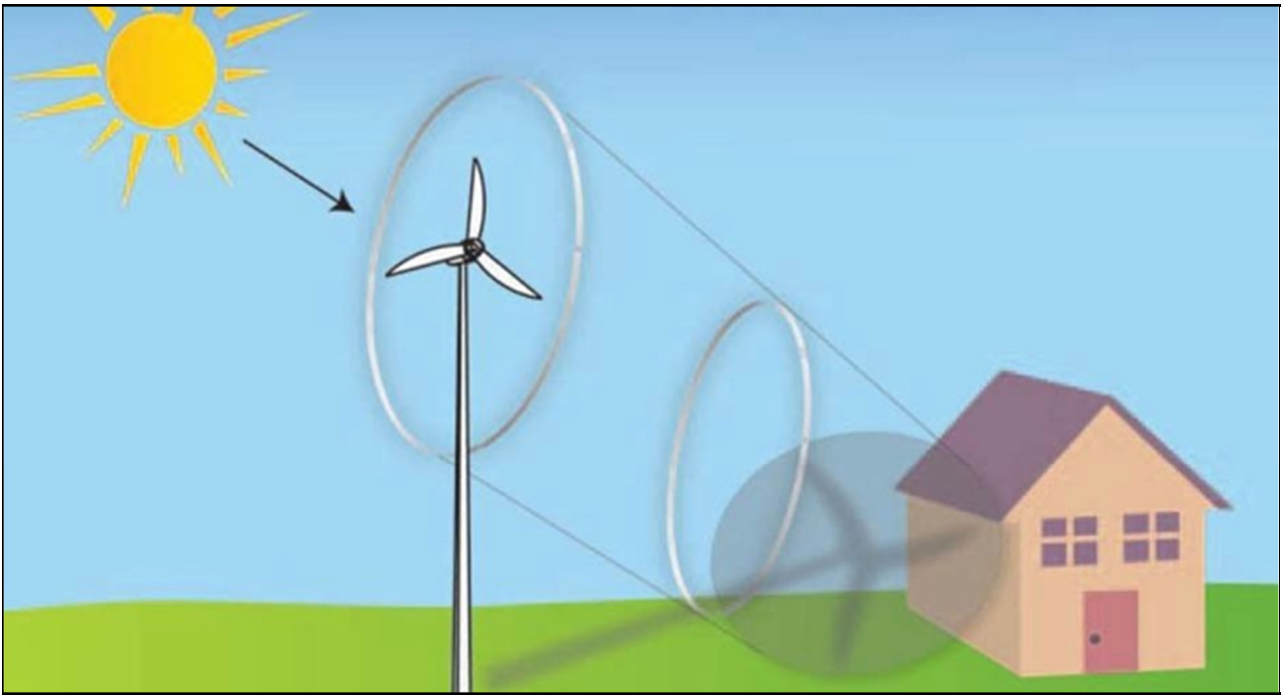


Figura 4.1: Ombre proiettate dalle pale in rotazione di una turbina

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 finestre 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, azimuth ed altezza.

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

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

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

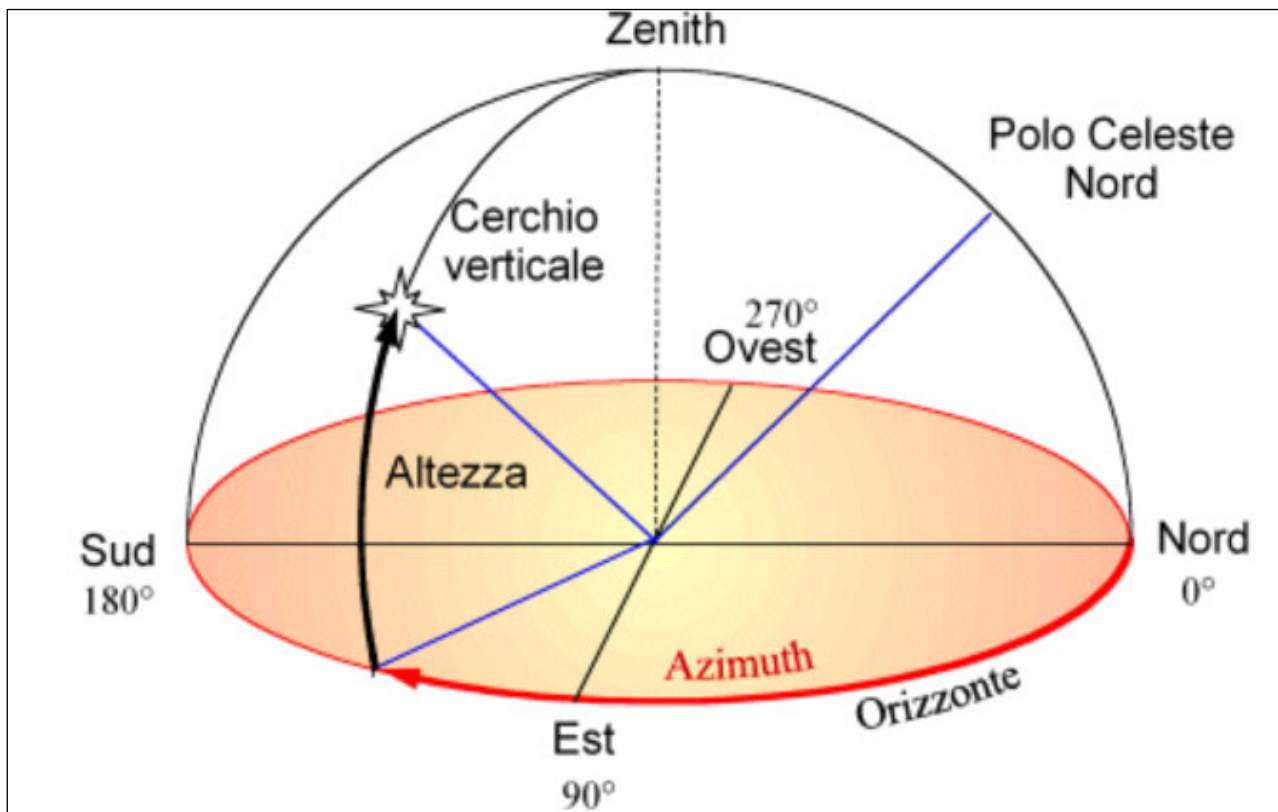


Figura 4.2: Coordinate azimuth ed altezza per identificare la posizione del sole

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

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

5. RIFERIMENTI NORMATIVI

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

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

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

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

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

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

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

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

6. IPOTESI E METODO DI CALCOLO

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

Nell'analisi condotta sono stati considerati 9 aerogeneratori di nuova realizzazione e relativi al progetto del Parco Eolico Albano.

Gli aerogeneratori di progetto hanno un'altezza al mozzo di 135 m, diametro del rotore di 170 m, potenza nominale di 6 MW e 8,8 giri al minuto (RPM nominale).

La verifica è stata effettuata in corrispondenza di 27 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						
R1	40.603950°	16.018147°	Albano di Lucania	AL09	793	15	77	catasto terreni
R10	40.602142°	16.013265°	Albano di Lucania	AL08	587	15	85	A03
R12	40.611973°	16.016502°	Albano di Lucania	AL07	669	10	106	A02
R17	40.611050°	16.017800°	Albano di Lucania	AL07	747	10	175	A03
R18	40.611389°	16.017800°	Albano di Lucania	AL07	755	10	176; 177	C02
R19	40.618515°	16.015594°	Albano di Lucania	AL06	781	5	30	A02

Ricettore	Coordinate UTM WGS 84, 33°		Comune	WTG più vicina	Distanza WTG più vicina	Foglio	Particella	Stato accatastamento
	Latitudine	Longitudine						
R20	40.636639°	15.964989°	Tricarico	AL02	786	78	257	A03
R26	40.639126°	15.989817°	Albano di Lucania	AL03	676	1	74	A04
R30	40.632791°	15.992025°	Albano di Lucania	AL03	555	3	43	A02
R31	40.631904°	15.991698°	Albano di Lucania	AL03	560	3	52	A04
R33	40.630617°	15.991255°	Albano di Lucania	AL03	602	3	55	A03
R35	40.630092°	15.990959°	Albano di Lucania	AL03	615	3	50	catasto terreni
R36a	40.630132°	15.990467°	Albano di Lucania	AL03	585	3	49	A03
R41	40.624369°	15.988079°	Albano di Lucania	AL05	642	9	64	A02
R43	40.627852°	15.975661°	Tricarico	AL02	590	80	113	A03
R44	40.627280°	15.975523°	Tricarico	AL02	619	80	113	A03
R45	40.622458°	15.962136°	Tricarico	AL01	587	79	248	A02
R49	40.617471°	16.000694°	Albano di Lucania	AL06	618	10	166	A02
R56	40.607453°	16.020663°	Albano di Lucania	AL07	1006	10	149	A03
R66	40.601916°	15.980616°	Brindisi di Montagna	AL04	904	20	287	A04
R67	40.603212°	15.984129°	Brindisi di Montagna	AL04	955	20	231	A06
R78	40.616246°	15.970328°	Tricarico	AL04	903	80	127; 128; 129	C02
R79	40.616293°	15.969877°	Tricarico	AL04	930	80	74	A04
R81	40.616195°	15.968252°	Tricarico	AL04	1008	80	112	A03
R88	40.629878°	15.957456°	Tricarico	AL01	532	79	169	A03
R93	40.634178°	15.997455°	Albano di Lucania	AL03	1001	4	91	A02
R95	40.631855°	15.997136°	Albano di Lucania	AL03	1000	4	142	A04

Tabella 6.1: Ricettori oggetto di verifica

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

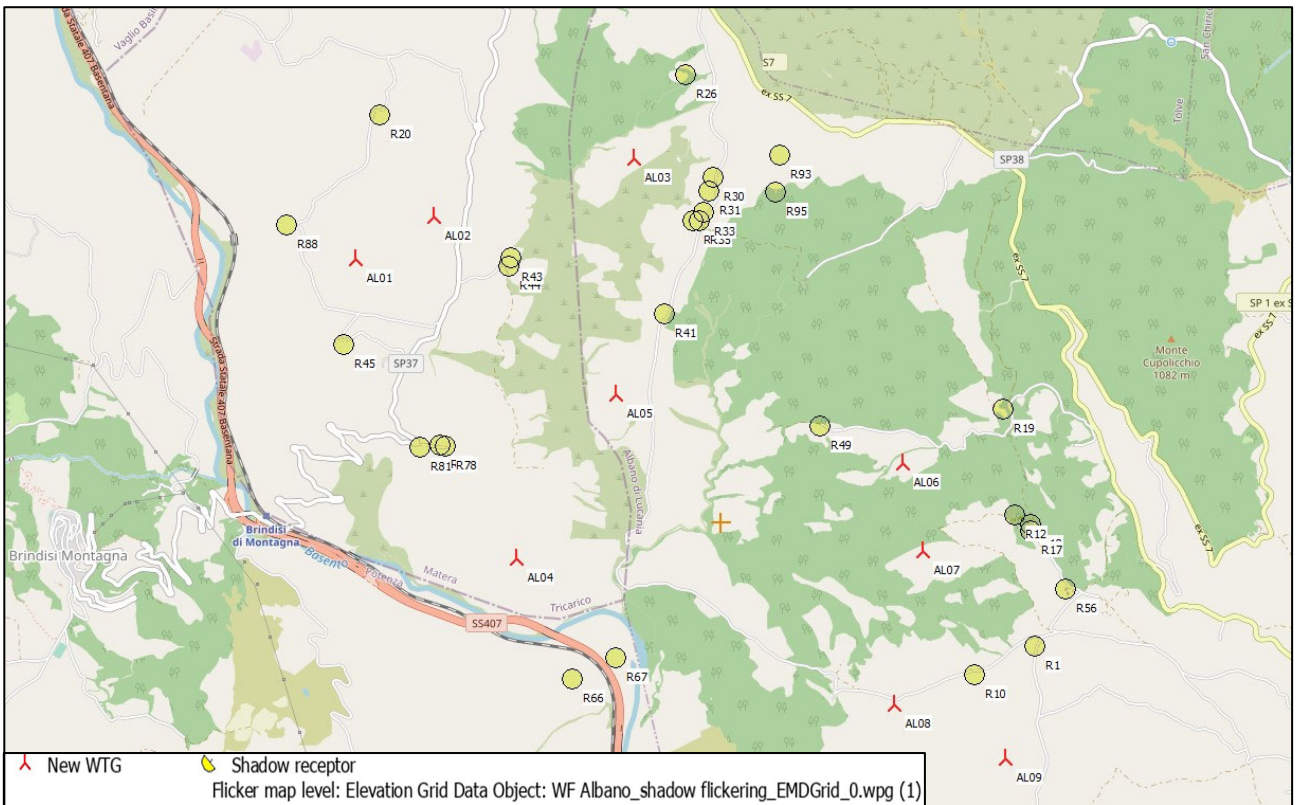


Figura 6.1: Localizzazione dei ricettori rispetto agli aerogeneratori di progetto

Il software impiegato per effettuare la verifica di sicurezza all'effetto shadow flickering è il WindPRO versione 4.0.

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

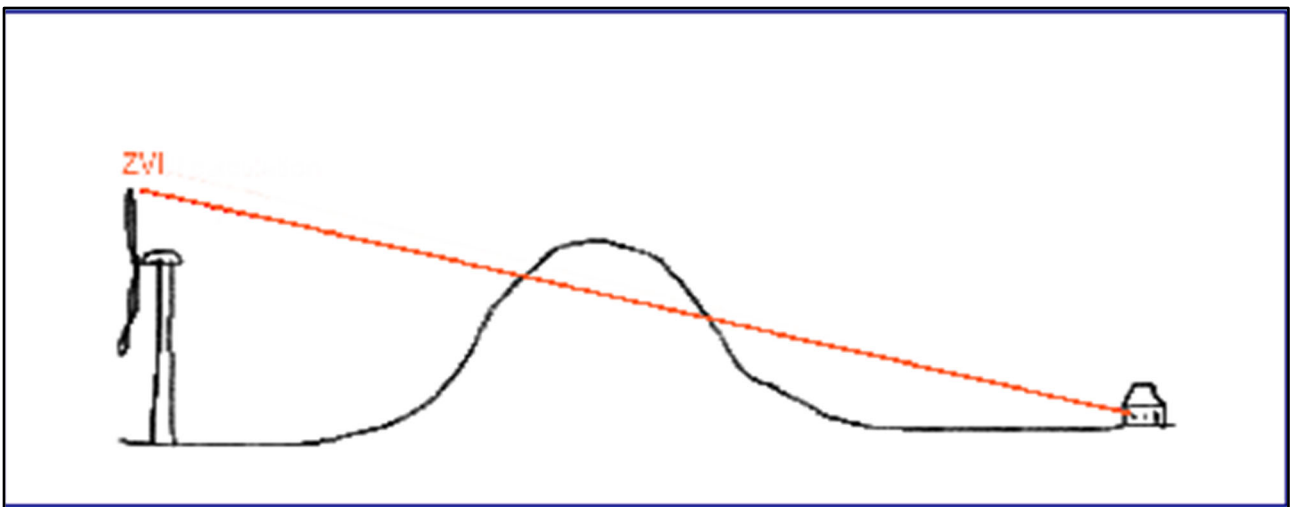


Figura 6.2: Impatto della ZVI, l'orografica del territorio può rendere non visibile l'aerogeneratore al ricettore

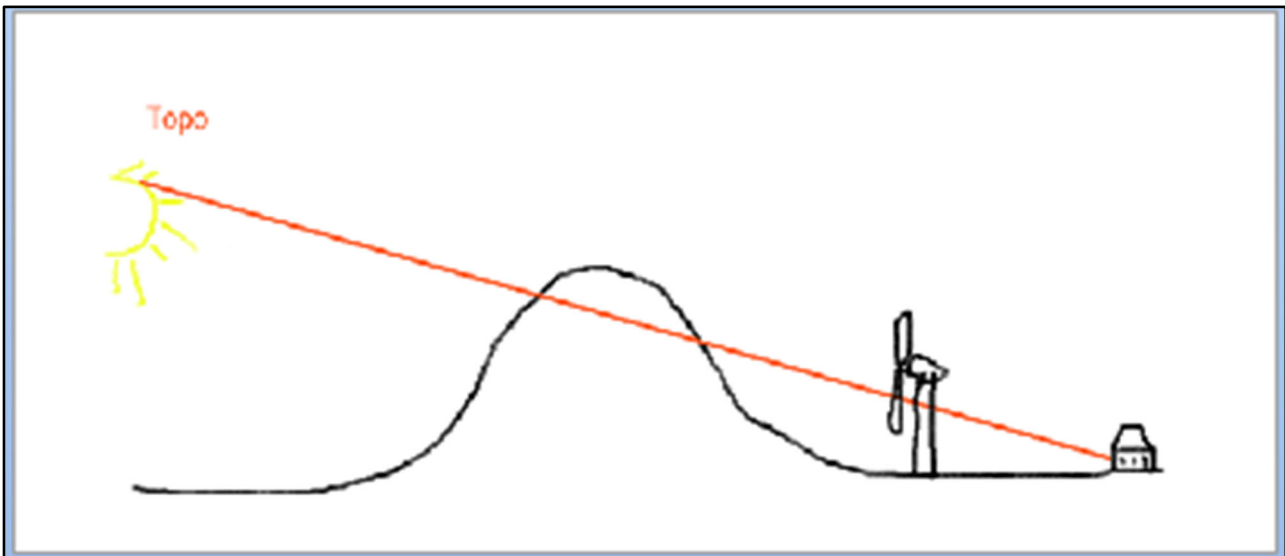


Figura 6.3: Impatto dell'orografia del territorio sull'ombreggiamento

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

- l'impianto eolico sempre in funzione durante le ore di sole;
- altezza minima del sole sull'orizzonte pari a 3° ;
- 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 eliofania di 6,70 h come da fonte ISPRA con riferimento al Comune di Genzano di Lucania 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	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70

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
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

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

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

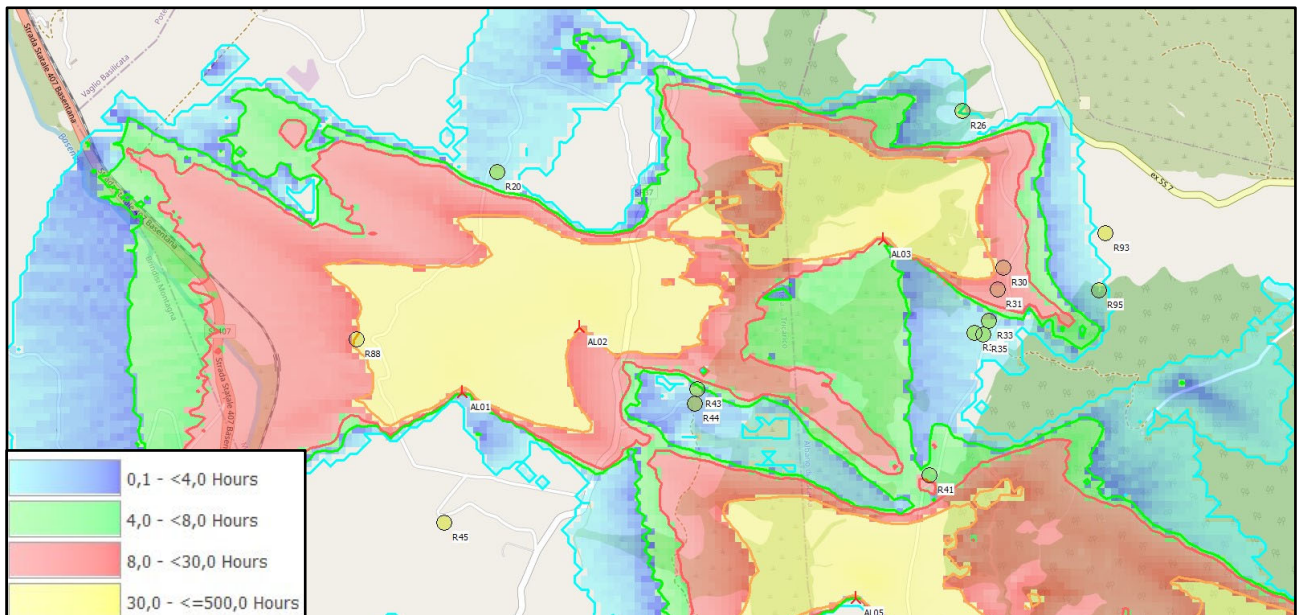


Figura 7.1: Localizzazione dei ricettori attenzionati rispetto agli aerogeneratori di progetto e ore d'ombra per anno

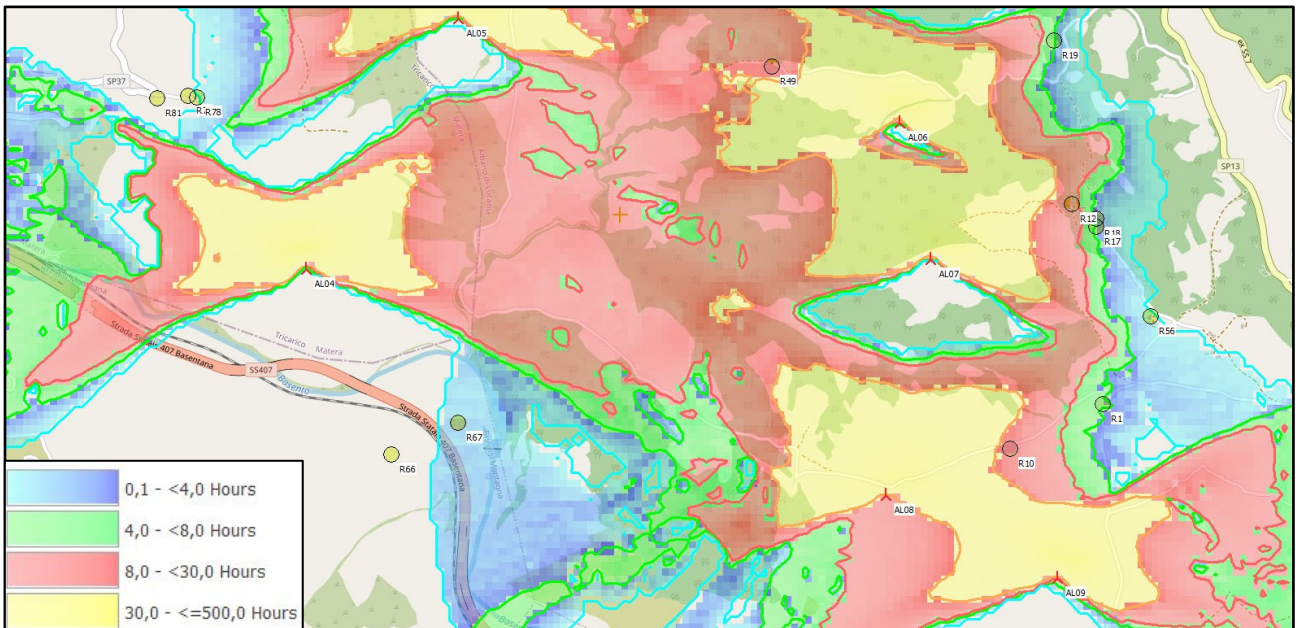


Figura 7.2: Localizzazione dei ricettori attenzionati rispetto agli aerogeneratori di progetto e ore d'ombra per anno

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)
R1	14:22	4:56
R10	71:27	23:21
R12	44:14	13:25
R17	15:18	4:33
R18	15:56	4:47
R19	11:36	4:16
R20	2:59	0:55
R26	0:56	0:21
R30	75:58	19:42
R31	83:41	20:46
R33	2:00	0:36
R35	2:45	0:49
R36a	3:15	0:58
R41	25:36	7:33
R43	8:39	2:14
R44	7:59	2:13
R45	0:00	0:00
R49	76:46	24:43
R56	2:43	0:53
R66	0:00	0:00

Ricettore	ORE/ANNO – WORST CASE	ORE/ANNO – REAL CASE (EXPECTED VALUES)
R67	4:41	1:24
R78	0:06	0:01
R79	0:00	0:00
R81	0:00	0:00
R88	102:36	31:11
R93	0:00	0:00
R95	3:50	1:01

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

Dai risultati riportati nella **Tabella 7.1** si evince che, nelle ipotesi precedentemente elencate e con riferimento al real case, per i ricettori attenzionati, il valore atteso delle ore d'ombra intermittente per anno è inferiore al valore di 30 ore/anno, parametro considerato di qualità a livello internazionale, eccetto che per il ricettore R88.

Il fabbricato **R88** presenta un valore di ore d'ombra intermittenti/anno di poco superiore al parametro di qualità e, come mostra la seguente figura, risulta essere schermato dagli alberi presenti nelle vicinanze lungo la direzione definita dalla congiungente aerogeneratore AL01 – ricettore R88.

Inoltre, considerando tutte le ipotesi cautelative assunte nello studio real case, si può ritenere che anche per tale ricettore lo shadow flickering non abbia effetti negativi sulla salute dell'uomo.



Figura 7.3: Localizzazione del ricettore R88 rispetto all' aerogeneratore AL01

Come detto, nell'analisi condotta sono state adottate ipotesi molto restrittive, tra le quali quella secondo cui l'impianto sia sempre in funzione durante le ore di sole, il piano del rotore sempre

ortogonale alla congiungente tra l'osservatore e il sole e ci sia totale assenza di ostacoli o schermi vegetazionali presenti negli spazi circostanti i possibili ricettori e che potrebbero attenuare il fenomeno. Nella stima effettuata è stata considerata l'ulteriore ipotesi conservativa secondo la quale i ricettori siano in modalità "green house", ovvero le finestre delle abitazioni attenzionate siano omnidirezionali, situazione non sempre verificata nella realtà.

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

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

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

SHADOW - Main Result

Calculation: WF Albano - 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 Albano_shadow flickering_EMDGrid_0.wpg (1)
Receptor grid resolution: 1,0 m
Topographic shadow included in calculation

All coordinates are in
Geo [deg]-WGS84

WTGs

	Longitude	Latitude	Z [m]	Row data/Description	WTG type		Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.					Calculation distance [m]	RPM [RPM]
AL01	15,963089° E	40,627745° N	668,1	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL02	15,969372° E	40,630381° N	681,0	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL03	15,985581° E	40,633922° N	683,3	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL04	15,976116° E	40,609346° N	596,9	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL05	15,984128° E	40,619394° N	586,6	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL06	16,007410° E	40,615214° N	705,0	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL07	16,009047° E	40,609764° N	731,0	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL08	16,006694° E	40,600312° N	749,3	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL09	16,015756° E	40,596981° N	726,4	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8

Shadow receptor-Input

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]
R1	16,018147° E	40,603950° N	825,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R10	16,013265° E	40,602142° N	786,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R12	16,016502° E	40,611973° N	840,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R17	16,017800° E	40,611050° N	856,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R18	16,017800° E	40,611389° N	856,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R19	16,015594° E	40,618515° N	842,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R20	15,964989° E	40,636639° N	659,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R26	15,989817° E	40,639126° N	771,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R30	15,992025° E	40,632791° N	767,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R31	15,991698° E	40,631904° N	759,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R33	15,991255° E	40,630617° N	746,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R35	15,990959° E	40,630092° N	736,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R36a	15,990467° E	40,630132° N	732,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R41	15,988079° E	40,624369° N	683,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R43	15,975661° E	40,627852° N	651,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R44	15,975523° E	40,627280° N	656,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R45	15,962136° E	40,622458° N	711,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R49	16,000694° E	40,617471° N	649,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R56	16,020663° E	40,607453° N	881,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R66	15,980616° E	40,601916° N	537,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R67	15,984129° E	40,603212° N	498,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R78	15,970328° E	40,616246° N	722,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

Project:

WF Albano_shadow flickering

Licensed user:

Ge.co.Dor srl
Via G. Garibaldi, 15
IT-74023 Grottaglie (TA)Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 14:54/4.0.531

SHADOW - Main Result

Calculation: WF Albano - Worst case

...continued from previous page

No.	Longitude	Latitude	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
R79	15,969877° E	40,616293° N	726,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R81	15,968252° E	40,616195° N	715,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R88	15,957456° E	40,629878° N	590,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R93	15,997455° E	40,634178° N	850,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R95	15,997136° E	40,631855° N	817,3	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]
R1	14:22	50	0:26
R10	71:27	91	1:06
R12	44:14	157	0:34
R17	15:18	101	0:21
R18	15:56	116	0:21
R19	11:36	63	0:17
R20	2:59	23	0:11
R26	0:56	20	0:04
R30	75:58	128	0:58
R31	83:41	129	1:00
R33	2:00	19	0:09
R35	2:45	22	0:11
R36a	3:15	23	0:12
R41	25:36	112	0:23
R43	8:39	56	0:16
R44	7:59	40	0:17
R45	0:00	0	0:00
R49	76:46	142	1:00
R56	2:43	68	0:05
R66	0:00	0	0:00
R67	4:41	25	0:17
R78	0:06	6	0:01
R79	0:00	0	0:00
R81	0:00	0	0:00
R88	102:36	141	1:07
R93	0:00	0	0:00
R95	3:50	33	0:10

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

No.	Name	Worst case [h/year]
AL01	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (2)	85:56
AL02	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (3)	54:47
AL03	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (4)	130:41
AL04	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (5)	0:00
AL05	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (6)	6:29
AL06	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (7)	99:50
AL07	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (8)	48:22
AL08	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (9)	78:18
AL09	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (10)	0:00

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

SHADOW - Calendar

Calculation: WF Albano - Worst case Shadow receptor: R1 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (1)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:39	07:07 17:13	16:41 (AL08) 16:49 (AL08)	06:32 17:47	06:42 19:20	05:57 19:51	05:28 20:20	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	07:00 16:30
2	07:20 16:40	07:06 17:14	16:41 (AL08) 16:51 (AL08)	06:30 17:48	06:40 19:21	05:55 19:52	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	07:01 16:30
3	07:20 16:41	07:05 17:16	16:41 (AL08) 16:52 (AL08)	06:29 17:49	06:39 19:22	05:54 19:53	05:27 20:22	05:30 20:31	05:54 20:10	06:24 19:27	06:54 18:37	07:02 16:30
4	07:20 16:42	07:04 17:17	16:40 (AL08) 16:54 (AL08)	06:27 17:50	06:37 19:23	05:53 19:54	05:27 20:23	05:30 20:31	05:55 20:09	06:25 19:25	06:55 18:35	07:03 16:30
5	07:20 16:43	07:03 17:18	16:40 (AL08) 16:55 (AL08)	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:26 19:24	06:56 18:34	07:04 16:29
6	07:20 16:44	07:02 17:19	16:40 (AL08) 16:56 (AL08)	06:24 17:52	06:34 19:25	05:50 19:57	05:26 20:24	05:31 20:30	05:57 20:07	06:27 19:22	06:57 18:32	07:05 16:29
7	07:20 16:45	07:01 17:21	16:40 (AL08) 16:58 (AL08)	06:23 17:53	06:32 19:26	05:49 19:58	05:26 20:24	05:32 20:30	05:58 20:06	06:28 19:20	06:58 18:30	07:06 16:29
8	07:20 16:46	07:00 17:22	16:40 (AL08) 16:59 (AL08)	06:21 17:55	06:30 19:27	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	07:07 16:29
9	07:20 16:47	06:59 17:23	16:40 (AL08) 17:00 (AL08)	06:19 17:56	06:29 19:28	05:47 20:00	05:26 20:26	05:33 20:29	06:00 20:03	06:30 19:17	07:00 18:27	07:08 16:29
10	07:20 16:48	06:58 17:24	16:40 (AL08) 17:01 (AL08)	06:18 17:57	06:27 19:30	05:46 20:01	05:25 20:26	05:34 20:29	06:01 20:02	06:31 19:15	07:01 18:26	07:08 16:29
11	07:20 16:49	06:57 17:26	16:41 (AL08) 17:03 (AL08)	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	07:09 16:29
12	07:20 16:50	06:55 17:27	16:41 (AL08) 17:04 (AL08)	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:35 20:28	06:03 20:00	06:33 19:12	07:03 18:22	07:10 16:29
13	07:19 16:51	06:54 17:28	16:41 (AL08) 17:05 (AL08)	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:10	07:04 18:21	07:11 16:30
14	07:19 16:52	06:53 17:29	16:42 (AL08) 17:07 (AL08)	06:11 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:05 18:19	07:12 16:30
15	07:19 16:53	06:52 17:30	16:43 (AL08) 17:08 (AL08)	06:10 18:02	06:19 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:06 18:18	07:12 16:30
16	07:18 16:54	06:50 17:32	16:43 (AL08) 17:09 (AL08)	06:08 18:03	06:18 19:36	05:40 20:06	05:25 20:29	05:38 20:26	06:07 19:54	06:37 19:05	07:08 18:16	07:13 16:30
17	07:18 16:55	06:49 17:33	16:44 (AL08) 17:10 (AL08)	06:07 18:04	06:16 19:37	05:39 20:07	05:25 20:29	05:39 20:25	06:08 19:53	06:38 19:04	07:09 18:15	07:14 16:31
18	07:17 16:56	06:48 17:34	16:46 (AL08) 17:12 (AL08)	06:05 18:05	06:15 19:38	05:38 20:08	05:25 20:30	05:40 20:25	06:09 19:51	06:39 19:02	07:10 18:13	07:14 16:31
19	07:17 16:58	06:46 17:35	16:47 (AL08) 17:11 (AL08)	06:03 18:07	06:13 19:39	05:37 20:09	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:00	07:11 18:12	07:15 16:31
20	07:16 16:59	06:45 17:36	16:49 (AL08) 17:10 (AL08)	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:30	05:42 20:23	06:11 19:49	06:41 18:59	07:12 18:10	07:16 16:32
21	07:16 17:00	06:44 17:38	16:52 (AL08) 17:07 (AL08)	06:00 18:09	06:10 19:41	05:35 20:11	05:26 20:31	05:42 20:23	06:12 19:47	06:42 18:57	07:13 18:09	07:16 16:32
22	07:15 17:01	06:42 17:39	16:57 (AL08) 17:02 (AL08)	05:58 18:10	06:09 19:42	05:34 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:07	07:17 16:33
23	07:14 17:02	06:41 17:40	17:02 (AL08) 17:40 (AL08)	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	07:17 16:33
24	07:14 17:04	06:39 17:41	17:04 (AL08) 17:41 (AL08)	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	07:16 18:05	07:18 16:34
25	07:13 17:05	06:38 17:42	17:05 (AL08) 17:42 (AL08)	05:53 18:13	06:05 19:45	05:32 20:15	05:26 20:31	05:46 20:19	06:16 19:41	06:46 18:50	07:17 17:03	07:18 16:34
26	07:12 17:06	06:36 17:43	17:06 (AL08) 17:43 (AL08)	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:31	05:47 20:19	06:17 19:40	06:47 18:49	07:19 17:02	07:19 16:35
27	07:12 17:07	06:35 17:44	17:07 (AL08) 17:44 (AL08)	05:50 18:15	06:02 19:47	05:31 20:16	05:27 20:31	05:48 20:18	06:18 19:38	06:48 18:47	07:20 17:01	07:19 16:36
28	07:11 17:08	06:33 17:46	17:08 (AL08) 17:46 (AL08)	05:48 18:16	06:01 19:48	05:30 20:17	05:28 20:31	05:49 20:17	06:19 19:36	06:49 18:45	07:21 16:59	07:19 16:36
29	07:10 17:10	16:43 (AL08) 16:46 (AL08)	16:43 (AL08) 16:46 (AL08)	06:47 19:17	05:59 19:49	05:30 20:18	05:28 20:31	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	07:19 16:37
30	07:09 17:11	16:43 (AL08) 16:47 (AL08)	16:43 (AL08) 16:47 (AL08)	06:45 19:18	05:58 19:50	05:29 20:19	05:28 20:31	05:50 20:15	06:21 19:33	06:51 18:42	06:23 16:57	07:20 16:38
31	07:08 17:12	16:42 (AL08) 16:48 (AL08)	16:42 (AL08) 16:48 (AL08)	06:43 19:19	19:18 19:50	05:29 20:20	05:29 20:31	05:51 20:14	06:22 19:32	06:24 16:55	06:24 16:32	07:20 16:38
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
Total, worst case	13	414								271	164	

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 Albano - Worst case Shadow receptor: R10 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	January	February	March	April	May	June	
1	07:20 16:39	07:07 17:13	06:32 17:47	65 16:15 (AL08) 17:20 (AL08)	06:42 19:20	05:57 19:51	20:20
2	07:20 16:40	07:06 17:14	16:41 (AL08) 06:30 17:48	64 16:15 (AL08) 17:19 (AL08)	06:40 19:21	05:55 19:52	20:21
3	07:20 16:41	07:05 17:16	10 16:51 (AL08) 17:48	64 16:37 (AL08) 06:29	06:39 16:16 (AL08) 06:39	05:54 19:53	20:22
4	07:20 16:42	07:04 17:17	15 16:52 (AL08) 17:49	63 16:34 (AL08) 06:27	06:37 16:16 (AL08) 06:37	05:53 19:54	20:23
5	07:20 16:43	07:03 17:18	20 16:54 (AL08) 17:50	62 16:30 (AL08) 06:24	06:35 16:17 (AL08) 06:35	05:52 19:54	20:23
6	07:20 16:44	07:02 17:19	23 16:55 (AL08) 17:51	61 16:28 (AL08) 06:23	06:34 16:17 (AL08) 06:34	05:50 19:57	20:24
7	07:20 16:45	07:01 17:21	26 16:56 (AL08) 17:52	60 16:28 (AL08) 06:23	06:32 16:17 (AL08) 06:32	05:49 19:58	20:25
8	07:20 16:46	07:00 17:22	30 16:58 (AL08) 17:54	59 16:27 (AL08) 06:21	06:30 16:18 (AL08) 06:30	05:48 19:59	20:25
9	07:20 16:47	06:59 17:23	32 16:59 (AL08) 17:55	57 16:25 (AL08) 06:19	06:29 16:19 (AL08) 06:29	05:47 20:00	20:26
10	07:20 16:48	06:58 17:24	35 17:00 (AL08) 17:56	55 16:24 (AL08) 06:18	06:27 16:20 (AL08) 06:27	05:46 20:01	20:26
11	07:20 16:49	06:57 17:26	37 17:01 (AL08) 17:57	53 16:23 (AL08) 06:16	06:26 16:21 (AL08) 06:26	05:45 20:02	20:27
12	07:20 16:50	06:55 17:27	40 17:03 (AL08) 17:58	50 16:22 (AL08) 06:15	06:24 16:22 (AL08) 06:24	05:44 20:03	20:27
13	07:19 16:51	06:54 17:28	42 17:04 (AL08) 17:59	47 16:20 (AL08) 06:13	06:23 16:24 (AL08) 06:23	05:43 20:04	20:28
14	07:19 16:52	06:53 17:29	45 17:05 (AL08) 18:00	44 16:20 (AL08) 06:11	06:21 16:25 (AL08) 06:21	05:42 20:05	20:28
15	07:19 16:53	06:52 17:30	47 17:07 (AL08) 18:01	41 16:19 (AL08) 06:10	06:19 16:26 (AL08) 06:19	05:41 20:06	20:29
16	07:18 16:54	06:50 17:32	49 17:08 (AL08) 18:02	37 17:03 (AL08) 19:35	06:18 16:29 (AL08) 06:18	05:40 20:07	20:29
17	07:18 16:55	06:49 17:33	51 17:10 (AL08) 18:03	32 17:01 (AL08) 19:36	06:16 16:32 (AL08) 06:16	05:39 20:07	20:29
18	07:17 16:57	06:48 17:34	52 17:10 (AL08) 18:04	25 16:57 (AL08) 19:37	06:15 16:36 (AL08) 06:15	05:38 20:08	20:30
19	07:17 16:58	06:46 17:35	54 17:12 (AL08) 18:05	17 16:53 (AL08) 19:38	06:13 06:13	05:37 20:09	20:30
20	07:16 16:59	06:45 17:36	57 17:13 (AL08) 18:07	19 19:39	06:12 06:12	05:36 20:10	20:30
21	07:16 17:00	06:44 17:38	58 17:14 (AL08) 18:08	18 18:08	06:10 19:40	05:35 20:11	20:31
22	07:15 17:01	06:42 17:39	60 17:16 (AL08) 18:09	18 18:09	06:09 19:41	05:35 20:12	20:31
23	07:14 17:02	06:41 17:40	62 16:15 (AL08) 05:58	18 18:10	06:08 19:42	05:34 20:13	20:31
24	07:14 17:04	06:39 17:41	62 17:18 (AL08) 18:11	18 18:11	06:06 19:43	05:33 20:14	20:31
25	07:13 17:05	06:38 17:42	64 17:19 (AL08) 18:12	18 18:12	06:05 19:44	05:32 20:15	20:31
26	07:12 17:06	06:36 17:43	66 16:15 (AL08) 05:53	18 18:13	06:05 19:45	05:32 20:16	20:31
27	07:12 17:07	06:35 17:44	66 17:21 (AL08) 18:13	18 18:13	06:03 19:46	05:32 20:17	20:31
28	07:11 17:08	06:33 17:46	66 16:15 (AL08) 05:50	18 18:15	06:02 19:47	05:31 20:18	20:31
29	07:10 17:10		66 17:21 (AL08) 18:15	18 18:15	06:01 19:48	05:30 20:19	20:31
30	07:09 17:11		65 17:20 (AL08) 18:16	18 18:16	05:59 19:49	05:29 20:20	20:31
31	07:08 17:12				05:58 19:50	05:29 20:21	20:31
Potential sun hours	299	298	370	398	447	451	
Total, worst case		1234	892				

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 Albano - Worst case Shadow receptor: R10 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	July	August	September	October	November	December
1	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	17:02 (AL08) 16:54	06:25 16:31 (AL08)
2	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	17:00 (AL08) 17:49 (AL08)	06:27 16:53
3	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	16:58 (AL08) 17:50 (AL08)	06:28 16:52
4	05:30 20:31	05:55 20:09	06:25 19:25	06:55 18:35	16:57 (AL08) 17:51 (AL08)	06:29 16:51
5	05:31 20:31	05:56 20:08	06:26 19:24	06:56 18:34	16:55 (AL08) 17:51 (AL08)	06:30 16:50
6	05:32 20:30	05:57 20:07	06:27 19:22	06:57 18:32	16:54 (AL08) 17:52 (AL08)	06:31 16:48
7	05:32 20:30	05:58 20:06	06:28 19:20	06:58 18:30	16:53 (AL08) 17:52 (AL08)	06:32 16:47
8	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	16:52 (AL08) 17:53 (AL08)	06:34 16:46
9	05:33 20:29	06:00 20:03	06:30 19:17	07:00 18:27	16:51 (AL08) 17:53 (AL08)	06:35 16:45
10	05:34 20:29	06:01 20:02	06:31 19:15	07:01 18:26	16:50 (AL08) 17:53 (AL08)	06:36 16:44
11	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	16:49 (AL08) 17:53 (AL08)	06:37 16:43
12	05:35 20:28	06:03 20:00	06:33 19:12	07:03 18:22	16:48 (AL08) 17:53 (AL08)	06:38 16:42
13	05:36 20:28	06:04 19:58	06:34 19:10	07:04 18:21	16:48 (AL08) 17:53 (AL08)	06:40 16:41
14	05:37 20:27	06:05 19:57	06:35 19:09	07:05 18:19	16:48 (AL08) 17:54 (AL08)	06:41 16:40
15	05:38 20:27	06:06 19:56	06:36 19:07	07:06 18:18	16:48 (AL08) 17:53 (AL08)	06:42 16:40
16	05:38 20:26	06:07 19:54	06:37 19:05	07:08 18:16	16:47 (AL08) 17:53 (AL08)	06:43 16:39
17	05:39 20:25	06:08 19:53	06:38 19:04	07:09 18:15	16:47 (AL08) 17:52 (AL08)	06:44 16:38
18	05:40 20:25	06:09 19:51	06:39 19:02	07:10 18:13	16:46 (AL08) 17:50 (AL08)	06:45 16:37
19	05:41 20:24	06:10 19:50	06:40 19:00	07:11 18:12	16:46 (AL08) 17:49 (AL08)	06:47 16:36
20	05:42 20:23	06:11 19:49	06:41 18:59	07:12 18:10	16:46 (AL08) 17:47 (AL08)	06:48 16:36
21	05:42 20:23	06:12 19:47	06:42 18:57	07:13 18:09	16:47 (AL08) 17:46 (AL08)	06:49 16:35
22	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:08	16:47 (AL08) 17:45 (AL08)	06:50 16:34
23	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	16:47 (AL08) 17:43 (AL08)	06:51 16:34
24	05:45 20:20	06:15 19:43	06:45 18:52	07:16 18:05	16:47 (AL08) 17:41 (AL08)	06:52 16:33
25	05:46 20:19	06:16 19:41	06:46 18:50	06:17 17:34 (AL08)	15:48 (AL08) 16:40 (AL08)	06:53 16:33
26	05:47 20:19	06:17 19:40	06:47 18:49	06:19 17:39 (AL08)	15:49 (AL08) 16:39 (AL08)	06:54 16:32
27	05:48 20:18	06:18 19:38	06:48 18:47	06:20 17:12 (AL08)	15:49 (AL08) 16:38 (AL08)	06:56 16:32
28	05:49 20:17	06:19 19:36	06:49 18:45	06:21 17:09 (AL08)	15:50 (AL08) 16:36 (AL08)	06:57 16:31
29	05:50 20:16	06:20 19:35	06:50 18:44	06:22 17:06 (AL08)	15:50 (AL08) 16:34 (AL08)	06:58 16:31
30	05:51 20:15	06:21 19:33	06:51 18:42	06:23 17:04 (AL08)	15:51 (AL08) 16:33 (AL08)	06:59 16:31
31	05:51 20:14	06:22 19:32		06:24 16:55	15:53 (AL08) 16:32 (AL08)	
Potential sun hours	458	427	375	346	299	289
Total, worst case			184	1753	224	

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 Albano - Worst case Shadow receptor: R12 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June			
1	07:20 16:39	07:07 17:13	16:37 (AL07) 16:49 (AL07)	06:32 17:47	16:58 (AL07) 17:14 (AL07)	06:42 19:20	05:57 19:51	05:28 20:20	19:41 (AL06) 19:55 (AL06)
2	07:20 16:40	07:06 17:14	16:37 (AL07) 16:51 (AL07)	06:30 17:48	06:40 19:21	05:55 19:52	05:28 20:21	19:41 (AL06) 19:56 (AL06)	
3	07:20 16:41	07:05 17:16	16:37 (AL07) 16:52 (AL07)	06:29 17:49	06:39 19:22	05:54 19:53	05:27 20:22	19:42 (AL06) 19:57 (AL06)	
4	07:20 16:42	07:04 17:17	16:37 (AL07) 16:54 (AL07)	06:27 17:50	06:37 19:23	05:53 19:54	05:27 20:23	19:42 (AL06) 19:57 (AL06)	
5	07:21 16:43	07:03 17:18	16:37 (AL07) 16:55 (AL07)	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	19:43 (AL06) 19:58 (AL06)	
6	07:20 16:44	07:02 17:19	16:37 (AL07) 16:56 (AL07)	06:24 17:52	06:34 19:25	05:50 19:57	05:26 20:24	19:44 (AL06) 19:59 (AL06)	
7	07:20 16:45	07:01 17:21	16:37 (AL07) 16:58 (AL07)	06:23 17:54	06:32 19:26	05:49 19:58	05:26 20:25	19:45 (AL06) 20:00 (AL06)	
8	07:20 16:46	07:00 17:22	16:37 (AL07) 16:59 (AL07)	06:21 17:55	06:30 19:27	05:48 19:59	05:26 20:25	19:45 (AL06) 20:00 (AL06)	
9	07:20 16:47	06:59 17:23	16:36 (AL07) 17:00 (AL07)	06:19 17:56	06:29 19:28	05:47 20:00	05:26 20:26	19:45 (AL06) 20:00 (AL06)	
10	07:20 16:48	06:58 17:24	16:36 (AL07) 17:01 (AL07)	06:18 17:57	06:27 19:30	05:46 20:01	19:35 (AL06) 20:26	05:25 20:01 (AL06)	
11	07:20 16:49	06:57 17:26	16:37 (AL07) 17:03 (AL07)	06:16 17:58	06:26 19:31	05:45 20:02	19:35 (AL06) 20:27	05:25 20:02 (AL06)	
12	07:20 16:50	06:55 17:27	16:37 (AL07) 17:04 (AL07)	06:15 17:59	06:24 19:32	05:44 20:03	19:35 (AL06) 20:27	05:25 20:02 (AL06)	
13	07:19 16:51	06:54 17:28	16:37 (AL07) 17:05 (AL07)	06:13 18:00	06:23 19:33	05:43 20:04	19:36 (AL06) 20:28	05:25 20:03 (AL06)	
14	07:19 16:52	06:53 17:29	16:37 (AL07) 17:07 (AL07)	06:11 18:01	06:21 19:34	05:42 20:05	19:36 (AL06) 20:28	05:25 20:03 (AL06)	
15	07:19 16:53	06:52 17:30	16:38 (AL07) 17:08 (AL07)	06:10 18:02	06:19 19:35	05:41 20:06	19:41 (AL06) 20:29	05:25 20:04 (AL06)	
16	07:18 16:54	06:50 17:32	16:39 (AL07) 17:10 (AL07)	06:08 18:03	06:18 19:36	05:40 20:07	19:42 (AL06) 20:29	05:25 20:04 (AL06)	
17	07:18 16:55	06:49 17:33	16:39 (AL07) 17:10 (AL07)	06:07 18:04	06:16 19:37	05:39 20:07	19:43 (AL06) 20:29	05:25 20:04 (AL06)	
18	07:17 16:56	06:48 17:34	16:40 (AL07) 17:12 (AL07)	06:05 18:05	06:15 19:38	05:38 20:08	19:44 (AL06) 20:30	05:25 20:04 (AL06)	
19	07:17 16:58	06:46 17:35	16:40 (AL07) 17:13 (AL07)	06:03 18:07	06:13 19:39	05:37 20:09	19:45 (AL06) 20:30	05:25 20:04 (AL06)	
20	07:16 16:59	06:45 17:36	16:41 (AL07) 17:14 (AL07)	06:02 18:08	06:12 19:40	05:36 20:10	19:45 (AL06) 20:30	05:25 20:06 (AL06)	
21	07:16 17:00	06:44 17:38	16:42 (AL07) 17:16 (AL07)	06:00 18:09	06:10 19:41	05:35 20:11	19:46 (AL06) 20:31	05:25 20:06 (AL06)	
22	07:15 17:01	06:42 17:39	16:43 (AL07) 17:17 (AL07)	05:58 18:10	06:09 19:42	05:34 20:12	19:47 (AL06) 20:31	05:26 20:06 (AL06)	
23	07:14 17:02	06:41 17:40	16:44 (AL07) 17:18 (AL07)	05:57 18:11	06:08 19:43	05:34 20:13	19:48 (AL06) 20:31	05:26 20:05 (AL06)	
24	07:14 17:03	06:39 17:41	16:45 (AL07) 17:19 (AL07)	05:55 18:12	06:06 19:44	05:33 20:14	19:49 (AL06) 20:31	05:26 20:05 (AL06)	
25	07:13 17:05	06:38 17:42	16:47 (AL07) 17:21 (AL07)	05:53 18:13	06:05 19:45	05:32 20:15	19:50 (AL06) 20:31	05:26 20:06 (AL06)	
26	07:12 17:06	16:40 (AL07) 17:43	06:36 17:22 (AL07)	05:52 18:14	06:03 19:46	05:32 20:16	19:51 (AL06) 20:31	05:27 20:06 (AL06)	
27	07:12 17:07	16:42 (AL07) 17:44	06:35 17:23 (AL07)	05:50 18:15	06:02 19:47	05:31 20:16	19:52 (AL06) 20:31	05:27 20:06 (AL06)	
28	07:11 17:08	16:43 (AL07) 17:46	06:34 17:24 (AL07)	05:48 18:16	06:01 19:48	05:30 20:17	19:53 (AL06) 20:31	05:28 20:06 (AL06)	
29	07:10 17:10	16:44 (AL07) 17:46	06:33 17:25 (AL07)	05:48 18:16	06:01 19:49	05:30 20:18	19:54 (AL06) 20:31	05:28 20:06 (AL06)	
30	07:09 17:11	16:46 (AL07) 17:47	06:32 17:26 (AL07)	05:47 18:17	05:58 19:50	05:29 20:19	19:55 (AL06) 20:31	05:28 20:06 (AL06)	
31	07:08 17:12	16:47 (AL07) 17:48	06:31 17:27 (AL07)	05:46 18:18	05:57 19:51	05:28 20:20	19:56 (AL06) 20:31	05:29 20:06 (AL06)	
Potential sun hours	299	298	370	398	447	451	440		
Total, worst case	39	747	16	214	440				

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 Albano - Worst case Shadow receptor: R12 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)
Assumptions for shadow calculations

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

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

	July		August		September		October		November		December			
1	05:29		19:51 (AL06)	05:52		19:46 (AL06)	06:23	06:52		06:25	16:06 (AL07)	07:00		
	20:31	15	20:06 (AL06)	20:13	3	19:49 (AL06)	19:30	18:40		16:54	25	16:31 (AL07)	16:30	
2	05:29		19:51 (AL06)	05:53		19:46 (AL06)	06:24	06:53		06:27		16:06 (AL07)	07:01	
	20:31	15	20:06 (AL06)	20:12	2	19:48 (AL06)	19:29	18:39		16:53	23	16:29 (AL07)	16:30	
3	05:30		19:51 (AL06)	05:54		19:46 (AL06)	06:24	06:54		06:28		16:06 (AL07)	07:02	
	20:31	15	20:06 (AL06)	20:11	1	19:47 (AL06)	19:27	18:37		16:52	22	16:28 (AL07)	16:30	
4	05:30		19:51 (AL06)	05:55			06:25	06:55		06:29		16:07 (AL07)	07:03	
	20:31	15	20:06 (AL06)	20:09			19:25	18:35		16:51	20	16:27 (AL07)	16:30	
5	05:31		19:50 (AL06)	05:56			06:26	06:56		06:30		16:07 (AL07)	07:04	
	20:31	15	20:05 (AL06)	20:08			19:24	18:34		16:49	19	16:26 (AL07)	16:29	
6	05:31		19:50 (AL06)	05:57			06:27	06:57		06:31		16:06 (AL07)	07:05	
	20:30	15	20:05 (AL06)	20:07			19:22	18:32		16:48	19	16:25 (AL07)	16:29	
7	05:32		19:50 (AL06)	05:58			06:28	06:58		06:32		16:07 (AL07)	07:06	
	20:30	15	20:05 (AL06)	20:06			19:20	18:30		16:47	16	16:24 (AL07)	16:29	
8	05:33		19:50 (AL06)	05:59			06:29	06:59		06:34		16:08 (AL07)	07:07	
	20:30	15	20:05 (AL06)	20:05			19:19	18:29		16:46	15	16:23 (AL07)	16:29	
9	05:33		19:50 (AL06)	06:00			06:30	07:00		06:35		16:08 (AL07)	07:08	
	20:29	15	20:05 (AL06)	20:03			19:17	18:27		16:45	14	16:22 (AL07)	16:29	
10	05:34		19:49 (AL06)	06:01			06:31	07:01		06:36		16:08 (AL07)	07:08	
	20:29	15	20:04 (AL06)	20:02			19:15	18:26		16:44	12	16:20 (AL07)	16:29	
11	05:35		19:49 (AL06)	06:02			06:32	07:02		06:37		16:08 (AL07)	07:09	
	20:29	15	20:04 (AL06)	20:01			19:14	18:24		16:43	11	16:19 (AL07)	16:29	
12	05:35		19:49 (AL06)	06:03			06:33	07:03		17:35 (AL07)		16:10 (AL07)	07:10	
	20:28	15	20:04 (AL06)	20:00			19:12	18:22	7	17:42 (AL07)	16:42	9	16:19 (AL07)	16:29
13	05:36		19:48 (AL06)	06:04			06:34	07:04		17:28 (AL07)		16:10 (AL07)	07:11	
	20:28	14	20:02 (AL06)	19:58			19:10	18:21	20	17:48 (AL07)	16:41	7	16:17 (AL07)	16:30
14	05:37		19:48 (AL06)	06:05			06:35	07:05		17:26 (AL07)		16:11 (AL07)	07:12	
	20:27	14	20:02 (AL06)	19:57			19:09	18:19	26	17:52 (AL07)	16:40	5	16:16 (AL07)	16:30
15	05:38		19:48 (AL06)	06:06			06:36	07:06		17:23 (AL07)		16:11 (AL07)	07:12	
	20:27	14	20:02 (AL06)	19:56			19:07	18:18	32	17:55 (AL07)	16:40	4	16:15 (AL07)	16:30
16	05:38		19:48 (AL06)	06:07			06:37	07:08		17:20 (AL07)		16:13 (AL07)	07:13	
	20:26	14	20:02 (AL06)	19:54			19:05	18:16	34	17:54 (AL07)	16:39	2	16:15 (AL07)	16:30
17	05:39		19:47 (AL06)	06:08			06:38	07:09		17:18 (AL07)		16:14	07:14	
	20:25	13	20:00 (AL06)	19:53			19:04	18:15	34	17:52 (AL07)	16:38		16:31	
18	05:40		19:47 (AL06)	06:09			06:39	07:10		17:16 (AL07)		16:15	07:14	
	20:25	13	20:00 (AL06)	19:51			19:02	18:13	34	17:50 (AL07)	16:37		16:31	
19	05:41		19:47 (AL06)	06:10			06:40	07:11		17:15 (AL07)		16:16	07:15	
	20:24	13	20:00 (AL06)	19:50			19:00	18:12	34	17:49 (AL07)	16:36		16:31	
20	05:42		19:47 (AL06)	06:11			06:41	07:12		17:13 (AL07)		16:17	07:16	
	20:23	12	19:59 (AL06)	19:49			18:59	18:10	34	17:47 (AL07)	16:36		16:32	
21	05:42		19:47 (AL06)	06:12			06:42	07:13		17:13 (AL07)		16:18	07:16	
	20:23	12	19:59 (AL06)	19:47			18:57	18:09	33	17:46 (AL07)	16:35		16:32	
22	05:43		19:46 (AL06)	06:13			06:43	07:14		17:11 (AL07)		16:19	07:17	
	20:22	11	19:57 (AL06)	19:46			18:55	18:07	34	17:45 (AL07)	16:34		16:33	
23	05:44		19:46 (AL06)	06:14			06:44	07:15		17:10 (AL07)		16:20	07:17	
	20:21	11	19:57 (AL06)	19:44			18:54	18:06	33	17:43 (AL07)	16:34		16:33	
24	05:45		19:46 (AL06)	06:15			06:45	07:16		17:09 (AL07)		16:21	07:18	
	20:20	10	19:56 (AL06)	19:43			18:52	18:05	32	17:41 (AL07)	16:33		16:34	
25	05:46		19:46 (AL06)	06:16			06:46	06:17		16:08 (AL07)		16:22	07:18	
	20:19	9	19:55 (AL06)	19:41			18:50	17:03	32	16:40 (AL07)	16:33		16:34	
26	05:47		19:46 (AL06)	06:17			06:47	06:19		16:08 (AL07)		16:23	07:19	
	20:19	9	19:55 (AL06)	19:40			18:49	17:02	31	16:39 (AL07)	16:32		16:35	
27	05:48		19:46 (AL06)	06:18			06:48	06:20		16:08 (AL07)		16:24	07:19	
	20:18	8	19:54 (AL06)	19:38			18:47	17:01	30	16:38 (AL07)	16:32		16:35	
28	05:49		19:46 (AL06)	06:19			06:49	06:21		16:07 (AL07)		16:25	07:19	
	20:17	7	19:53 (AL06)	19:36			18:45	16:59	29	16:36 (AL07)	16:31		16:36	
29	05:50		19:46 (AL06)	06:20			06:50	06:22		16:07 (AL07)		16:26	07:19	
	20:16	6	19:52 (AL06)	19:35			18:44	16:58	27	16:34 (AL07)	16:31		16:37	
30	05:50		19:45 (AL06)	06:21			06:51	06:23		16:06 (AL07)		16:27	07:20	
	20:15	6	19:51 (AL06)	19:33			18:42	16:57	27	16:33 (AL07)	16:31		16:38	
31	05:51		19:45 (AL06)	06:22				06:24		16:07 (AL07)		16:28	07:20	
	20:14	5	19:50 (AL06)	19:32				16:55	25	16:32 (AL07)		16:29	16:38	
Potential sun hours	458			427			375	346		299	223		289	
Total, worst case		381			6				588					

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 Albano - Worst case Shadow receptor: R17 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)
Assumptions for shadow calculations

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

	January	February	March	April	May	June
1	07:20 16:39	07:07 17:13	06:32 17:47	17:12 (AL07) 19:20	06:42 19:51	05:28 20:20
2	07:20 16:40	07:06 17:14	06:30 17:48	17:11 (AL07) 19:21	06:40 19:52	05:28 20:21
3	07:20 16:41	07:05 17:16	06:29 17:49	17:12 (AL07) 19:22	06:39 19:53	05:27 20:22
4	07:20 16:42	07:04 17:17	06:27 17:50	17:12 (AL07) 19:23	06:37 19:54	05:27 20:23
5	07:20 16:43	07:03 17:18	06:26 17:51	17:13 (AL07) 19:24	06:35 19:56	05:27 20:23
6	07:20 16:44	07:02 17:19	06:24 17:52	17:13 (AL07) 19:25	06:34 19:57	05:26 20:24
7	07:20 16:45	07:01 17:21	06:23 17:53	17:14 (AL07) 19:26	06:32 19:58	05:26 20:25
8	07:20 16:46	07:00 17:22	06:21 17:55	17:14 (AL07) 19:27	06:30 19:59	05:26 20:25
9	07:20 16:47	06:59 17:23	06:19 17:56	17:14 (AL07) 19:28	06:29 20:00	05:26 20:26
10	07:20 16:48	06:58 17:24	06:18 17:57	17:14 (AL07) 19:30	06:27 20:01	05:25 20:26
11	07:20 16:49	06:57 17:26	06:16 17:58	17:16 (AL07) 19:31	06:26 20:02	05:25 20:27
12	07:20 16:50	06:55 17:27	06:15 17:59	17:17 (AL07) 19:32	06:24 20:03	05:25 20:27
13	07:19 16:51	06:54 17:28	06:13 18:00	17:19 (AL07) 19:33	06:23 20:04	05:25 20:28
14	07:19 16:52	06:53 17:29	06:11 18:01	17:20 (AL07) 19:34	06:21 20:05	05:25 20:28
15	07:19 16:53	06:52 17:30	06:10 18:02	17:22 (AL07) 19:35	06:19 20:06	05:25 20:29
16	07:18 16:54	06:50 17:32	06:08 18:03	17:26 (AL07) 19:36	06:18 20:07	05:25 20:29
17	07:18 16:55	06:49 17:33	06:07 18:04	06:16 19:37	05:39 20:07	05:25 20:29
18	07:17 16:56	06:48 17:34	06:05 18:05	06:15 19:38	05:38 20:08	05:25 20:30
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	05:37 20:09	05:25 20:30
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:30
21	07:16 17:00	06:44 17:38	17:15 (AL07) 06:00	06:10 19:41	05:35 20:11	05:25 20:31
22	07:15 17:01	06:42 17:39	17:16 (AL07) 18:09	06:09 19:42	05:34 20:12	05:26 20:31
23	07:14 17:02	06:41 17:40	17:14 (AL07) 18:11	06:08 19:43	05:34 20:13	05:26 20:31
24	07:14 17:03	06:39 17:41	17:13 (AL07) 18:12	06:06 19:44	05:33 20:14	05:26 20:31
25	07:13 17:05	06:38 17:42	17:13 (AL07) 18:13	06:05 19:45	05:32 20:15	05:26 20:31
26	07:12 17:06	06:36 17:43	17:12 (AL07) 18:14	06:03 19:46	05:32 20:16	19:50 (AL06) 05:27
27	07:12 17:07	06:35 17:44	17:22 (AL07) 18:15	06:02 19:47	05:31 20:16	19:51 (AL06) 05:27
28	07:11 17:08	06:33 17:46	17:12 (AL07) 18:16	06:01 19:48	05:30 20:17	19:52 (AL06) 05:28
29	07:10 17:10		06:47 19:17	05:59 19:49	05:30 20:18	19:51 (AL06) 05:28
30	07:09 17:11		06:45 19:18	05:58 19:50	05:29 20:19	19:51 (AL06) 05:28
31	07:08 17:12		06:43 19:19		05:29 20:20	19:52 (AL06) 05:28
Potential sun hours	299	298	370	398	447	451
Total, worst case		55	298		12	132

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 Albano - Worst case Shadow receptor: R17 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)
Assumptions for shadow calculations

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

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

	July	August	September	October	November	December		
1	05:29	20:01 (AL06)	05:52	06:23	06:52	17:57 (AL07)	06:25	07:00
	20:31	5 20:06 (AL06)	20:13	19:30	18:40	21 18:18 (AL07)	16:54	16:30
2	05:29	20:02 (AL06)	05:53	06:24	06:53	17:55 (AL07)	06:27	07:01
	20:31	4 20:06 (AL06)	20:12	19:29	18:39	21 18:16 (AL07)	16:53	16:30
3	05:30	20:01 (AL06)	05:54	06:24	06:54	17:54 (AL07)	06:28	07:02
	20:31	5 20:06 (AL06)	20:11	19:27	18:37	21 18:15 (AL07)	16:52	16:30
4	05:30	20:01 (AL06)	05:55	06:25	06:55	17:52 (AL07)	06:29	07:03
	20:31	5 20:06 (AL06)	20:09	19:25	18:35	21 18:13 (AL07)	16:51	16:30
5	05:31	20:01 (AL06)	05:56	06:26	06:56	17:51 (AL07)	06:30	07:04
	20:31	4 20:05 (AL06)	20:08	19:24	18:34	20 18:11 (AL07)	16:49	16:29
6	05:31	20:01 (AL06)	05:57	06:27	06:57	17:50 (AL07)	06:31	07:05
	20:30	4 20:05 (AL06)	20:07	19:22	18:32	19 18:09 (AL07)	16:48	16:29
7	05:32	20:00 (AL06)	05:58	06:28	06:58	17:48 (AL07)	06:32	07:06
	20:30	5 20:05 (AL06)	20:06	19:20	18:30	20 18:08 (AL07)	16:47	16:29
8	05:33	20:01 (AL06)	05:59	06:29	06:59	17:48 (AL07)	06:34	07:07
	20:30	4 20:05 (AL06)	20:05	19:19	18:29	18 18:06 (AL07)	16:46	16:29
9	05:33	20:01 (AL06)	06:00	06:30	07:00	17:47 (AL07)	06:35	07:08
	20:29	4 20:05 (AL06)	20:03	19:17	18:27	17 18:04 (AL07)	16:45	16:29
10	05:34	20:00 (AL06)	06:01	06:31	07:01	17:46 (AL07)	06:36	07:08
	20:29	4 20:04 (AL06)	20:02	19:15	18:26	17 18:03 (AL07)	16:44	16:29
11	05:35	20:00 (AL06)	06:02	06:32	07:02	17:45 (AL07)	06:37	07:09
	20:29	4 20:04 (AL06)	20:01	19:14	18:24	16 18:01 (AL07)	16:43	16:29
12	05:35	20:01 (AL06)	06:03	06:33	07:03	17:45 (AL07)	06:38	07:10
	20:28	3 20:04 (AL06)	20:00	19:12	18:22	14 17:59 (AL07)	16:42	16:29
13	05:36	20:00 (AL06)	06:04	06:34	07:04	17:44 (AL07)	06:40	07:11
	20:28	2 20:02 (AL06)	19:58	19:10	18:21	14 17:58 (AL07)	16:41	16:30
14	05:37	20:00 (AL06)	06:05	06:35	07:05	17:45 (AL07)	06:41	07:12
	20:27	2 20:02 (AL06)	19:57	19:09	18:19	12 17:57 (AL07)	16:40	16:30
15	05:38	20:00 (AL06)	06:06	06:36	07:06	17:45 (AL07)	06:42	07:12
	20:27	2 20:02 (AL06)	19:56	19:07	18:18	10 17:55 (AL07)	16:40	16:30
16	05:38	20:00 (AL06)	06:07	06:37	07:08	17:45 (AL07)	06:43	07:13
	20:26	2 20:02 (AL06)	19:54	19:05	18:16	9 17:54 (AL07)	16:39	16:30
17	05:39	19:59 (AL06)	06:08	06:38	07:09	17:45 (AL07)	06:44	07:14
	20:25	1 20:00 (AL06)	19:53	19:04	18:15	7 17:52 (AL07)	16:38	16:31
18	05:40		06:09	06:39	07:10	17:45 (AL07)	06:45	07:14
	20:25		19:51	19:02	18:13	5 17:50 (AL07)	16:37	16:31
19	05:41		06:10	06:40	07:11	17:45 (AL07)	06:47	07:15
	20:24		19:50	19:00	18:12	4 17:49 (AL07)	16:36	16:31
20	05:42		06:11	06:41	07:12	17:45 (AL07)	06:48	07:16
	20:23		19:49	18:59	18:10	2 17:47 (AL07)	16:36	16:32
21	05:42		06:12	06:42	07:13		06:49	07:16
	20:23		19:47	18:57	18:09		16:35	16:32
22	05:43		06:13	06:43	07:14		06:50	07:17
	20:22		19:46	18:55	18:07		16:34	16:33
23	05:44		06:14	06:44	07:15		06:51	07:17
	20:21		19:44	18:54	18:06		16:34	16:33
24	05:45		06:15	06:45	07:16		06:52	07:18
	20:20		19:43	18:52	18:05		16:33	16:34
25	05:46		06:16	06:46	06:17		06:53	07:18
	20:19		19:41	18:50	17:03		16:33	16:34
26	05:47		06:17	06:47	06:19		06:54	07:19
	20:19		19:40	18:49	17:02		16:32	16:35
27	05:48		06:18	06:48	18:09 (AL07)	06:20	06:56	07:19
	20:18		19:38	18:47	15 18:24 (AL07)	17:01	16:32	16:35
28	05:49		06:19	06:49	18:05 (AL07)	06:21	06:57	07:19
	20:17		19:36	18:45	18 18:23 (AL07)	16:59	16:31	16:36
29	05:50		06:20	06:50	18:02 (AL07)	06:22	06:58	07:19
	20:16		19:35	18:44	19 18:21 (AL07)	16:58	16:31	16:37
30	05:50		06:21	06:51	17:59 (AL07)	06:23	06:59	07:20
	20:15		19:33	18:42	21 18:20 (AL07)	16:57	16:31	16:38
31	05:51		06:22			06:24		07:20
	20:14		19:32			16:55		16:38
Potential sun hours	458		427	375	346		299	289
Total, worst case	60		73		288			

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 Albano - Worst case Shadow receptor: R18 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)
Assumptions for shadow calculations

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

	January	February	March	April	May	June	
1	07:20 16:39	07:07 17:13	06:32 17:47	17:07 (AL07) 19:20	06:42 19:51	05:28 20:20	19:50 (AL06) 19:55 (AL06)
2	07:20 16:40	07:06 17:14	06:30 17:48	17:07 (AL07) 19:21	06:40 19:52	05:28 20:21	19:51 (AL06) 19:56 (AL06)
3	07:20 16:41	07:05 17:16	06:29 17:49	17:08 (AL07) 19:22	06:39 19:53	05:27 20:22	19:52 (AL06) 19:57 (AL06)
4	07:20 16:42	07:04 17:17	06:27 17:50	17:08 (AL07) 19:23	06:37 19:54	05:27 20:23	19:52 (AL06) 19:57 (AL06)
5	07:21 16:43	07:03 17:18	06:26 17:51	17:10 (AL07) 19:24	06:35 19:56	05:27 20:23	19:53 (AL06) 19:58 (AL06)
6	07:20 16:44	07:02 17:19	06:24 17:52	17:10 (AL07) 19:25	06:34 19:57	05:26 20:24	19:54 (AL06) 19:59 (AL06)
7	07:20 16:45	07:01 17:21	06:23 17:53	17:11 (AL07) 19:26	06:32 19:58	05:26 20:25	19:55 (AL06) 20:00 (AL06)
8	07:20 16:46	07:00 17:22	06:21 17:55	17:13 (AL07) 19:27	06:30 19:59	05:26 20:25	19:55 (AL06) 20:00 (AL06)
9	07:20 16:47	06:59 17:23	06:19 17:56	17:15 (AL07) 19:28	06:29 20:00	05:26 20:26	19:56 (AL06) 20:00 (AL06)
10	07:20 16:48	06:58 17:24	06:18 17:57	17:17 (AL07) 19:30	06:27 20:01	05:25 20:26	19:57 (AL06) 20:01 (AL06)
11	07:20 16:49	06:57 17:26	06:16 17:58	17:22 (AL07) 19:31	06:26 20:02	05:25 20:27	19:58 (AL06) 20:02 (AL06)
12	07:20 16:50	06:55 17:27	06:15 17:59	17:35 (AL07) 19:32	06:24 20:03	05:25 20:27	19:59 (AL06) 20:02 (AL06)
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	20:00 (AL06) 20:03 (AL06)
14	07:19 16:52	06:53 17:29	06:11 18:01	06:21 19:34	05:42 20:05	05:25 20:28	20:01 (AL06) 20:03 (AL06)
15	07:19 16:53	06:52 17:30	06:10 18:02	06:19 19:35	05:41 20:06	05:25 20:29	20:01 (AL06) 20:03 (AL06)
16	07:18 16:54	06:50 17:32	17:08 (AL07) 18:03	06:08 19:36	05:40 20:07	05:25 20:29	20:02 (AL06) 20:04 (AL06)
17	07:18 16:55	06:49 17:33	17:07 (AL07) 18:04	06:07 19:37	05:39 20:07	05:25 20:29	20:03 (AL06) 20:04 (AL06)
18	07:17 16:56	06:48 17:34	17:07 (AL07) 18:05	06:05 19:38	05:38 20:08	05:25 20:30	20:03 (AL06) 20:04 (AL06)
19	07:17 16:58	06:46 17:35	17:06 (AL07) 18:07	06:03 19:39	05:37 20:09	19:44 (AL06) 20:30	05:25 20:30
20	07:16 16:59	06:45 17:36	17:06 (AL07) 18:08	06:02 19:40	05:36 20:10	19:44 (AL06) 20:30	05:25 20:30
21	07:16 17:00	06:44 17:38	17:06 (AL07) 18:09	06:10 19:41	05:35 20:11	19:45 (AL06) 20:31	05:25 20:05 (AL06)
22	07:15 17:01	06:42 17:39	17:05 (AL07) 18:10	05:58 19:42	05:34 20:12	19:45 (AL06) 20:31	05:26 20:05 (AL06)
23	07:14 17:02	06:41 17:40	17:05 (AL07) 18:11	05:57 19:43	05:34 20:13	19:45 (AL06) 20:31	05:26 20:04 (AL06)
24	07:14 17:03	06:39 17:41	17:05 (AL07) 18:12	05:55 19:44	05:33 20:14	19:46 (AL06) 20:31	05:26 20:05 (AL06)
25	07:13 17:05	06:38 17:42	17:05 (AL07) 18:13	05:53 19:45	05:32 20:15	19:46 (AL06) 20:31	05:26 20:06 (AL06)
26	07:12 17:06	06:36 17:43	17:05 (AL07) 18:14	05:52 19:46	05:32 20:16	19:46 (AL06) 20:31	05:27 20:06 (AL06)
27	07:12 17:07	06:35 17:44	17:06 (AL07) 18:15	05:50 19:47	05:31 20:16	19:47 (AL06) 20:31	05:27 20:06 (AL06)
28	07:11 17:08	06:33 17:46	17:06 (AL07) 18:16	05:48 19:48	05:30 20:17	19:48 (AL06) 20:31	05:28 20:06 (AL06)
29	07:10 17:10		06:47 19:17	05:59 19:49	05:30 20:18	19:49 (AL06) 20:31	05:28 20:03 (AL06)
30	07:09 17:11		06:45 19:18	05:58 19:50	05:29 20:19	19:49 (AL06) 20:31	05:28 20:06 (AL06)
31	07:08 17:12		06:43 19:19		05:29 20:20	19:50 (AL06) 20:31	05:29 20:06 (AL06)
Potential sun hours	299	298	370	398	447	451	83
Total, worst case		142	214		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 Albano - Worst case Shadow receptor: R18 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)
Assumptions for shadow calculations

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

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

	July	August	September	October	November	December			
1	05:29	20:03 (AL06)	05:52	06:23		06:25	07:00		
	20:31	3 20:06 (AL06)	20:13	19:30		16:54	16:30		
2	05:29	20:03 (AL06)	05:53	06:24	06:53	18:04 (AL07)	06:27	07:01	
	20:31	3 20:06 (AL06)	20:12	19:29	18:39	7 18:11 (AL07)	16:53	16:30	
3	05:30	20:02 (AL06)	05:54	06:24	06:54		17:57 (AL07)	06:28	07:02
	20:31	4 20:06 (AL06)	20:11	19:27	18:37	18 18:15 (AL07)	16:52	16:30	
4	05:30	20:02 (AL06)	05:55	06:25	06:55		17:54 (AL07)	06:29	07:03
	20:31	4 20:06 (AL06)	20:09	19:25	18:35	19 18:13 (AL07)	16:51	16:30	
5	05:31	20:01 (AL06)	05:56	06:26	06:56		17:51 (AL07)	06:30	07:04
	20:31	4 20:05 (AL06)	20:08	19:24	18:34	20 18:11 (AL07)	16:49	16:29	
6	05:31	20:01 (AL06)	05:57	06:27	06:57		17:49 (AL07)	06:31	07:05
	20:30	4 20:05 (AL06)	20:07	19:22	18:32	20 18:09 (AL07)	16:48	16:29	
7	05:32	20:00 (AL06)	05:58	06:28	06:58		17:47 (AL07)	06:32	07:06
	20:30	5 20:05 (AL06)	20:06	19:20	18:30	21 18:08 (AL07)	16:47	16:29	
8	05:33	20:00 (AL06)	05:59	06:29	06:59		17:45 (AL07)	06:34	07:07
	20:30	5 20:05 (AL06)	20:05	19:19	18:29	21 18:06 (AL07)	16:46	16:29	
9	05:33	20:00 (AL06)	06:00	06:30	07:00		17:43 (AL07)	06:35	07:08
	20:29	5 20:05 (AL06)	20:03	19:17	18:27	21 18:04 (AL07)	16:45	16:29	
10	05:34	19:59 (AL06)	06:01	06:31	07:01		17:42 (AL07)	06:36	07:08
	20:29	5 20:04 (AL06)	20:02	19:15	18:26	21 18:03 (AL07)	16:44	16:29	
11	05:35	19:59 (AL06)	06:02	06:32	07:02		17:41 (AL07)	06:37	07:09
	20:29	5 20:04 (AL06)	20:01	19:14	18:24	20 18:01 (AL07)	16:43	16:29	
12	05:35	19:58 (AL06)	06:03	06:33	07:03		17:40 (AL07)	06:38	07:10
	20:28	6 20:04 (AL06)	20:00	19:12	18:22	19 17:59 (AL07)	16:42	16:29	
13	05:36	19:57 (AL06)	06:04	06:34	07:04		17:39 (AL07)	06:40	07:11
	20:28	5 20:02 (AL06)	19:58	19:10	18:21	19 17:58 (AL07)	16:41	16:30	
14	05:37	19:57 (AL06)	06:05	06:35	07:05		17:39 (AL07)	06:41	07:12
	20:27	5 20:02 (AL06)	19:57	19:09	18:19	18 17:57 (AL07)	16:40	16:30	
15	05:38	19:57 (AL06)	06:06	06:36	07:06		17:38 (AL07)	06:42	07:12
	20:27	5 20:02 (AL06)	19:56	19:07	18:18	17 17:55 (AL07)	16:40	16:30	
16	05:38	19:57 (AL06)	06:07	06:37	07:08		17:37 (AL07)	06:43	07:13
	20:26	5 20:02 (AL06)	19:54	19:05	18:16	17 17:54 (AL07)	16:39	16:30	
17	05:39	19:56 (AL06)	06:08	06:38	07:09		17:37 (AL07)	06:44	07:14
	20:25	4 20:00 (AL06)	19:53	19:04	18:15	15 17:52 (AL07)	16:38	16:31	
18	05:40	19:56 (AL06)	06:09	06:39	07:10		17:36 (AL07)	06:45	07:14
	20:25	4 20:00 (AL06)	19:51	19:02	18:13	14 17:50 (AL07)	16:37	16:31	
19	05:41	19:56 (AL06)	06:10	06:40	07:11		17:36 (AL07)	06:47	07:15
	20:24	4 20:00 (AL06)	19:50	19:00	18:12	13 17:49 (AL07)	16:36	16:31	
20	05:42	19:56 (AL06)	06:11	06:41	07:12		17:36 (AL07)	06:48	07:16
	20:23	3 19:59 (AL06)	19:49	18:59	18:10	11 17:47 (AL07)	16:36	16:32	
21	05:42	19:55 (AL06)	06:12	06:42	07:13		17:36 (AL07)	06:49	07:16
	20:23	4 19:59 (AL06)	19:47	18:57	18:09	10 17:46 (AL07)	16:35	16:32	
22	05:43	19:54 (AL06)	06:13	06:43	07:14		17:36 (AL07)	06:50	07:17
	20:22	3 19:57 (AL06)	19:46	18:55	18:07	9 17:45 (AL07)	16:34	16:33	
23	05:44	19:54 (AL06)	06:14	06:44	07:15		17:36 (AL07)	06:51	07:17
	20:21	3 19:57 (AL06)	19:44	18:54	18:06	7 17:43 (AL07)	16:34	16:33	
24	05:45	19:54 (AL06)	06:15	06:45	07:16		17:36 (AL07)	06:52	07:18
	20:20	2 19:56 (AL06)	19:43	18:52	18:05	5 17:41 (AL07)	16:33	16:34	
25	05:46	19:54 (AL06)	06:16	06:46	06:17		16:36 (AL07)	06:53	07:18
	20:19	1 19:55 (AL06)	19:41	18:50	17:03	4 16:40 (AL07)	16:33	16:34	
26	05:47	19:54 (AL06)	06:17	06:47	06:19		16:38 (AL07)	06:54	07:19
	20:19	1 19:55 (AL06)	19:40	18:49	17:02	1 16:39 (AL07)	16:32	16:35	
27	05:48		06:18	06:48	06:20		06:56	07:19	
	20:18		19:38	18:47	17:01		16:32	16:35	
28	05:49		06:19	06:49	06:21		06:57	07:19	
	20:17		19:36	18:45	16:59		16:31	16:36	
29	05:50		06:20	06:50	06:22		06:58	07:19	
	20:16		19:35	18:44	16:58		16:31	16:37	
30	05:50		06:21	06:51	06:23		06:59	07:20	
	20:15		19:33	18:42	16:57		16:31	16:38	
31	05:51		06:22		06:24			07:20	
	20:14		19:32		16:55			16:38	
Potential sun hours	458		427	375	346		299	289	
Total, worst case		102			367				

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 Albano - Worst case Shadow receptor: R19 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (6)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:39	07:07 17:13	16:33 (AL06) 06:32	06:42 17:47	05:57 19:20	05:28 20:20	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	06:25 16:54	07:00 16:30
2	07:20 16:40	07:06 17:14	16:34 (AL06) 06:30	06:40 17:48	05:55 19:21	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	16:23 (AL06) 07:01
3	07:20 16:41	07:05 17:16	16:35 (AL06) 06:29	06:39 17:49	05:54 19:22	05:27 20:22	05:30 20:31	05:54 20:11	06:24 19:27	06:54 18:37	06:28 16:52	16:15 (AL06) 07:02
4	07:21 16:42	07:04 17:17	16:37 (AL06) 06:27	06:37 17:50	05:53 19:23	05:27 20:23	05:30 20:31	05:55 20:09	06:25 19:25	06:55 18:35	06:29 16:51	16:13 (AL06) 07:03
5	07:21 16:43	07:03 17:18	16:39 (AL06) 06:26	06:35 17:51	05:52 19:24	05:27 20:23	05:31 20:31	05:56 20:08	06:26 19:24	06:56 18:34	06:30 16:49	16:10 (AL06) 07:04
6	07:21 16:44	07:02 17:19	16:41 (AL06) 06:24	06:34 17:52	05:50 19:25	05:26 20:24	05:31 20:30	05:57 20:07	06:27 19:22	06:57 18:32	06:31 16:48	16:08 (AL06) 07:05
7	07:20 16:45	07:01 17:21	16:44 (AL06) 06:23	06:32 17:53	05:49 19:26	05:26 20:25	05:32 20:30	05:58 20:06	06:28 19:20	06:58 18:30	06:33 16:47	16:07 (AL06) 07:06
8	07:20 16:46	07:00 17:22	16:47 (AL06) 06:21	06:30 17:55	05:48 19:27	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	16:06 (AL06) 07:07
9	07:20 16:47	16:20 (AL06) 06:59	06:19 17:23	06:29 17:56	05:47 19:29	05:26 20:26	05:33 20:29	06:00 20:03	06:30 19:17	07:00 18:27	06:35 16:45	16:05 (AL06) 07:08
10	07:20 16:48	16:21 (AL06) 06:58	06:18 17:24	06:27 17:57	05:46 19:30	05:25 20:26	05:34 20:29	06:01 20:02	06:31 19:15	07:01 18:26	06:36 16:44	16:03 (AL06) 07:08
11	07:20 16:49	16:23 (AL06) 06:57	06:16 17:26	06:26 17:58	05:45 19:31	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	16:20 (AL06) 07:09
12	07:20 16:50	16:24 (AL06) 06:55	06:15 17:27	06:24 17:59	05:44 19:32	05:25 20:27	05:35 20:28	06:03 20:00	06:33 19:12	07:03 18:22	06:38 16:42	16:02 (AL06) 07:10
13	07:19 16:51	16:25 (AL06) 06:54	06:13 17:28	06:23 18:00	05:43 19:33	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:10	07:04 18:21	06:40 16:41	16:02 (AL06) 07:11
14	07:19 16:52	16:26 (AL06) 06:53	06:11 17:29	06:21 18:01	05:42 19:34	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:05 18:19	06:41 16:40	16:01 (AL06) 07:12
15	07:19 16:53	16:27 (AL06) 06:52	06:10 17:30	06:19 18:02	05:41 19:35	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:06 18:18	06:42 16:40	16:00 (AL06) 07:12
16	07:18 16:54	16:28 (AL06) 06:50	06:08 17:32	06:18 18:03	05:40 19:36	05:25 20:29	05:38 20:26	06:07 19:54	06:37 19:05	07:08 18:16	06:43 16:39	16:01 (AL06) 07:13
17	07:18 16:55	16:29 (AL06) 06:49	06:07 17:33	06:16 18:04	05:39 19:37	05:25 20:29	05:39 20:25	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	16:00 (AL06) 07:14
18	07:17 16:56	16:31 (AL06) 06:48	06:05 17:34	06:15 18:05	05:38 19:38	05:25 20:30	05:40 20:25	06:09 19:51	06:39 19:02	07:10 18:13	06:45 16:37	16:00 (AL06) 07:14
19	07:17 16:58	16:32 (AL06) 06:46	06:03 17:35	06:13 18:07	05:37 19:39	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:00	07:11 18:12	06:45 16:36	16:13 (AL06) 07:15
20	07:16 16:59	16:33 (AL06) 06:45	06:02 17:36	06:12 18:08	05:36 19:40	05:25 20:30	05:42 20:23	06:11 19:49	06:41 18:59	07:12 18:10	06:48 16:36	16:00 (AL06) 07:16
21	07:16 17:00	16:34 (AL06) 06:44	06:00 17:38	06:10 18:09	05:35 19:41	05:25 20:31	05:42 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	16:00 (AL06) 07:16
22	07:15 17:01	16:35 (AL06) 06:42	05:58 17:39	06:09 18:10	05:34 19:42	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:07	06:50 16:34	16:00 (AL06) 07:17
23	07:14 17:02	16:36 (AL06) 06:41	05:57 17:40	06:08 18:11	05:34 19:43	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	16:00 (AL06) 07:17
24	07:14 17:03	16:38 (AL06) 06:39	05:55 17:41	06:06 18:12	05:33 19:44	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	07:16 18:05	06:52 16:33	16:00 (AL06) 07:18
25	07:13 17:05	16:39 (AL06) 06:38	05:53 17:42	06:05 18:13	05:32 19:45	05:26 20:31	05:46 20:19	06:16 19:41	06:46 18:50	07:17 17:03	06:53 16:33	16:01 (AL06) 07:18
26	07:12 17:06	16:40 (AL06) 06:36	05:52 17:43	06:03 18:14	05:32 19:46	05:27 20:31	05:47 20:19	06:17 19:40	06:47 18:49	07:18 17:02	06:55 16:32	16:09 (AL06) 07:19
27	07:12 17:07	16:42 (AL06) 06:35	05:50 17:44	06:02 18:15	05:31 19:47	05:27 20:31	05:48 20:18	06:18 19:38	06:48 18:47	07:19 17:01	06:56 16:32	16:00 (AL06) 07:19
28	07:11 17:08	16:43 (AL06) 06:33	05:48 17:45	06:01 18:16	05:30 19:48	05:27 20:31	05:49 20:17	06:19 19:37	06:49 18:45	07:20 16:59	06:57 16:31	16:02 (AL06) 07:19
29	07:10 17:10	16:44 (AL06) 06:33	05:47 17:46	05:59 18:17	05:30 19:49	05:28 20:31	05:50 20:16	06:20 19:35	06:50 18:44	07:21 16:59	06:58 16:31	16:00 (AL06) 07:20
30	07:09 17:11	16:46 (AL06) 06:32	05:45 17:47	05:58 19:18	05:29 19:50	05:28 20:31	05:50 20:15	06:21 19:33	06:51 18:42	07:22 16:57	06:59 16:31	16:06 (AL06) 07:20
31	07:08 17:12	16:47 (AL06) 06:31	05:43 17:48	05:29 19:19	05:29 20:20	05:29 20:31	05:51 20:14	06:22 19:32	06:24 18:42	07:23 16:55	06:59 16:31	16:02 (AL06) 07:20
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
Total, worst case	222	123									344	7

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

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

Calculation: WF Albano - Worst case Shadow receptor: R20 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (7)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:20 16:40	07:08 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:32	05:52 20:13	06:23 19:30	06:52 18:40	07:27 (AL03) 07:37 (AL03)	06:26 16:54	07:00 16:30
2	07:21 16:40	07:07 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	07:27 (AL03) 07:37 (AL03)	06:27 16:53	07:01 16:30
3	07:21 16:41	07:06 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	07:28 (AL03) 07:37 (AL03)	06:28 16:52	07:02 16:30
4	07:21 16:42	07:05 17:17	06:28 17:50	06:37 19:24	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:26	06:55 18:35	07:29 (AL03) 07:36 (AL03)	06:29 16:51	07:03 16:30
5	07:21 16:43	07:04 17:18	06:26 17:51	06:35 19:25	05:52 19:56	05:27 20:24	05:31 20:31	05:56 20:09	06:27 19:24	06:56 18:34	07:30 (AL03) 07:36 (AL03)	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:20	06:24 17:53	06:56 (AL03) 06:58 (AL03)	06:34 19:26	05:51 19:57	05:26 20:24	05:32 20:31	05:57 20:07	06:57 19:22	07:30 (AL03) 07:35 (AL03)	06:32 16:49	07:05 16:29
7	07:21 16:45	07:01 17:21	06:23 17:54	06:55 (AL03) 06:59 (AL03)	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:08 20:06	06:29 19:21	07:31 (AL03) 07:34 (AL03)	06:33 16:47	07:06 16:29
8	07:21 16:46	07:00 17:22	06:21 17:55	06:54 (AL03) 06:59 (AL03)	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:30 19:19		06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:52 (AL03) 06:59 (AL03)	06:29 19:29	05:47 20:00	05:26 20:26	05:33 20:30	06:00 20:04	06:30 19:17		06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:51 (AL03) 06:59 (AL03)	06:27 19:30	05:46 20:01	05:26 20:27	05:34 20:29	06:01 20:02	06:31 19:16		06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:49 (AL03) 06:58 (AL03)	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14		06:37 16:43	07:10 16:29
12	07:20 16:50	06:56 17:27	06:15 17:59	06:48 (AL03) 06:57 (AL03)	06:24 19:32	05:44 20:03	05:25 20:28	05:36 20:28	06:03 20:00	06:33 19:12		06:39 16:42	07:10 16:30
13	07:20 16:51	06:54 17:28	06:13 18:00	06:47 (AL03) 06:57 (AL03)	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:59	06:34 19:11		06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:45 (AL03) 06:56 (AL03)	06:21 19:34	05:42 20:05	05:25 20:29	05:37 20:27	06:05 19:57	06:35 19:09		06:41 16:41	07:12 16:30
15	07:19 16:53	06:52 17:31	06:10 18:02	06:44 (AL03) 06:55 (AL03)	06:20 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07		06:42 16:40	07:13 16:30
16	07:18 16:54	06:51 17:32	06:08 18:04	06:43 (AL03) 06:52 (AL03)	06:18 19:36	05:40 20:07	05:25 20:29	05:38 20:26	06:07 19:54	06:37 19:06		06:43 16:39	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:05	06:44 (AL03) 06:47 (AL03)	06:17 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04		06:45 16:38	07:14 16:31
18	07:18 16:57	06:48 17:34	06:05 18:06	06:45 (AL03) 19:38	06:15 20:09	05:38 20:10	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02		06:46 16:37	07:15 16:31
19	07:17 16:58	06:47 17:35	06:03 18:07	06:14 19:39	05:37 20:10	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:01	06:40 19:01		06:47 16:37	07:15 16:31
20	07:17 16:59	06:45 17:37	06:02 18:08	06:12 19:40	05:36 20:11	05:25 20:31	05:42 20:24	06:11 19:49	06:41 18:59	06:41 18:59		06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	05:26 20:31	05:43 20:23	06:12 19:47	06:42 18:57	06:42 18:57		06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:56	06:43 18:56		06:50 16:35	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	06:44 18:54		06:51 16:34	07:18 16:33
24	07:14 17:04	06:40 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:21	06:15 19:43	06:45 18:52	06:45 18:52		06:53 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:54 18:13	06:05 19:45	05:32 20:15	05:27 20:32	05:46 20:20	06:16 19:41	06:46 18:50	06:46 18:50		06:54 16:33	07:18 16:34
26	07:13 17:06	06:37 17:44	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:32	05:47 20:19	06:17 19:40	06:47 18:49	06:47 18:49		06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	05:27 20:32	05:48 20:18	06:18 19:38	06:48 18:47	06:48 18:47	07:24 (AL03) 07:33 (AL03)	06:20 17:01	06:35 16:36
28	07:11 17:08	06:34 17:46	05:49 18:16	06:01 19:49	05:30 20:18	05:28 20:32	05:49 20:17	06:19 19:37	06:49 18:45	06:49 18:45	07:24 (AL03) 07:35 (AL03)	06:21 16:59	06:36 16:36
29	07:10 17:10		06:47 19:17	05:59 19:50	05:30 20:18	05:28 20:32	05:50 20:16	06:20 19:35	06:50 18:44	06:50 18:44	07:25 (AL03) 07:36 (AL03)	06:22 16:58	06:37 16:37
30	07:09 17:11		06:45 19:18	05:58 19:51	05:29 20:19	05:28 20:32	05:51 20:15	06:21 19:34	06:51 18:42	06:51 18:42	07:26 (AL03) 07:36 (AL03)	06:23 16:57	06:38 16:38
31	07:08 17:12		06:44 19:19	05:57 20:20	05:29 20:20	05:27 20:14	05:52 19:32	06:22 19:32		06:25 16:56		06:25 16:56	07:20 16:39
Potential sun hours	299	298	370	398	447	451	458	427	375	41	50	299	289
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 Albano - Worst case Shadow receptor: R26 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:21 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:27 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:25	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:29
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:26	05:50 19:57	05:26 20:24	05:31 20:31	05:57 20:07	06:27 19:22	06:57 18:32	06:31 16:48	07:05 16:29
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:28 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	07:21 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:33 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:25 20:26	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:35 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:29
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11	07:04 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:06 18:19	06:41 16:40	07:12 16:30
15	07:19 16:53	06:52 17:30	06:10 18:02	06:20 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	05:25 20:29	05:38 20:26	06:07 19:54	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:04	06:16 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:18 16:56	16:30 (AL02) 16:31 (AL02)	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:40 20:25	06:09 19:52	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	07:17 16:58	16:31 (AL02) 16:33 (AL02)	06:46 17:35	06:03 18:07	06:13 19:39	05:37 20:10	05:25 20:30	06:10 19:50	06:40 19:00	07:11 18:12	06:47 16:36	07:15 16:31
20	07:16 16:59	16:32 (AL02) 16:34 (AL02)	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:31	06:11 19:49	06:41 18:59	07:12 18:10	06:48 16:36	07:16 16:32
21	07:16 17:00	16:33 (AL02) 16:36 (AL02)	06:44 17:38	06:00 18:09	06:10 19:41	05:35 20:11	05:26 20:31	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	16:33 (AL02) 16:37 (AL02)	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	06:13 19:46	06:43 18:55	07:14 18:08	06:50 16:34	07:17 16:33
23	07:15 17:02	16:34 (AL02) 16:38 (AL02)	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	16:35 (AL02) 16:39 (AL02)	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	06:15 19:43	06:45 18:52	07:16 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	16:37 (AL02) 16:41 (AL02)	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	05:26 20:31	06:16 19:41	06:46 18:50	07:17 17:03	06:54 16:33	07:19 16:34
26	07:13 17:06	16:39 (AL02) 16:42 (AL02)	06:37 17:43	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:32	06:17 19:40	06:47 18:49	07:19 17:02	06:55 16:32	07:20 16:35
27	07:12 17:07	16:42 (AL02)	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	05:27 20:32	06:18 19:38	06:48 18:47	07:20 17:01	06:56 16:32	07:21 16:36
28	07:11 17:08		06:34 17:46	05:48 18:16	06:01 19:48	05:30 20:17	05:28 20:32	06:19 19:37	06:49 18:45	07:21 16:59	06:57 16:31	07:22 16:36
29	07:10 17:10		06:47 19:17	05:59 19:49	06:09 20:18	05:30 20:32	05:28 20:16	06:20 19:35	06:50 18:44	07:22 16:58	06:58 16:31	07:23 16:37
30	07:09 17:11		06:45 19:18	05:58 19:51	06:08 20:19	05:29 20:32	05:28 20:15	06:21 19:33	06:51 18:42	07:23 16:57	06:59 16:31	07:24 16:38
31	07:08 17:12		06:44 19:19	05:57 20:20	06:07 20:29	05:28 20:32	05:27 20:14	06:22 19:32	06:52 18:42	07:24 16:55	07:00 16:31	07:25 16:38
Potential sun hours	299		298	398	447	451	458	427	375	346	299	289
Total, worst case	27										29	

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 Albano - Worst case Shadow receptor: R30 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	January	February	March	April	May	June
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	18:37 (AL03) 20:21
2	07:21 16:40	07:06 17:15	06:30 17:48	06:40 19:21	05:55 19:53	18:37 (AL03) 20:21
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	18:37 (AL03) 20:22
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	18:37 (AL03) 20:23
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	18:38 (AL03) 20:23
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:25	05:50 19:57	18:38 (AL03) 20:24
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	18:39 (AL03) 20:25
8	07:20 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	18:39 (AL03) 20:25
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	18:40 (AL03) 20:26
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	18:41 (AL03) 20:26
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	18:41 (AL03) 20:27
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	18:42 (AL03) 20:27
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	18:43 (AL03) 20:28
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	18:43 (AL03) 20:28
15	07:19 16:53	06:52 17:30	06:10 18:02	06:20 19:35	05:41 20:06	18:44 (AL03) 20:29
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	18:45 (AL03) 20:29
17	07:18 16:55	06:49 17:33	06:07 18:04	06:16 19:37	05:39 20:08	18:46 (AL03) 20:30
18	07:17 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	18:47 (AL03) 20:30
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	05:37 20:10	18:47 (AL03) 20:30
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	18:49 (AL03) 20:30
21	07:16 17:00	06:44 17:38	06:00 18:09	06:10 19:41	05:35 20:11	18:50 (AL03) 20:31
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	18:51 (AL03) 20:31
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	18:52 (AL03) 20:31
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	18:54 (AL03) 20:31
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	18:55 (AL03) 20:31
26	07:12 17:06	06:36 17:43	05:52 18:14	06:03 19:46	05:32 20:16	18:57 (AL03) 20:31
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	18:59 (AL03) 20:32
28	07:11 17:08	06:34 17:46	05:48 18:16	06:01 19:48	05:30 20:17	19:01 (AL03) 20:32
29	07:10 17:10		06:47 19:17	05:59 19:49	05:30 20:18	19:04 (AL03) 20:32
30	07:09 17:11		06:45 19:18	05:58 19:50	05:29 20:19	19:07 (AL03) 20:32
31	07:08 17:12		06:44 19:19		05:29 20:20	
Potential sun hours	299	298	370	398	447	451
Total, worst case			21	882	1361	

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 Albano - Worst case Shadow receptor: R30 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	July	August	September	October	November	December		
1	05:29 20:31	05:52 20:13	18:51 (AL03) 19:49 (AL03)	06:23 19:30	18:44 (AL03) 19:08 (AL03)	06:52 18:40	18:14 (AL02) 16:54	07:00 16:30
2	05:29 20:31	05:53 20:12	18:51 (AL03) 19:48 (AL03)	06:24 19:29	18:45 (AL03) 19:06 (AL03)	06:53 18:39	18:12 (AL02) 16:53	07:01 16:30
3	05:30 20:31	05:54 20:11	18:50 (AL03) 19:47 (AL03)	06:25 19:27	18:46 (AL03) 19:05 (AL03)	06:54 18:37	18:10 (AL02) 16:52	07:02 16:30
4	05:30 20:31	05:55 20:10	18:49 (AL03) 19:46 (AL03)	06:26 19:25	18:47 (AL03) 19:03 (AL03)	06:55 18:35	18:09 (AL02) 16:51	07:03 16:30
5	05:31 20:31	05:56 20:08	18:49 (AL03) 19:45 (AL03)	06:27 19:24	18:48 (AL03) 19:02 (AL03)	06:56 18:34	18:09 (AL02) 16:50	07:04 16:29
6	05:31 20:31	05:57 20:07	18:48 (AL03) 19:44 (AL03)	06:27 19:22	18:50 (AL03) 19:00 (AL03)	06:57 18:32	18:08 (AL02) 16:48	07:05 16:29
7	05:32 20:30	05:58 20:06	18:48 (AL03) 19:43 (AL03)	06:28 19:21	18:51 (AL03) 18:59 (AL03)	06:58 18:31	18:09 (AL02) 16:47	07:06 16:29
8	05:33 20:30	05:59 20:05	18:47 (AL03) 19:42 (AL03)	06:29 19:19	18:53 (AL03) 18:57 (AL03)	06:59 18:29	18:09 (AL02) 16:46	07:07 16:29
9	05:33 20:30	06:00 20:04	18:47 (AL03) 19:41 (AL03)	06:30 19:17	18:57 (AL03)	07:00 18:27	18:09 (AL02) 16:45	07:08 16:29
10	05:34 20:29	06:01 20:02	18:46 (AL03) 19:40 (AL03)	06:31 19:16	18:57 (AL03)	07:01 18:26	18:09 (AL02) 16:44	07:09 16:29
11	05:35 20:29	06:02 20:01	18:46 (AL03) 19:39 (AL03)	06:32 19:14	18:57 (AL03)	07:02 18:24	18:09 (AL02) 16:43	07:09 16:29
12	05:35 20:28	06:03 20:00	18:45 (AL03) 19:37 (AL03)	06:33 19:12	18:57 (AL03)	07:03 18:23	18:09 (AL02) 16:42	07:10 16:29
13	05:36 20:28	19:17 (AL03) 19:22 (AL03)	06:04 19:58	18:44 (AL03) 19:35 (AL03)	06:34 19:11	07:04 18:21	18:09 (AL02) 16:41	07:11 16:30
14	05:37 20:27	19:13 (AL03) 19:27 (AL03)	06:05 19:57	18:44 (AL03) 19:34 (AL03)	06:35 19:09	07:05 18:19	18:09 (AL02) 16:40	07:12 16:30
15	05:38 20:27	19:11 (AL03) 19:30 (AL03)	06:06 19:56	18:43 (AL03) 19:33 (AL03)	06:36 19:07	07:07 18:18	18:09 (AL02) 16:40	07:13 16:30
16	05:38 20:26	19:09 (AL03) 19:33 (AL03)	06:07 19:54	18:43 (AL03) 19:31 (AL03)	06:37 19:06	07:08 18:16	18:09 (AL02) 16:39	07:13 16:30
17	05:39 20:26	19:07 (AL03) 19:34 (AL03)	06:08 19:53	18:43 (AL03) 19:30 (AL03)	06:38 19:04	07:09 18:15	18:09 (AL02) 16:38	07:14 16:31
18	05:40 20:25	19:06 (AL03) 19:36 (AL03)	06:09 19:52	18:43 (AL03) 19:29 (AL03)	06:39 19:02	07:10 18:13	18:09 (AL02) 16:37	07:15 16:31
19	05:41 20:24	19:04 (AL03) 19:38 (AL03)	06:10 19:50	18:42 (AL03) 19:28 (AL03)	06:40 19:00	07:11 18:12	18:09 (AL02) 16:36	07:15 16:31
20	05:42 20:24	19:03 (AL03) 19:39 (AL03)	06:11 19:49	18:42 (AL03) 19:26 (AL03)	06:41 18:59	07:12 18:10	18:09 (AL02) 16:36	07:16 16:32
21	05:42 20:23	19:02 (AL03) 19:41 (AL03)	06:12 19:47	18:42 (AL03) 19:25 (AL03)	06:42 18:57	07:13 18:09	18:09 (AL02) 16:35	07:16 16:32
22	05:43 20:22	19:01 (AL03) 19:42 (AL03)	06:13 19:46	18:42 (AL03) 19:23 (AL03)	06:43 18:55	07:14 18:08	18:09 (AL02) 16:34	07:17 16:33
23	05:44 20:21	18:59 (AL03) 19:42 (AL03)	06:14 19:44	18:42 (AL03) 19:22 (AL03)	06:44 18:54	07:15 18:06	18:09 (AL02) 16:34	07:17 16:33
24	05:45 20:20	18:58 (AL03) 19:44 (AL03)	06:15 19:43	18:42 (AL03) 19:21 (AL03)	06:45 18:52	07:16 18:05	18:09 (AL02) 16:33	07:18 16:34
25	05:46 20:20	18:58 (AL03) 19:45 (AL03)	06:16 19:41	18:43 (AL03) 19:19 (AL03)	06:46 18:50	06:18 17:03	18:09 (AL02) 16:33	07:18 16:34
26	05:47 20:19	18:57 (AL03) 19:46 (AL03)	06:17 19:40	18:43 (AL03) 19:18 (AL03)	06:47 18:49	06:19 17:02	18:09 (AL02) 16:32	07:19 16:35
27	05:48 20:18	18:56 (AL03) 19:47 (AL03)	06:18 19:38	18:43 (AL03) 19:16 (AL03)	06:48 18:47	06:20 17:01	18:09 (AL02) 16:32	07:19 16:36
28	05:49 20:17	18:55 (AL03) 19:48 (AL03)	06:19 19:37	18:43 (AL03) 19:15 (AL03)	06:49 18:45	06:21 16:59	18:09 (AL02) 16:31	07:19 16:36
29	05:50 20:16	18:54 (AL03) 19:49 (AL03)	06:20 19:35	18:43 (AL03) 19:12 (AL03)	06:50 18:44	06:22 16:58	18:09 (AL02) 16:31	07:20 16:37
30	05:51 20:15	18:54 (AL03) 19:50 (AL03)	06:21 19:33	18:43 (AL03) 19:11 (AL03)	06:51 18:42	18:16 (AL02) 16:57	18:09 (AL02) 16:31	07:20 16:38
31	05:51 20:14	18:52 (AL03) 19:50 (AL03)	06:22 19:32	18:44 (AL03) 19:09 (AL03)		06:24 16:55	18:09 (AL02) 16:31	07:20 16:38
Potential sun hours	458	427	375	346	299	289		
Total, worst case	727	1427	120	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 Albano - Worst case Shadow receptor: R31 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	January	February	March	April	May	June		
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	19:13 (AL03) 20:21	05:28 55	19:01 (AL03) 19:56 (AL03)
2	07:21 16:40	07:06 17:15	06:30 17:48	06:40 19:21	05:55 19:53	19:12 (AL03) 19:30 (AL03)	05:28 20:21	19:01 (AL03) 19:56 (AL03)
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	19:09 (AL03) 19:30 (AL03)	05:27 20:22	19:02 (AL03) 19:57 (AL03)
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	19:08 (AL03) 19:31 (AL03)	05:27 20:23	19:01 (AL03) 19:57 (AL03)
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	19:07 (AL03) 19:33 (AL03)	05:27 20:23	19:02 (AL03) 19:58 (AL03)
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:25	05:50 19:57	19:07 (AL03) 19:34 (AL03)	05:26 20:24	19:02 (AL03) 19:59 (AL03)
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	19:06 (AL03) 19:35 (AL03)	05:26 20:25	19:03 (AL03) 20:00 (AL03)
8	07:20 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	19:05 (AL03) 19:36 (AL03)	05:26 20:25	19:02 (AL03) 20:00 (AL03)
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	19:05 (AL03) 19:37 (AL03)	05:26 20:26	19:02 (AL03) 20:00 (AL03)
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	19:04 (AL03) 19:38 (AL03)	05:25 20:26	19:03 (AL03) 20:01 (AL03)
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	19:03 (AL03) 19:39 (AL03)	05:25 20:27	19:03 (AL03) 20:02 (AL03)
12	07:20 16:50	06:55 17:27	06:15 17:59	17:37 (AL02) 19:32	05:44 20:03	19:03 (AL03) 19:40 (AL03)	05:25 20:27	19:04 (AL03) 20:02 (AL03)
13	07:19 16:51	06:54 17:28	06:13 18:00	17:37 (AL02) 19:33	05:43 20:04	19:02 (AL03) 19:41 (AL03)	05:25 20:28	19:04 (AL03) 20:03 (AL03)
14	07:19 16:52	06:53 17:29	06:12 18:01	17:37 (AL02) 19:34	05:42 20:05	19:02 (AL03) 19:41 (AL03)	05:25 20:28	19:04 (AL03) 20:03 (AL03)
15	07:19 16:53	06:52 17:30	06:10 18:02	17:36 (AL02) 19:35	05:41 20:06	19:01 (AL03) 19:42 (AL03)	05:25 20:29	19:04 (AL03) 20:04 (AL03)
16	07:18 16:54	06:50 17:32	06:08 18:03	17:37 (AL02) 19:36	05:40 20:07	19:01 (AL03) 19:43 (AL03)	05:25 20:29	19:05 (AL03) 20:04 (AL03)
17	07:18 16:55	06:49 17:33	06:07 18:04	17:38 (AL02) 19:37	05:39 20:08	19:01 (AL03) 19:44 (AL03)	05:25 20:30	19:05 (AL03) 20:04 (AL03)
18	07:17 16:57	06:48 17:34	06:05 18:06	17:38 (AL02) 19:38	05:38 20:09	19:00 (AL03) 19:45 (AL03)	05:25 20:30	19:05 (AL03) 20:04 (AL03)
19	07:17 16:58	06:46 17:35	06:03 18:07	17:41 (AL02) 19:39	05:37 20:10	19:00 (AL03) 19:45 (AL03)	05:25 20:30	19:05 (AL03) 20:05 (AL03)
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	19:01 (AL03) 19:47 (AL03)	05:25 20:30	19:06 (AL03) 20:06 (AL03)
21	07:16 17:00	06:44 17:38	06:00 18:09	06:10 19:41	05:35 20:11	19:00 (AL03) 19:47 (AL03)	05:26 20:31	19:06 (AL03) 20:06 (AL03)
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	19:00 (AL03) 19:48 (AL03)	05:26 20:31	19:06 (AL03) 20:06 (AL03)
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	19:00 (AL03) 19:49 (AL03)	05:26 20:31	19:06 (AL03) 20:06 (AL03)
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	19:00 (AL03) 19:50 (AL03)	05:26 20:31	19:07 (AL03) 20:06 (AL03)
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	19:00 (AL03) 19:50 (AL03)	05:26 20:31	19:07 (AL03) 20:06 (AL03)
26	07:12 17:06	06:36 17:43	05:52 18:14	06:03 19:46	05:32 19:23 (AL03) 19:24 (AL03)	19:00 (AL03) 19:51 (AL03) 20:31	05:27 20:31	19:07 (AL03) 20:06 (AL03)
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 19:21 (AL03) 19:25 (AL03)	19:00 (AL03) 19:52 (AL03) 20:32	05:27 20:32	19:07 (AL03) 20:07 (AL03)
28	07:11 17:08	06:34 17:46	05:48 18:16	06:01 19:48	05:30 19:19 (AL03) 19:26 (AL03)	19:00 (AL03) 19:53 (AL03) 20:32	05:28 20:32	19:07 (AL03) 20:06 (AL03)
29	07:10 17:10	06:47 19:17	05:59 19:17	05:59 19:49	05:30 19:16 (AL03) 19:26 (AL03)	19:01 (AL03) 19:54 (AL03) 20:32	05:28 20:32	19:07 (AL03) 20:06 (AL03)
30	07:09 17:11	06:45 19:18	06:45 19:18	05:58 19:50	05:29 19:14 (AL03) 19:28 (AL03)	19:00 (AL03) 19:54 (AL03) 20:32	05:28 20:32	19:08 (AL03) 20:06 (AL03)
31	07:08 17:12	06:44 19:19	06:44 19:19	05:29 20:20	05:29 19:01 (AL03) 19:55 (AL03)	19:01 (AL03)		
Potential sun hours	299	298	370	398	447	451	1750	
Total, worst case			35	36	1231			

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 Albano - Worst case Shadow receptor: R31 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	July		August		September		October		November		December	
1	05:29		19:07 (AL03)	05:52	19:13 (AL03)	06:23	06:52	18:17 (AL02)	06:26	07:00		
	20:31	59	20:06 (AL03)	20:13	19:49 (AL03)	19:30	18:40	18:18 (AL02)	16:54	16:30		
2	05:29		19:08 (AL03)	05:53	19:13 (AL03)	06:24	06:53		06:27	07:01		
	20:31	58	20:06 (AL03)	20:12	19:48 (AL03)	19:29	18:39		16:53	16:30		
3	05:30		19:08 (AL03)	05:54	19:14 (AL03)	06:25	06:54		06:28	07:02		
	20:31	58	20:06 (AL03)	20:11	19:47 (AL03)	19:27	18:37		16:52	16:30		
4	05:30		19:08 (AL03)	05:55	19:14 (AL03)	06:26	06:55		06:29	07:03		
	20:31	58	20:06 (AL03)	20:10	19:46 (AL03)	19:25	18:35		16:51	16:30		
5	05:31		19:08 (AL03)	05:56	19:15 (AL03)	06:27	06:56		06:30	07:04		
	20:31	57	20:05 (AL03)	20:08	19:45 (AL03)	19:24	18:34		16:50	16:29		
6	05:31		19:08 (AL03)	05:57	19:16 (AL03)	06:27	06:57		06:31	07:05		
	20:31	58	20:06 (AL03)	20:07	19:44 (AL03)	19:22	18:32		16:48	16:29		
7	05:32		19:09 (AL03)	05:58	19:17 (AL03)	06:28	06:58		06:33	07:06		
	20:30	57	20:06 (AL03)	20:06	19:43 (AL03)	19:21	18:31		16:47	16:29		
8	05:33		19:08 (AL03)	05:59	19:17 (AL03)	06:29	06:59		06:34	07:07		
	20:30	57	20:05 (AL03)	20:05	19:42 (AL03)	19:19	18:29		16:46	16:29		
9	05:33		19:09 (AL03)	06:00	19:18 (AL03)	06:30	07:00		06:35	07:08		
	20:30	56	20:05 (AL03)	20:04	19:41 (AL03)	19:17	18:27		16:45	16:29		
10	05:34		19:08 (AL03)	06:01	19:19 (AL03)	06:31	07:01		06:36	07:09		
	20:29	56	20:04 (AL03)	20:02	19:40 (AL03)	19:16	18:26		16:44	16:29		
11	05:35		19:09 (AL03)	06:02	19:21 (AL03)	06:32	07:02		06:37	07:09		
	20:29	55	20:04 (AL03)	20:01	19:39 (AL03)	19:14	18:24		16:43	16:29		
12	05:35		19:09 (AL03)	06:03	19:22 (AL03)	06:33	07:03		06:39	07:10		
	20:28	55	20:04 (AL03)	20:00	19:37 (AL03)	19:12	18:23		16:42	16:29		
13	05:36		19:09 (AL03)	06:04	19:22 (AL03)	06:34	07:04		06:40	07:11		
	20:28	55	20:04 (AL03)	19:58	19:35 (AL03)	19:11	18:21		16:41	16:30		
14	05:37		19:09 (AL03)	06:05	19:24 (AL03)	06:35	07:05		06:41	07:12		
	20:27	53	20:02 (AL03)	19:57	19:34 (AL03)	19:09	18:19		16:40	16:30		
15	05:38		19:09 (AL03)	06:06	19:26 (AL03)	06:36	07:07		06:42	07:13		
	20:27	53	20:02 (AL03)	19:56	19:33 (AL03)	19:07	18:18		16:40	16:30		
16	05:38		19:10 (AL03)	06:07	19:28 (AL03)	06:37	07:08		06:43	07:13		
	20:26	52	20:02 (AL03)	19:54	19:31 (AL03)	19:06	18:16		16:39	16:30		
17	05:39		19:09 (AL03)	06:08		06:38	07:09		06:44	07:14		
	20:26	52	20:01 (AL03)	19:53		19:04	18:15		16:38	16:31		
18	05:40		19:09 (AL03)	06:09		06:39	07:10		06:46	07:15		
	20:25	51	20:00 (AL03)	19:52		19:02	18:13		16:37	16:31		
19	05:41		19:10 (AL03)	06:10		06:40	07:11		06:47	07:15		
	20:24	50	20:00 (AL03)	19:50		19:00	18:12		16:36	16:31		
20	05:42		19:10 (AL03)	06:11		06:41	07:12		06:48	07:16		
	20:24	49	19:59 (AL03)	19:49		18:59	18:10		16:36	16:32		
21	05:42		19:10 (AL03)	06:12		06:42	07:13		06:49	07:16		
	20:23	49	19:59 (AL03)	19:47		18:57	18:09		16:35	16:32		
22	05:43		19:11 (AL03)	06:13		06:43	07:14		06:50	07:17		
	20:22	47	19:58 (AL03)	19:46		18:55	18:08		16:34	16:33		
23	05:44		19:10 (AL03)	06:14		06:44	07:15		06:51	07:17		
	20:21	47	19:57 (AL03)	19:44		18:54	18:06		16:34	16:33		
24	05:45		19:10 (AL03)	06:15		06:45	07:16	18:25 (AL02)	06:52	07:18		
	20:20	46	19:56 (AL03)	19:43		18:52	5 18:30 (AL02)	18:05	16:33	16:34		
25	05:46		19:11 (AL03)	06:16		06:46	06:18	18:22 (AL02)	06:54	07:18		
	20:20	44	19:55 (AL03)	19:41		18:50	6 18:28 (AL02)	17:03	16:33	16:34		
26	05:47		19:11 (AL03)	06:17		06:47	06:19	18:20 (AL02)	06:55	07:19		
	20:19	44	19:55 (AL03)	19:40		18:49	6 18:26 (AL02)	17:02	16:32	16:35		
27	05:48		19:11 (AL03)	06:18		06:48	06:20	18:19 (AL02)	06:56	07:19		
	20:18	43	19:54 (AL03)	19:38		18:47	6 18:25 (AL02)	17:01	16:32	16:36		
28	05:49		19:12 (AL03)	06:19		06:49	06:21	18:18 (AL02)	06:57	07:19		
	20:17	41	19:53 (AL03)	19:37		18:45	5 18:23 (AL02)	16:59	16:31	16:36		
29	05:50		19:12 (AL03)	06:20		06:50	06:22	18:17 (AL02)	06:58	07:20		
	20:16	41	19:53 (AL03)	19:35		18:44	4 18:21 (AL02)	16:58	16:31	16:37		
30	05:51		19:13 (AL03)	06:21		06:51	06:23	18:17 (AL02)	06:59	07:20		
	20:15	39	19:52 (AL03)	19:33		18:42	3 18:20 (AL02)	16:57	16:31	16:38		
31	05:51		19:12 (AL03)	06:22			06:24			07:20		
	20:14	38	19:50 (AL03)	19:32			16:55			16:38		
Potential sun hours	458			427		375	346		299	289		
Total, worst case	1578			355		35		1				

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 Albano - Worst case Shadow receptor: R33 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (11)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:20 16:40	07:06 17:15	06:30 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:27 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:25	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:25	05:50 19:57	05:26 20:24	05:31 20:31	05:57 20:07	06:27 19:22	06:57 18:32	06:31 16:48	07:05 16:29
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:28 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	07:20 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:33 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:25 20:26	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:35 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:29
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11	07:04 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:05 18:19	06:41 16:40	07:12 16:30
15	07:19 16:53	06:52 17:30	06:10 18:02	06:20 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	8 18:37 (AL02) 07:07	06:42 16:40	07:13 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	05:25 20:29	05:38 20:26	06:07 19:54	06:37 19:06	8 18:34 (AL02) 07:08	06:43 16:39	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:04	06:16 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	9 18:43 (AL02) 07:09	06:44 16:38	07:14 16:31
18	07:17 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	8 18:32 (AL02) 07:10	06:46 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	05:37 20:10	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:00	8 18:40 (AL02) 07:11	06:47 16:36	07:15 16:31
20	07:16 16:59	06:45 17:36	06:02 18:08	6 17:45 (AL02) 06:12	05:36 19:40	05:25 20:10	05:42 20:24	06:11 19:49	06:41 18:59	7 18:38 (AL02) 07:12	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	2 17:47 (AL02) 06:10	05:35 19:41	05:26 20:11	05:42 20:23	06:12 19:47	06:42 18:57	7 18:37 (AL02) 07:13	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	3 17:47 (AL02) 06:09	05:35 19:42	05:26 20:12	05:43 20:22	06:13 19:46	06:43 18:55	5 18:35 (AL02) 07:14	06:50 16:34	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	5 17:49 (AL02) 06:08	05:34 19:43	05:26 20:13	05:44 20:31	06:14 19:44	06:44 18:54	4 18:29 (AL02) 07:15	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	6 17:50 (AL02) 06:06	05:33 19:44	05:26 20:14	05:45 20:31	06:15 19:43	06:45 18:52	2 18:31 (AL02) 07:16	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	8 17:51 (AL02) 06:05	05:32 19:45	05:27 20:15	05:46 20:31	06:16 19:41	06:46 18:50	7 18:38 (AL02) 07:17	06:54 16:33	07:18 16:34
26	07:12 17:06	06:36 17:43	05:52 18:14	7 17:44 (AL02) 06:03	05:32 19:46	05:27 20:16	05:47 20:19	06:17 19:40	06:47 18:49	8 18:43 (AL02) 07:18	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	9 17:53 (AL02) 06:02	05:31 19:47	05:27 20:17	05:48 20:32	06:18 19:38	06:48 18:47	9 18:41 (AL02) 07:19	06:56 16:32	07:19 16:36
28	07:11 17:08	06:34 17:46	05:48 18:16	8 17:47 (AL02) 06:01	05:30 19:48	05:28 20:17	05:49 20:32	06:19 19:37	06:49 18:45	8 18:33 (AL02) 07:20	06:57 16:31	07:20 16:36
29	07:10 17:10	06:47 19:17	06:47 19:17	4 18:54 (AL02) 05:59	05:30 19:49	05:28 20:18	05:50 20:16	06:20 19:35	06:50 18:44	6 17:55 (AL02) 07:21	06:58 16:31	07:20 16:37
30	07:09 17:11	06:45 19:18	06:45 19:18	5 17:55 (AL02) 05:58	05:29 19:50	05:28 20:19	05:51 20:32	06:21 19:33	06:51 18:42	7 18:35 (AL02) 07:22	06:59 16:31	07:20 16:38
31	07:08 17:12	06:44 19:19	06:44 19:19	6 17:54 (AL02) 05:57	05:29 20:20	05:29 20:32	05:51 20:15	06:22 19:32	06:52 18:42	8 18:34 (AL02) 07:23	07:00 16:31	07:21 16:38
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
Total, worst case			62						58			

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 Albano - Worst case Shadow receptor: R35 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (12)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	18:49 (AL02) 19:52	05:57 20:21	05:28 20:31	05:29 20:13	05:52 19:30	06:23 18:40	06:26 16:54	07:00 16:30
2	07:20 16:40	07:06 17:15	06:30 17:48	06:40 19:21	18:52 (AL02) 19:53	05:55 20:21	05:28 20:31	05:29 20:12	05:53 19:29	06:24 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	18:59 (AL02) 19:54	05:54 20:22	05:27 20:31	05:30 20:11	05:54 19:27	06:25 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	18:52 (AL02) 19:55	05:53 20:23	05:27 20:31	05:30 20:10	05:55 19:25	06:26 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	18:52 (AL02) 19:56	05:52 20:23	05:27 20:31	05:31 20:08	05:56 19:24	06:27 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:25	18:52 (AL02) 19:57	05:50 20:24	05:26 20:31	05:32 20:07	05:57 19:22	06:27 18:32	06:31 16:48	07:05 16:29
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	18:52 (AL02) 19:58	05:49 20:25	05:26 20:30	05:32 20:06	05:58 19:21	06:28 18:31	06:33 16:47	07:06 16:29
8	07:20 16:46	07:00 17:22	06:21 17:55	06:31 19:28	18:52 (AL02) 19:59	05:48 20:25	05:26 20:30	05:33 20:05	05:59 19:19	06:29 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	18:52 (AL02) 20:00	05:47 20:26	05:26 20:30	05:33 20:04	06:00 19:17	06:30 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	18:52 (AL02) 20:01	05:46 20:26	05:25 20:29	05:34 20:02	06:01 19:16	06:31 18:46 (AL02) 18:51 (AL02)	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	18:52 (AL02) 20:02	05:45 20:27	05:25 20:29	06:02 20:01	06:32 19:14	06:32 18:52 (AL02)	07:02 18:24	07:09 16:29
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	18:52 (AL02) 20:03	05:44 20:27	05:25 20:28	06:03 20:00	06:33 19:12	07:03 18:40 (AL02) 18:51 (AL02)	07:03 18:23	07:10 16:29
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	18:52 (AL02) 20:04	05:43 20:28	05:25 20:28	06:04 19:58	06:34 19:11	07:04 18:48 (AL02)	07:04 18:21	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	18:52 (AL02) 20:05	05:42 20:28	05:25 20:27	06:05 19:57	06:35 19:09	07:05 18:36 (AL02) 18:46 (AL02)	07:05 18:19	07:12 16:30
15	07:19 16:53	06:52 17:30	06:10 18:02	06:20 19:35	18:52 (AL02) 20:06	05:41 20:29	05:25 20:27	06:06 19:56	06:36 19:07	07:07 18:35 (AL02) 18:45 (AL02)	07:07 18:18	07:13 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	18:52 (AL02) 20:07	05:40 20:29	05:25 20:26	06:07 19:54	06:37 19:06	07:08 18:35 (AL02) 18:43 (AL02)	07:08 18:16	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:04	06:16 19:37	18:52 (AL02) 20:08	05:39 20:30	05:25 20:26	06:08 19:53	06:38 19:04	07:09 18:34 (AL02) 18:41 (AL02)	07:09 18:15	07:14 16:31
18	07:17 16:57	06:48 17:34	06:05 18:06	06:15 19:38	18:52 (AL02) 20:09	05:38 20:30	05:25 20:25	06:09 19:52	06:39 19:02	07:10 18:34 (AL02) 18:40 (AL02)	07:10 18:13	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	18:52 (AL02) 20:10	05:37 20:30	05:25 20:24	06:10 19:50	06:40 19:00	07:11 18:38 (AL02) 18:35 (AL02)	07:11 18:12	07:16 16:31
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	18:52 (AL02) 20:10	05:36 20:30	05:25 20:24	06:11 19:49	06:41 18:59	07:12 18:35 (AL02) 18:37 (AL02)	07:12 18:10	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	18:52 (AL02) 20:11	05:35 20:31	05:26 20:23	06:12 19:47	06:42 18:57	07:13 18:41 (AL02) 18:34 (AL02)	07:13 18:15	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	18:52 (AL02) 20:12	05:35 20:31	05:26 20:22	06:13 19:46	06:43 18:55	07:14 18:34 (AL02) 18:41 (AL02)	07:14 18:08	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	17:49 (AL02) 17:50 (AL02)	05:34 20:31	05:26 20:21	06:14 19:44	06:44 18:54	07:15 18:40 (AL02) 18:47 (AL02)	07:15 18:01	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	17:47 (AL02) 17:51 (AL02)	05:33 20:31	05:26 20:20	06:15 19:43	06:45 18:52	07:16 18:45 (AL02) 18:52 (AL02)	07:16 18:05	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	17:47 (AL02) 17:52 (AL02)	05:32 20:31	05:27 20:20	06:16 19:41	06:46 18:50	07:17 18:40 (AL02) 18:47 (AL02)	07:17 18:03	07:18 16:34
26	07:12 17:06	06:36 17:43	05:52 18:14	06:03 19:46	17:46 (AL02) 17:53 (AL02)	05:32 20:31	05:27 20:19	06:17 19:40	06:47 18:49	07:18 18:40 (AL02) 18:47 (AL02)	07:18 18:06	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	17:46 (AL02) 17:54 (AL02)	05:31 20:32	05:27 20:18	06:18 19:38	06:48 18:47	07:19 18:40 (AL02) 18:47 (AL02)	07:19 18:07	07:20 16:36
28	07:11 17:08	06:34 17:46	05:48 18:16	06:01 19:48	17:46 (AL02) 17:55 (AL02)	05:30 20:32	05:28 20:17	06:19 19:37	06:49 18:45	07:20 18:40 (AL02) 18:47 (AL02)	07:20 18:08	07:21 16:36
29	07:10 17:10	06:47 19:17	06:47 19:17	06:47 19:17	18:46 (AL02) 18:56 (AL02)	05:30 20:18	05:28 20:32	06:20 20:16	06:50 19:35	07:21 18:44 18:51	07:21 16:58 17:05	07:22 16:37
30	07:09 17:11	06:45 19:18	06:45 19:18	06:45 19:18	18:47 (AL02) 18:58 (AL02)	05:29 20:19	05:28 20:32	06:21 20:15	06:51 19:33	07:22 18:42 18:49	07:22 16:57 17:04	07:23 16:38
31	07:08 17:12	06:44 19:19	06:44 19:19	06:44 19:19	18:48 (AL02) 18:58 (AL02)	05:29 20:20	05:28 20:14	06:22 19:32	06:52 18:42	07:23 18:42 18:49	07:23 16:56 17:01	07:24 16:38
Potential sun hours	299	298	370	398	447	451	458	427	375	83	346	299
Total, worst case			65	17								289

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

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

Calculation: WF Albano - Worst case Shadow receptor: R36a - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (13)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	18:47 (AL02) 19:52	05:57 20:21	05:28 20:31	05:29 20:13	05:52 19:30	06:23 18:40	06:26 16:54	07:00 16:30
2	07:21 16:40	07:06 17:15	06:30 17:48	06:40 19:21	18:50 (AL02) 19:53	05:55 20:21	05:28 20:31	05:29 20:12	05:53 19:29	06:24 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	18:59 (AL02) 19:54	05:54 20:22	05:27 20:31	05:30 20:11	05:54 19:27	06:25 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	18:59 (AL02) 19:55	05:53 20:23	05:27 20:31	05:30 20:10	05:55 19:25	06:26 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	18:59 (AL02) 19:56	05:52 20:23	05:27 20:31	05:31 20:08	05:56 19:24	06:27 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:25	18:59 (AL02) 19:57	05:50 20:24	05:26 20:31	05:32 20:07	05:57 19:22	06:27 18:32	06:31 16:48	07:05 16:29
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	18:59 (AL02) 19:58	05:49 20:25	05:26 20:30	05:32 20:06	05:58 19:21	06:28 18:31	06:33 16:47	07:06 16:29
8	07:20 16:46	07:00 17:22	06:21 17:55	06:31 19:28	18:59 (AL02) 19:59	05:48 20:25	05:26 20:30	05:33 20:05	05:59 19:19	06:29 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	18:59 (AL02) 20:00	05:47 20:26	05:26 20:30	05:33 20:04	06:00 19:17	06:30 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	18:59 (AL02) 20:01	05:46 20:26	05:25 20:29	05:34 20:02	06:01 19:16	06:31 18:44 (AL02) 18:51 (AL02)	07:01 18:26	07:09 16:44
11	07:20 16:49	06:57 17:25	06:16 17:58	06:26 19:31	18:59 (AL02) 20:02	05:45 20:27	05:25 20:29	06:02 20:01	06:32 19:14	07:02 18:52 (AL02)	07:02 18:24	07:09 16:43
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	18:59 (AL02) 20:03	05:44 20:27	05:25 20:28	06:03 20:00	06:33 19:12	07:03 18:39 (AL02) 18:51 (AL02)	07:03 18:23	07:10 16:42
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	18:59 (AL02) 20:04	05:43 20:28	05:25 20:28	06:04 19:58	06:34 19:11	07:04 18:48 (AL02)	07:04 18:21	07:11 16:41
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	18:59 (AL02) 20:05	05:42 20:28	05:25 20:27	06:05 19:57	06:35 19:09	07:05 18:35 (AL02) 18:46 (AL02)	07:05 18:19	07:12 16:40
15	07:19 16:53	06:52 17:30	06:10 18:02	06:20 19:35	18:59 (AL02) 20:06	05:41 20:29	05:25 20:27	06:06 19:56	06:36 19:07	07:07 18:34 (AL02) 18:45 (AL02)	07:07 18:18	07:13 16:40
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	18:59 (AL02) 20:07	05:40 20:29	05:25 20:26	06:07 19:54	06:37 19:06	07:08 18:34 (AL02) 18:43 (AL02)	07:08 18:16	07:13 16:39
17	07:18 16:55	06:49 17:33	06:07 18:04	06:16 19:37	18:59 (AL02) 20:08	05:39 20:25	05:25 20:26	06:08 19:53	06:38 19:04	07:09 18:33 (AL02) 18:41 (AL02)	07:09 18:15	07:14 16:38
18	07:17 16:57	06:48 17:34	06:05 18:06	06:15 19:38	18:59 (AL02) 20:09	05:38 20:25	05:25 20:25	06:09 19:52	06:39 19:02	07:10 18:33 (AL02) 18:40 (AL02)	07:10 18:13	07:15 16:37
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	18:59 (AL02) 20:10	05:37 20:25	05:25 20:24	06:10 19:50	06:40 19:00	07:11 18:38 (AL02) 18:34 (AL02)	07:11 18:12	07:15 16:36
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	18:59 (AL02) 20:10	05:36 20:25	05:25 20:24	06:11 19:49	06:41 18:59	07:12 18:37 (AL02) 18:34 (AL02)	07:12 18:10	07:16 16:36
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	18:59 (AL02) 20:11	05:35 20:26	05:26 20:23	06:12 19:47	06:42 18:57	07:13 18:35 (AL02)	07:13 18:09	07:16 16:35
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	18:59 (AL02) 20:12	05:35 20:31	05:26 20:22	06:13 19:46	06:43 18:55	07:14 18:33 (AL02) 18:41 (AL02)	07:14 18:08	07:17 16:34
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	18:59 (AL02) 20:13	05:34 20:31	05:26 20:21	06:14 19:44	06:44 18:54	07:15 18:32 (AL02) 18:39 (AL02)	07:15 18:06	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	18:59 (AL02) 20:14	05:33 20:31	05:26 20:20	06:15 19:43	06:45 18:52	07:16 18:31 (AL02) 18:38 (AL02)	07:16 18:05	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	18:59 (AL02) 20:15	05:32 20:31	05:27 20:20	06:16 19:41	06:46 18:50	07:17 18:30 (AL02) 18:35 (AL02)	07:17 18:03	07:18 16:34
26	07:12 17:06	06:36 17:43	05:52 18:14	06:03 19:46	18:59 (AL02) 20:16	05:32 20:31	05:27 20:19	06:17 19:40	06:47 18:49	07:18 18:29 (AL02) 18:34 (AL02)	07:18 18:01	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	18:59 (AL02) 20:17	05:31 20:32	05:27 20:18	06:18 19:38	06:48 18:47	07:19 18:28 (AL02) 18:33 (AL02)	07:19 18:00	07:20 16:36
28	07:11 17:08	06:34 17:46	05:48 18:16	06:01 19:48	18:59 (AL02) 20:18	05:30 20:32	05:28 20:17	06:19 19:37	06:49 18:45	07:20 18:27 (AL02) 18:32 (AL02)	07:20 18:00	07:21 16:36
29	07:10 17:10	06:47 17:47	06:47 18:17	05:59 19:49	18:59 (AL02) 20:19	05:30 20:32	05:28 20:16	06:20 19:35	06:50 18:44	07:21 18:26 (AL02) 18:31 (AL02)	07:21 18:00	07:22 16:37
30	07:09 17:11	06:45 17:48	06:45 18:18	05:58 19:50	18:59 (AL02) 20:20	05:29 20:32	05:28 20:15	06:21 19:33	06:51 18:42	07:22 18:25 (AL02) 18:30 (AL02)	07:22 18:00	07:23 16:38
31	07:08 17:12	06:44 17:49	06:44 18:19	05:57 19:51	18:59 (AL02) 20:21	05:29 20:32	05:27 20:14	06:22 19:32	06:52 18:42	07:23 18:24 (AL02) 18:29 (AL02)	07:23 18:00	07:24 16:38
Potential sun hours	299	298	370	398	447	451	458	427	375	97	346	299
Total, worst case			77	21								289

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

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

Calculation: WF Albano - Worst case Shadow receptor: R41 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	18 19:32 (AL02) 19:50 (AL02)
2	07:20 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 20:21	16 19:33 (AL02) 19:49 (AL02)
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:27 20:22	15 19:34 (AL02) 19:49 (AL02)
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	14 19:35 (AL02) 19:49 (AL02)
5	07:21 16:43	07:46 (AL06) 07:47 (AL06)	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	13 19:35 (AL02) 19:48 (AL02)
6	07:21 16:44	07:45 (AL06) 07:48 (AL06)	07:02 17:19	06:24 17:52	06:34 19:25	05:50 19:57	11 19:36 (AL02) 19:47 (AL02)
7	07:21 16:45	07:45 (AL06) 07:49 (AL06)	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	9 19:38 (AL02) 19:47 (AL02)
8	07:20 16:46	07:45 (AL06) 07:50 (AL06)	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	7 19:39 (AL02) 19:46 (AL02)
9	07:20 16:47	07:45 (AL06) 07:52 (AL06)	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	2 19:41 (AL02) 19:43 (AL02)
10	07:20 16:48	07:46 (AL06) 07:53 (AL06)	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	4 19:34 (AL02) 19:38 (AL02)
11	07:20 16:49	07:45 (AL06) 07:53 (AL06)	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	7 19:32 (AL02) 19:39 (AL02)
12	07:20 16:50	07:45 (AL06) 07:54 (AL06)	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	9 19:31 (AL02) 19:40 (AL02)
13	07:19 16:51	07:46 (AL06) 07:55 (AL06)	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	11 19:30 (AL02) 19:41 (AL02)
14	07:19 16:52	07:45 (AL06) 07:55 (AL06)	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	11 19:30 (AL02) 19:41 (AL02)
15	07:19 16:53	07:45 (AL06) 07:57 (AL06)	06:52 17:30	06:10 18:02	06:20 19:35	05:41 20:06	13 19:29 (AL02) 19:42 (AL02)
16	07:18 16:54	07:43 (AL06) 07:57 (AL06)	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	15 19:28 (AL02) 19:43 (AL02)
17	07:18 16:55	07:43 (AL06) 07:58 (AL06)	06:49 17:33	06:07 18:04	06:16 19:37	05:39 20:08	16 19:28 (AL02) 19:44 (AL02)
18	07:17 16:57	07:43 (AL06) 07:58 (AL06)	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	18 19:27 (AL02) 19:45 (AL02)
19	07:17 16:58	07:43 (AL06) 07:59 (AL06)	06:46 17:35	06:03 18:07	06:13 19:39	05:37 20:10	18 19:27 (AL02) 19:45 (AL02)
20	07:16 16:59	07:42 (AL06) 07:58 (AL06)	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	19 19:28 (AL02) 19:47 (AL02)
21	07:16 17:00	07:41 (AL06) 07:58 (AL06)	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	19 19:28 (AL02) 19:47 (AL02)
22	07:15 17:01	07:42 (AL06) 07:59 (AL06)	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	20 19:28 (AL02) 19:48 (AL02)
23	07:15 17:02	07:41 (AL06) 07:59 (AL06)	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	22 19:27 (AL02) 19:49 (AL02)
24	07:14 17:04	07:39 (AL06) 07:58 (AL06)	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	22 19:28 (AL02) 19:50 (AL02)
25	07:13 17:05	07:40 (AL06) 07:59 (AL06)	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	22 19:28 (AL02) 19:50 (AL02)
26	07:12 17:06	07:41 (AL06) 07:58 (AL06)	06:36 17:43	05:52 18:14	06:03 19:46	05:32 20:16	23 19:29 (AL02) 19:52 (AL02)
27	07:12 17:07	07:42 (AL06) 07:57 (AL06)	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	22 19:29 (AL02) 19:51 (AL02)
28	07:11 17:08	07:44 (AL06) 07:56 (AL06)	06:34 17:46	05:48 18:16	06:01 19:48	05:30 20:17	22 19:29 (AL02) 19:51 (AL02)
29	07:10 17:10	07:46 (AL06) 07:54 (AL06)		06:47 19:17	05:59 19:49	05:30 20:18	21 19:30 (AL02) 19:51 (AL02)
30	07:09 17:11			06:45 19:18	05:58 19:50	05:29 20:19	20 19:30 (AL02) 19:50 (AL02)
31	07:08 17:12			06:44 19:19		05:29 20:20	19 19:31 (AL02) 19:50 (AL02)
Potential sun hours	299	298	370	398	447	451	
Total, worst case	293				373		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 Albano - Worst case Shadow receptor: R41 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	July	August	September	October	November	December
1	05:29 20:31	05:52 20:13	19:41 (AL02) 06:23	06:23 18:40	06:52 16:54	07:00 16:30
2	05:29 20:31	05:53 20:12	19:43 (AL02) 06:24	06:24 18:39	06:53 16:53	07:01 16:30
3	05:30 20:31	05:54 20:11	19:45 (AL02) 06:25	06:25 18:37	06:54 16:52	07:02 16:30
4	05:30 20:31	19:45 (AL02) 05:55	06:26 19:25	06:55 18:35	06:29 16:51	07:03 16:30
5	05:31 20:31	19:43 (AL02) 05:56	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	05:32 20:31	19:43 (AL02) 05:57	06:27 19:22	06:57 18:32	06:31 16:48	07:05 16:29
7	05:32 20:30	19:43 (AL02) 05:58	06:28 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	05:33 20:30	19:41 (AL02) 05:59	06:29 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	05:33 20:30	19:41 (AL02) 06:00	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	05:34 20:29	19:40 (AL02) 06:01	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	05:35 20:29	19:40 (AL02) 06:02	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	05:35 20:28	19:40 (AL02) 06:03	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:29
13	05:36 20:28	19:40 (AL02) 06:04	06:34 19:11	07:04 18:21	06:40 16:41	07:11 16:30
14	05:37 20:27	19:39 (AL02) 06:05	06:35 19:09	07:06 18:19	06:41 16:41	07:12 16:30
15	05:38 20:27	19:39 (AL02) 06:06	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	05:38 20:26	19:39 (AL02) 06:07	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	05:39 20:26	19:39 (AL02) 06:08	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	05:40 20:25	19:38 (AL02) 06:09	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	05:41 20:24	19:38 (AL02) 06:10	06:40 19:00	07:11 18:12	06:47 16:37	07:15 16:31
20	05:42 20:24	19:38 (AL02) 06:11	06:41 18:59	07:12 18:10	06:48 16:36	07:16 16:32
21	05:43 20:23	19:38 (AL02) 06:12	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	05:43 20:22	19:38 (AL02) 06:13	06:43 18:55	07:14 18:08	06:50 16:34	07:17 16:33
23	05:44 20:21	19:37 (AL02) 06:14	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	05:45 20:20	19:38 (AL02) 06:15	06:45 18:52	07:16 18:05	06:52 16:33	07:18 16:34
25	05:46 20:20	19:38 (AL02) 06:16	06:46 18:50	07:17 17:03	06:54 16:33	07:18 16:34
26	05:47 20:19	19:38 (AL02) 06:17	06:47 18:49	07:18 17:02	06:55 16:32	07:19 16:35
27	05:48 20:18	19:39 (AL02) 06:18	06:48 18:47	07:19 17:01	06:56 16:32	07:19 16:36
28	05:49 20:17	19:39 (AL02) 06:19	06:49 18:45	07:20 16:59	06:57 16:31	07:19 16:36
29	05:50 20:16	19:40 (AL02) 06:20	06:50 18:44	07:21 16:58	06:58 16:31	07:20 16:37
30	05:51 20:15	19:40 (AL02) 06:21	06:51 18:42	07:22 16:57	06:59 16:31	07:20 16:38
31	05:51 20:14	19:40 (AL02) 06:22	06:52 18:41	07:23 16:56	07:00 16:30	07:20 16:38
Potential sun hours	458	427	375	346	299	289
Total, worst case	458	15			258	34

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 Albano - Worst case Shadow receptor: R43 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	18:16 (AL01) 05:57	05:28 20:21	
2	07:21 16:40	07:06 17:15	06:31 17:48	06:40 19:21	18:16 (AL01) 05:55	05:28 20:21	
3	07:21 16:41	07:06 17:16	06:29 17:49	06:39 19:22	18:15 (AL01) 05:54	05:27 20:22	
4	07:21 16:42	07:05 17:17	06:27 17:50	06:37 19:23	18:15 (AL01) 05:53	05:27 20:23	
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:25	18:16 (AL01) 05:52	05:27 20:23	
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	18:16 (AL01) 05:51	05:26 20:24	
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	18:17 (AL01) 05:49	05:26 20:25	
8	07:21 16:46	07:00 17:22	06:21 17:55	06:31 19:28	18:17 (AL01) 05:48	05:26 20:25	
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	18:17 (AL01) 05:47	05:26 20:26	
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	18:19 (AL01) 05:46	05:25 20:26	8 19:14 (AL02)
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	18:20 (AL01) 05:45	05:25 20:27	9 19:13 (AL02)
12	07:20 16:50	06:56 17:27	06:15 17:59	06:24 19:32	18:22 (AL01) 05:44	05:25 20:28	11 19:12 (AL02)
13	07:20 16:51	06:54 17:28	06:13 18:00	06:23 19:33	18:25 (AL01) 05:43	05:25 20:28	12 19:23 (AL02)
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	18:29 (AL01) 05:42	05:25 20:28	14 19:10 (AL02)
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	20:05 05:41	05:25 20:29	14 19:24 (AL02)
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	20:07 05:39	05:25 20:29	15 19:10 (AL02)
17	07:18 16:55	06:49 17:33	06:07 18:05	06:17 19:37	20:08 05:38	05:25 20:30	16 19:09 (AL02)
18	07:18 16:57	06:48 17:34	06:05 18:06	06:15 19:38	20:09 05:37	05:25 20:30	16 19:25 (AL02)
19	07:17 16:58	06:46 17:35	06:03 18:07	06:14 19:39	20:10 05:36	05:25 20:30	16 19:09 (AL02)
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	20:11 05:35	05:25 20:31	16 19:25 (AL02)
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	20:12 05:35	05:26 20:31	16 19:10 (AL02)
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	20:13 05:34	05:26 20:31	16 19:26 (AL02)
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	20:14 05:33	05:26 20:31	16 19:10 (AL02)
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	20:15 05:32	05:26 20:31	16 19:26 (AL02)
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	20:16 05:32	05:27 20:31	16 19:11 (AL02)
26	07:13 17:06	06:37 17:43	05:52 18:14	06:03 19:46	20:17 05:31	05:27 20:32	16 19:27 (AL02)
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	20:18 05:30	05:27 20:32	14 19:13 (AL02)
28	07:11 17:08	06:34 17:46	05:49 18:16	06:01 19:48	20:19 05:30	05:28 20:32	14 19:27 (AL02)
29	07:10 17:10		06:47 19:17	18:17 (AL01) 05:59	20:20 05:29	05:28 20:32	13 19:14 (AL02)
30	07:09 17:11		06:45 19:18	18:17 (AL01) 05:58	20:21 05:29	05:28 20:32	13 19:27 (AL02)
31	07:08 17:12		06:44 19:19	18:19 (AL01) 05:58	20:22 05:29	05:28 20:32	12 19:15 (AL02)
Potential sun hours	299	298	370	398	447	451	296
Total, worst case			7		92		

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 Albano - Worst case Shadow receptor: R43 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	July	August	September	October	November	December		
1	05:29 20:31	19:16 (AL02) 20:13	05:52 19:30	06:23 19:30	18:19 (AL01) 18:40	06:52 16:54	07:00 16:30	
2	05:29 20:31	19:19 (AL02) 20:12	05:53 20:12	06:24 19:29	18:17 (AL01) 18:39	06:53 16:53	07:01 16:30	
3	05:30 20:31	19:21 (AL02) 19:26 (AL02)	05:54 20:11	06:25 19:27	18:15 (AL01) 18:24 (AL01)	06:54 18:37	06:28 16:52	07:02 16:30
4	05:30 20:31	05:55 20:10	05:55 20:10	06:26 19:26	18:14 (AL01) 18:23 (AL01)	06:55 18:35	06:29 16:51	07:03 16:30
5	05:31 20:31	05:56 20:08	05:56 20:08	06:27 19:24	18:13 (AL01) 18:21 (AL01)	06:56 18:34	06:30 16:50	07:04 16:30
6	05:32 20:31	05:57 20:07	05:57 20:07	06:28 19:22	18:12 (AL01) 18:20 (AL01)	06:57 18:32	06:32 16:49	07:05 16:29
7	05:32 20:30	05:58 20:06	05:58 20:06	06:29 19:21	18:11 (AL01) 18:19 (AL01)	06:58 18:31	06:33 16:47	07:06 16:29
8	05:33 20:30	05:59 20:05	05:59 20:05	06:29 19:19	18:10 (AL01) 18:17 (AL01)	06:59 18:29	06:34 16:46	07:07 16:29
9	05:33 20:30	06:00 20:04	06:00 20:04	06:30 19:17	18:10 (AL01) 18:16 (AL01)	07:00 18:27	06:35 16:45	07:08 16:29
10	05:34 20:29	06:01 20:02	06:01 20:02	06:31 19:16	18:09 (AL01) 18:15 (AL01)	07:01 18:26	06:36 16:44	07:09 16:29
11	05:35 20:29	06:02 20:01	06:02 20:01	06:32 19:14	18:09 (AL01) 18:13 (AL01)	07:02 18:24	06:37 16:43	07:09 16:29
12	05:35 20:28	06:03 20:00	06:03 20:00	06:33 19:12	18:08 (AL01) 18:12 (AL01)	07:03 18:23	06:39 16:42	07:10 16:30
13	05:36 20:28	06:04 19:58	06:04 19:58	06:34 19:11	18:08 (AL01) 18:11 (AL01)	07:04 18:21	06:40 16:41	07:11 16:30
14	05:37 20:27	06:05 19:57	06:05 19:57	06:35 19:09	18:07 (AL01) 18:08 (AL01)	07:06 18:20	06:41 16:41	07:12 16:30
15	05:38 20:27	06:06 19:56	06:06 19:56	06:36 19:07	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	05:38 20:26	06:07 19:54	06:07 19:54	06:37 19:06	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	05:39 20:26	06:08 19:53	06:08 19:53	06:38 19:04	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	05:40 20:25	06:09 19:52	06:09 19:52	06:39 19:02	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	05:41 20:24	06:10 19:50	06:10 19:50	06:40 19:01	06:40 19:01	07:11 18:12	06:47 16:37	07:15 16:31
20	05:42 20:24	06:11 19:49	06:11 19:49	06:41 18:59	06:41 18:59	07:12 18:10	06:48 16:36	07:16 16:32
21	05:43 20:23	06:12 19:47	06:12 19:47	06:42 18:57	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	05:43 20:22	06:13 19:46	06:13 19:46	06:43 18:55	06:43 18:55	07:14 18:08	06:50 16:35	07:17 16:33
23	05:44 20:21	06:14 19:44	06:14 19:44	06:44 18:54	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	05:45 20:21	06:15 19:43	06:15 19:43	06:45 18:52	06:45 18:52	07:17 18:05	06:52 16:33	07:18 16:34
25	05:46 20:20	06:16 19:41	06:16 19:41	06:46 18:50	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
26	05:47 20:19	06:17 19:40	06:17 19:40	06:47 18:49	06:47 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	05:48 20:18	06:18 19:38	06:18 19:38	06:48 18:47	06:48 18:47	06:20 17:01	06:56 16:32	07:19 16:36
28	05:49 20:17	06:19 19:37	06:19 19:37	06:49 18:45	06:49 18:45	06:21 16:59	06:57 16:31	07:19 16:36
29	05:50 20:16	06:20 19:35	06:20 19:35	06:50 18:44	06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	05:51 20:15	06:21 19:34	06:21 19:34	06:51 18:42	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	05:52 20:14	06:22 19:32	06:22 19:32	06:52 18:41	06:52 18:41	06:25 16:56	07:20 16:31	07:20 16:38
Potential sun hours	458	427	375	346	299	289		
Total, worst case	24	11	89					

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 Albano - Worst case Shadow receptor: R44 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (16)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:20	07:07	06:32	06:42	05:57	05:28	05:29	05:52	06:23	18:21 (AL01)	06:52	06:26	07:00	
	16:40	17:13	17:47	19:20	19:52	20:21	20:31	20:13	19:30	15 18:36 (AL01)	18:40	16:54	16:30	
2	07:21	07:06	06:31	06:40	18:27 (AL01)	05:55	05:28	05:29	05:53	06:24	18:21 (AL01)	06:53	06:27	07:01
	16:40	17:15	17:48	19:21	3 18:30 (AL01)	19:53	20:21	20:31	20:12	19:29	14 18:35 (AL01)	18:39	16:53	16:30
3	07:21	07:06	06:29	06:39	18:26 (AL01)	05:54	05:27	05:30	05:54	06:25	18:20 (AL01)	06:54	06:28	07:02
	16:41	17:16	17:49	19:22	4 18:30 (AL01)	19:54	20:22	20:31	20:11	19:27	14 18:34 (AL01)	18:37	16:52	16:30
4	07:21	07:05	06:27	06:37	18:25 (AL01)	05:53	05:27	05:30	05:55	06:26	18:20 (AL01)	06:55	06:29	07:03
	16:42	17:17	17:50	19:23	6 18:31 (AL01)	19:55	20:23	20:31	20:10	19:26	12 18:32 (AL01)	18:35	16:51	16:30
5	07:21	07:03	06:26	06:35	18:24 (AL01)	05:52	05:27	05:31	05:56	06:27	18:20 (AL01)	06:56	06:30	07:04
	16:43	17:18	17:51	19:25	9 18:33 (AL01)	19:56	20:23	20:31	20:08	19:24	11 18:31 (AL01)	18:34	16:50	16:30
6	07:21	07:02	06:24	06:34	18:23 (AL01)	05:51	05:26	05:32	05:57	06:28	18:20 (AL01)	06:57	06:32	07:05
	16:44	17:20	17:53	19:26	10 18:33 (AL01)	19:57	20:24	20:31	20:07	19:22	10 18:30 (AL01)	18:32	16:49	16:29
7	07:21	07:01	06:23	06:32	18:24 (AL01)	05:49	05:26	05:32	05:58	06:29	18:20 (AL01)	06:58	06:33	07:06
	16:45	17:21	17:54	19:27	11 18:35 (AL01)	19:58	20:25	20:30	20:06	19:21	8 18:28 (AL01)	18:31	16:47	16:29
8	07:21	07:00	06:21	06:31	18:23 (AL01)	05:48	05:26	05:33	05:59	06:29	18:20 (AL01)	06:59	06:34	07:07
	16:46	17:22	17:55	19:28	12 18:35 (AL01)	19:59	20:25	20:30	20:05	19:19	6 18:26 (AL01)	18:29	16:46	16:29
9	07:20	06:59	06:20	06:29	18:22 (AL01)	05:47	05:26	05:33	06:00	06:30	18:20 (AL01)	07:00	06:35	07:08
	16:47	17:23	17:56	19:29	14 18:36 (AL01)	20:00	20:26	20:30	20:04	19:17	5 18:25 (AL01)	18:27	16:45	16:29
10	07:20	06:58	06:18	06:27	18:23 (AL01)	05:46	05:26	05:34	06:01	06:31	18:20 (AL01)	07:01	06:36	07:09
	16:48	17:24	17:57	19:30	14 18:37 (AL01)	20:01	20:26	20:29	20:02	19:16	3 18:23 (AL01)	18:26	16:44	16:29
11	07:20	06:57	06:16	06:26	18:22 (AL01)	05:45	05:25	05:35	06:02	06:32	18:21 (AL01)	07:02	06:37	07:09
	16:49	17:26	17:58	19:31	16 18:38 (AL01)	20:02	20:27	20:29	20:01	19:14	1 18:22 (AL01)	18:24	16:43	16:29
12	07:20	06:56	06:15	06:24	18:23 (AL01)	05:44	05:25	05:35	06:03	06:33		07:03	06:39	07:10
	16:50	17:27	17:59	19:32	16 18:39 (AL01)	20:03	20:28	20:28	20:00	19:12		18:23	16:42	16:30
13	07:20	06:54	06:13	06:23	18:23 (AL01)	05:43	05:25	05:36	06:04	06:34		07:04	06:40	07:11
	16:51	17:28	18:00	19:33	16 18:39 (AL01)	20:04	20:28	20:28	19:58	19:11		18:21	16:41	16:30
14	07:19	06:53	06:12	06:21	18:24 (AL01)	05:42	05:25	05:37	06:05	06:35		07:06	06:41	07:12
	16:52	17:29	18:01	19:34	16 18:40 (AL01)	20:05	20:28	20:27	19:57	19:09		18:20	16:41	16:30
15	07:19	06:52	06:10	06:20	18:24 (AL01)	05:41	05:25	05:38	06:06	06:36		07:07	06:42	07:13
	16:53	17:31	18:02	19:35	17 18:41 (AL01)	20:06	20:29	20:27	19:56	19:07		18:18	16:40	16:30
16	07:18	06:50	06:08	06:18	18:25 (AL01)	05:40	05:25	05:38	06:07	06:37		07:08	06:43	07:13
	16:54	17:32	18:03	19:36	17 18:42 (AL01)	20:07	20:29	20:26	19:54	19:06		18:16	16:39	16:30
17	07:18	06:49	06:07	06:17	18:26 (AL01)	05:39	05:25	05:39	06:08	06:38		07:09	06:44	07:14
	16:55	17:33	18:05	19:37	16 18:42 (AL01)	20:08	20:30	20:26	19:53	19:04		18:15	16:38	16:31
18	07:18	06:48	06:05	06:15	18:28 (AL01)	05:38	05:25	05:40	06:09	06:39		07:10	06:46	07:15
	16:57	17:34	18:06	19:38	15 18:43 (AL01)	20:09	20:30	20:25	19:52	19:02		18:13	16:37	16:31
19	07:17	06:46	06:03	06:14	18:29 (AL01)	05:37	05:25	05:41	06:10	06:40		07:11	06:47	07:15
	16:58	17:35	18:07	19:39	14 18:43 (AL01)	20:10	20:30	20:24	19:50	19:01		18:12	16:37	16:31
20	07:16	06:45	06:02	06:12	18:32 (AL01)	05:36	05:25	05:42	06:11	06:41		07:12	06:48	07:16
	16:59	17:36	18:08	19:40	13 18:45 (AL01)	20:11	20:31	20:24	19:49	18:59		18:10	16:36	16:32
21	07:16	06:44	06:00	06:11		05:35	05:26	05:43	06:12	06:42		07:13	06:49	07:16
	17:00	17:38	18:09	19:41		20:11	20:31	20:23	19:47	18:57		18:09	16:35	16:32
22	07:15	06:42	05:58	06:09		05:35	05:26	05:43	06:13	06:43	18:41 (AL01)	07:14	06:50	07:17
	17:01	17:39	18:10	19:42		20:12	20:31	20:22	19:46	3 18:44 (AL01)		18:08	16:35	16:33
23	07:15	06:41	05:57	06:08		05:34	05:26	05:44	06:14	06:44	18:36 (AL01)	07:15	06:51	07:17
	17:02	17:40	18:11	19:43		20:13	20:31	20:21	19:44	12 18:48 (AL01)		18:06	16:34	16:33
24	07:14	06:39	05:55	06:06		05:33	05:26	05:45	06:15	06:45	18:33 (AL01)	07:17	06:52	07:18
	17:04	17:41	18:12	19:44		20:14	20:31	20:20	19:43	14 18:47 (AL01)		18:05	16:33	16:34
25	07:13	06:38	05:53	06:05		05:32	05:27	05:46	06:16	06:46	18:31 (AL01)	07:18	06:54	07:18
	17:05	17:42	18:13	19:45		20:15	20:31	20:20	19:41	15 18:46 (AL01)		18:06	16:33	16:34
26	07:13	06:37	05:52	06:03		05:32	05:27	05:47	06:17	06:47	18:29 (AL01)	07:19	06:55	07:19
	17:06	17:43	18:14	19:46		20:16	20:32	20:19	19:40	16 18:45 (AL01)		17:02	16:32	16:35
27	07:12	06:35	05:50	06:02		05:31	05:27	05:48	06:18	06:48	18:27 (AL01)	07:20	06:56	07:19
	17:07	17:45	18:15	19:47		20:17	20:32	20:18	19:38	17 18:44 (AL01)		17:01	16:32	16:36
28	07:11	06:34	05:49	06:01		05:30	05:28	05:49	06:19	06:49	18:26 (AL01)	07:21	06:57	07:19
	17:08	17:46	18:16	19:48		20:17	20:32	20:17	19:37	16 18:42 (AL01)		16:59	16:31	16:36
29	07:10		06:47	05:59		05:30	05:28	05:50	06:20	06:50	18:25 (AL01)	07:22	06:58	07:20
	17:10		19:17	19:50		20:18	20:32	20:16	19:35	16 18:41 (AL01)		16:58	16:31	16:37
30	07:09		06:45	05:58		05:29	05:28	05:51	06:21	06:51	18:23 (AL01)	07:23	06:59	07:20
	17:11		19:18	19:51		20:19	20:32	20:15	19:34	16 18:39 (AL01)		16:57	16:31	16:38
31	07:08		06:44			05:29		05:52	06:22	06:52	18:22 (AL01)	07:24	06:59	07:20
	17:12		19:19			20:20		20:14	19:32	16 18:38 (AL01)		16:56		16:38
Potential sun hours	299	298	370	398	447	451	458	427	375	99	346	299	289	
Total, worst case				239					141					

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 Albano - Worst case Shadow receptor: R45 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (17)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:32	05:53 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:31
2	07:21 16:40	07:07 17:15	06:31 17:48	06:40 19:21	05:56 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:06 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:05 17:17	06:28 17:50	06:37 19:24	05:53 19:55	05:27 20:23	05:31 20:31	05:55 20:10	06:26 19:26	06:55 18:36	06:29 16:51	07:03 16:30
5	07:21 16:43	07:04 17:18	06:26 17:51	06:35 19:25	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	05:51 19:57	05:27 20:24	05:32 20:31	05:57 20:07	06:28 19:22	06:57 18:32	06:32 16:49	07:05 16:30
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:29 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	07:21 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:30 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:34 20:30	06:00 20:04	06:31 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:25	06:18 17:57	06:27 19:30	05:46 20:01	05:26 20:27	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:10 16:29
12	07:20 16:50	06:56 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:28	05:36 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:30
13	07:20 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:59	06:34 19:11	07:05 18:21	06:40 16:42	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:06 18:20	06:41 16:41	07:12 16:30
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	07:18 16:54	06:51 17:32	06:08 18:04	06:18 19:36	05:40 20:07	05:25 20:29	05:39 20:26	06:07 19:54	06:37 19:06	07:08 18:17	06:43 16:39	07:13 16:30
17	07:18 16:56	06:49 17:33	06:07 18:05	06:17 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:18 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	07:10 18:14	06:46 16:37	07:15 16:31
19	07:17 16:58	06:47 17:35	06:03 18:07	06:14 19:39	05:37 20:10	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:01	07:11 18:12	06:47 16:37	07:15 16:31
20	07:17 16:59	06:45 17:37	06:02 18:08	06:12 19:40	05:36 20:11	05:26 20:31	05:42 20:24	06:11 19:49	06:41 18:59	07:12 18:11	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	05:26 20:31	05:43 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:56	07:14 18:08	06:50 16:35	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:40 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:21	06:15 19:43	06:45 18:52	07:17 18:05	06:53 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:54 18:13	06:05 19:45	05:32 20:15	05:27 20:31	05:46 20:20	06:16 19:41	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
26	07:13 17:06	06:37 17:44	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:32	05:47 20:19	06:17 19:40	06:47 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	05:27 20:32	05:48 20:18	06:18 19:38	06:48 18:47	06:20 17:01	06:56 16:32	07:19 16:36
28	07:11 17:09	06:34 17:46	05:49 18:16	06:01 19:49	05:31 20:18	05:28 20:32	05:49 20:17	06:19 19:37	06:49 18:45	06:21 16:59	06:57 16:32	07:19 16:36
29	07:10 17:10		06:47 19:17	05:59 19:50	05:30 20:18	05:28 20:32	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	07:09 17:11		06:45 19:18	05:58 19:51	05:29 20:19	05:29 20:32	05:51 20:15	06:21 19:34	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	07:08 17:12		06:44 19:19		05:29 20:20		05:52 20:14	06:22 19:32		06:25 16:56		07:20 16:39
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
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 Albano - Worst case Shadow receptor: R49 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June						
1	07:20	08:52 (AL07)	07:07	06:32	07:32 (AL06)	06:42	05:57	05:28				
	16:39	17	09:09 (AL07)	17:13	17:47	59	08:31 (AL06)	19:20	19:51	20:20		
2	07:20	08:53 (AL07)	07:06	06:30	07:32 (AL06)	06:40	05:55	05:28				
	16:40	15	09:08 (AL07)	17:15	17:48	59	08:31 (AL06)	19:21	19:53	20:21		
3	07:21	08:54 (AL07)	07:05	06:29	07:32 (AL06)	06:39	05:54	05:27				
	16:41	14	09:08 (AL07)	17:16	17:49	59	08:31 (AL06)	19:22	19:54	20:22		
4	07:21	08:56 (AL07)	07:04	06:27	07:31 (AL06)	06:37	05:53	05:27				
	16:42	11	09:07 (AL07)	17:17	17:50	60	08:31 (AL06)	19:23	19:55	20:23		
5	07:21	08:59 (AL07)	07:03	06:26	07:31 (AL06)	06:35	05:52	05:27				
	16:43	6	09:05 (AL07)	17:18	17:51	60	08:31 (AL06)	19:24	19:56	20:23		
6	07:21	07:02	07:02	06:24	07:31 (AL06)	06:34	19:01 (AL05)	05:50	05:26			
	16:44	17:19	17:19	17:52	59	08:30 (AL06)	19:25	3	19:04 (AL05)	19:57	20:24	
7	07:21	07:01	07:01	06:23	07:30 (AL06)	06:32	18:59 (AL05)	05:49	05:26			
	16:45	17:21	17:21	17:54	59	08:29 (AL06)	19:26	6	19:05 (AL05)	19:58	20:25	
8	07:20	07:00	07:00	06:21	07:31 (AL06)	06:30	18:59 (AL05)	05:48	05:26			
	16:46	17:22	17:22	17:55	58	08:29 (AL06)	19:28	7	19:06 (AL05)	19:59	20:25	
9	07:20	06:59	06:59	06:20	07:30 (AL06)	06:29	18:58 (AL05)	05:47	05:26			
	16:47	17:23	17:23	17:56	58	08:28 (AL06)	19:29	9	19:07 (AL05)	20:00	20:26	
10	07:20	06:58	06:58	06:18	07:31 (AL06)	06:27	18:58 (AL05)	05:46	05:25			
	16:48	17:24	17:24	17:57	57	08:28 (AL06)	19:30	10	19:08 (AL05)	20:01	20:26	
11	07:20	06:57	06:57	06:16	07:31 (AL06)	06:26	18:57 (AL05)	05:45	05:25			
	16:49	17:26	17:26	17:58	56	08:27 (AL06)	19:31	12	19:09 (AL05)	20:02	20:27	
12	07:20	06:55	06:55	06:15	07:31 (AL06)	06:24	18:57 (AL05)	05:44	05:25			
	16:50	17:27	17:27	17:59	54	08:25 (AL06)	19:32	14	19:11 (AL05)	20:03	20:27	
13	07:19	06:54	06:54	07:59 (AL06)	06:13	07:32 (AL06)	06:23	18:57 (AL05)	05:43	05:25		
	16:51	17:28	10	08:09 (AL06)	18:00	53	08:25 (AL06)	19:33	14	19:11 (AL05)	20:04	20:28
14	07:19	06:53	06:53	07:53 (AL06)	06:11	51	07:32 (AL06)	06:21	18:56 (AL05)	05:42	05:25	
	16:52	17:29	21	08:14 (AL06)	18:01	51	08:23 (AL06)	19:34	16	19:12 (AL05)	20:05	20:28
15	07:19	06:52	06:52	07:50 (AL06)	06:10	50	07:32 (AL06)	06:19	18:57 (AL05)	05:41	05:25	
	16:53	17:30	27	08:17 (AL06)	18:02	50	08:22 (AL06)	19:35	16	19:13 (AL05)	20:06	20:29
16	07:18	06:50	06:50	07:48 (AL06)	06:08	48	07:33 (AL06)	06:18	18:57 (AL05)	05:40	05:25	
	16:54	17:32	32	08:20 (AL06)	18:03	48	08:21 (AL06)	19:36	17	19:14 (AL05)	20:07	20:29
17	07:18	06:49	06:49	07:45 (AL06)	06:07	45	07:34 (AL06)	06:16	18:58 (AL05)	05:39	05:25	
	16:55	17:33	36	08:21 (AL06)	18:04	45	08:19 (AL06)	19:37	17	19:15 (AL05)	20:08	20:29
18	07:17	06:48	06:48	07:43 (AL06)	06:05	42	07:34 (AL06)	06:15	18:59 (AL05)	05:38	05:25	
	16:57	17:34	40	08:23 (AL06)	18:06	42	08:16 (AL06)	19:38	16	19:15 (AL05)	20:09	20:30
19	07:17	06:46	06:46	07:42 (AL06)	06:03	39	07:36 (AL06)	06:13	19:00 (AL05)	05:37	05:25	
	16:58	17:35	43	08:25 (AL06)	18:07	39	08:15 (AL06)	19:39	17	19:17 (AL05)	20:09	20:30
20	07:16	06:45	06:45	07:40 (AL06)	06:02	35	07:37 (AL06)	06:12	19:03 (AL05)	05:36	05:25	
	16:59	17:36	46	08:26 (AL06)	18:08	35	08:12 (AL06)	19:40	12	19:15 (AL05)	20:10	20:30
21	07:16	06:44	06:44	07:39 (AL06)	06:00	30	07:39 (AL06)	06:10	19:06 (AL05)	05:35	05:26	
	17:00	17:38	48	08:27 (AL06)	18:09	30	08:09 (AL06)	19:41	4	19:10 (AL05)	20:11	20:31
22	07:15	06:42	06:42	07:38 (AL06)	05:58	25	07:42 (AL06)	06:09	05:35	05:26		
	17:01	17:39	50	08:28 (AL06)	18:10	25	08:07 (AL06)	19:42	20:12	20:31		
23	07:15	06:41	06:41	07:37 (AL06)	05:57	17	07:45 (AL06)	06:08	05:34	05:26		
	17:02	17:40	52	08:29 (AL06)	18:11	17	08:02 (AL06)	19:43	20:13	20:31		
24	07:14	06:39	06:39	07:35 (AL06)	05:55			06:06	05:33	05:26		
	17:04	17:41	54	08:29 (AL06)	18:12			19:44	20:14	20:31		
25	07:13	06:38	06:38	07:35 (AL06)	05:53			06:05	05:32	05:27		
	17:05	17:42	55	08:30 (AL06)	18:13			19:45	20:15	20:31		
26	07:12	06:36	06:36	07:34 (AL06)	05:52			06:03	05:32	05:27		
	17:06	17:43	56	08:30 (AL06)	18:14			19:46	20:16	20:31		
27	07:12	06:35	06:35	07:34 (AL06)	05:50			06:02	05:31	05:27		
	17:07	17:45	57	08:31 (AL06)	18:15			19:47	20:17	20:31		
28	07:11	06:33	06:33	07:33 (AL06)	05:48			06:01	05:30	05:28		
	17:08	17:46	58	08:31 (AL06)	18:16			19:48	20:17	20:31		
29	07:10			06:47	05:47			05:59	05:30	05:28		
	17:10			19:17	19:17			19:49	20:18	20:31		
30	07:09			06:45	05:45			05:58	05:29	05:28		
	17:11			19:18	19:18			19:50	20:19	20:31		
31	07:08			06:43	05:43				05:29			
	17:12			19:19	19:19				20:20			
Potential sun hours	299	298	370	398	447	451						
Total, worst case	63	685	1133	190								

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

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

SHADOW - Calendar

Calculation: WF Albano - Worst case Shadow receptor: R49 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)
Assumptions for shadow calculations

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

	July	August	September	October	November	December			
1	05:29 20:31	05:52 20:13	06:23 19:30	18:56 (AL05) 19:08 (AL05)	06:52 18:40	08:10 (AL06) 09:05 (AL06)	06:26 16:54	07:00 16:30	
2	05:29 20:31	05:53 20:12	06:24 19:29	18:56 (AL05) 19:06 (AL05)	06:53 18:39	08:10 (AL06) 09:05 (AL06)	06:27 16:53	07:01 16:30	
3	05:30 20:31	05:54 20:11	06:25 19:27	18:56 (AL05) 19:05 (AL05)	06:54 18:37	08:09 (AL06) 09:05 (AL06)	06:28 16:52	07:02 16:30	
4	05:30 20:31	05:55 20:09	06:26 19:25	18:56 (AL05) 19:03 (AL05)	06:55 18:35	08:08 (AL06) 09:06 (AL06)	06:29 16:51	07:03 16:30	
5	05:31 20:31	05:56 20:08	06:26 19:24	18:56 (AL05) 19:02 (AL05)	06:56 18:34	08:07 (AL06) 09:06 (AL06)	06:30 16:50	07:04 16:30	
6	05:32 20:30	05:57 20:07	06:27 19:22	18:57 (AL05) 19:00 (AL05)	06:57 18:32	08:07 (AL06) 09:06 (AL06)	06:31 16:48	07:05 16:29	
7	05:32 20:30	05:58 20:06	06:28 19:21	18:58 (AL05) 18:59 (AL05)	06:58 18:30	08:06 (AL06) 09:06 (AL06)	06:33 16:47	07:06 16:29	08:45 (AL07) 08:51 (AL07)
8	05:33 20:30	05:59 20:05	06:29 19:19	18:59 (AL05)	06:59 18:29	08:06 (AL06) 09:06 (AL06)	06:34 16:46	07:07 16:29	08:43 (AL07) 08:54 (AL07)
9	05:33 20:30	06:00 20:04	06:30 19:17	18:59 (AL05)	07:00 18:27	08:06 (AL06) 09:05 (AL06)	06:35 16:45	07:08 16:29	08:43 (AL07) 08:56 (AL07)
10	05:34 20:29	06:01 20:02	06:31 19:16	18:59 (AL05)	07:01 18:26	08:05 (AL06) 09:05 (AL06)	06:36 16:44	07:08 16:29	08:42 (AL07) 08:57 (AL07)
11	05:35 20:29	06:02 20:01	06:32 19:14	18:59 (AL05)	07:02 18:24	08:05 (AL06) 09:05 (AL06)	06:37 16:43	07:09 16:29	08:42 (AL07) 08:59 (AL07)
12	05:35 20:28	06:03 20:00	06:33 19:12	18:59 (AL05)	07:03 18:23	08:05 (AL06) 09:04 (AL06)	06:38 16:42	07:10 16:29	08:42 (AL07) 09:00 (AL07)
13	05:36 20:28	06:04 19:58	06:34 19:11	18:59 (AL05)	07:04 18:21	08:06 (AL06) 09:05 (AL06)	06:40 16:41	07:11 16:30	08:41 (AL07) 09:00 (AL07)
14	05:37 20:27	06:05 19:57	06:35 19:09	18:59 (AL05)	07:05 18:19	08:06 (AL06) 09:04 (AL06)	06:41 16:40	07:12 16:30	08:41 (AL07) 09:01 (AL07)
15	05:38 20:27	06:06 19:56	06:36 19:07	18:59 (AL05)	07:07 18:18	08:06 (AL06) 09:03 (AL06)	06:42 16:40	07:12 16:30	08:42 (AL07) 09:03 (AL07)
16	05:38 20:26	06:07 19:54	06:37 19:05	18:59 (AL05)	07:08 18:16	08:07 (AL06) 09:02 (AL06)	06:43 16:39	07:13 16:30	08:42 (AL07) 09:04 (AL07)
17	05:39 20:26	06:08 19:53	06:38 19:04	18:59 (AL05)	07:09 18:15	08:07 (AL06) 09:01 (AL06)	06:44 16:38	07:14 16:31	08:42 (AL07) 09:04 (AL07)
18	05:40 20:25	06:09 19:51	06:39 19:02	18:59 (AL05)	07:10 18:13	08:07 (AL06) 09:00 (AL06)	06:45 16:37	07:15 16:31	08:42 (AL07) 09:05 (AL07)
19	05:41 20:24	06:10 19:50	06:40 19:00	18:59 (AL05)	07:11 18:12	08:08 (AL06) 08:59 (AL06)	06:47 16:36	07:15 16:31	08:42 (AL07) 09:05 (AL07)
20	05:42 20:24	06:11 19:49	06:41 18:59	18:59 (AL05)	07:12 18:10	08:08 (AL06) 08:58 (AL06)	06:48 16:36	07:16 16:32	08:43 (AL07) 09:06 (AL07)
21	05:42 20:23	06:12 19:47	06:42 18:57	18:59 (AL05)	07:13 18:09	08:10 (AL06) 08:58 (AL06)	06:49 16:35	07:16 16:32	08:43 (AL07) 09:06 (AL07)
22	05:43 20:22	06:13 19:46	19:10 (AL05) 18:55	18:59 (AL05)	07:14 18:08	08:11 (AL06) 08:56 (AL06)	06:50 16:34	07:17 16:33	08:44 (AL07) 09:07 (AL07)
23	05:44 20:21	06:14 19:44	19:06 (AL05) 18:54	18:59 (AL05)	07:15 18:06	08:12 (AL06) 08:54 (AL06)	06:51 16:34	07:17 16:33	08:44 (AL07) 09:07 (AL07)
24	05:45 20:20	06:15 19:43	19:04 (AL05) 19:21 (AL05)	18:54 (AL05)	07:16 18:05	08:14 (AL06) 08:53 (AL06)	06:52 16:33	07:18 16:34	08:45 (AL07) 09:08 (AL07)
25	05:46 20:20	06:16 19:41	19:02 (AL05) 19:19 (AL05)	18:45 (AL05)	06:46 18:50	07:15 (AL06) 07:50 (AL06)	06:53 16:33	07:18 16:34	08:45 (AL07) 09:08 (AL07)
26	05:47 20:19	06:17 19:40	19:01 (AL05) 19:18 (AL05)	18:45 (AL05)	06:47 18:49	07:18 (AL06) 07:49 (AL06)	06:55 16:32	07:19 16:35	08:46 (AL07) 09:08 (AL07)
27	05:48 20:18	06:18 19:38	19:00 (AL05) 19:16 (AL05)	18:45 (AL05)	06:48 18:47	08:15 (AL06) 09:02 (AL06)	06:56 16:32	07:19 16:36	08:47 (AL07) 09:09 (AL07)
28	05:49 20:17	06:19 19:37	18:59 (AL05) 19:15 (AL05)	18:45 (AL05)	06:49 18:45	08:14 (AL06) 09:03 (AL06)	06:57 16:31	07:19 16:36	08:47 (AL07) 09:09 (AL07)
29	05:50 20:16	06:20 19:35	18:57 (AL05) 19:12 (AL05)	18:45 (AL05)	06:50 18:44	08:13 (AL06) 09:03 (AL06)	06:58 16:31	07:20 16:37	08:48 (AL07) 09:09 (AL07)
30	05:51 20:15	06:21 19:33	18:56 (AL05) 19:11 (AL05)	18:45 (AL05)	06:51 18:42	08:11 (AL06) 09:04 (AL06)	06:59 16:31	07:20 16:38	08:49 (AL07) 09:08 (AL07)
31	05:51 20:14	06:22 19:32	18:56 (AL05) 19:09 (AL05)	18:45 (AL05)	06:52 16:55	08:11 (AL06)	06:59 16:31	07:20 16:38	08:50 (AL07) 09:08 (AL07)
Potential sun hours	458	427	375	346	299	289			
Total, worst case	145	471	1427	492					

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 Albano - Worst case Shadow receptor: R56 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (19)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June
1	07:20 16:39	16:11 (AL08)	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:51
2	07:20 16:40	16:13 (AL08)	07:06 17:14	06:30 17:48	06:40 19:21	05:28 20:21
3	07:20 16:41	16:13 (AL08)	07:05 17:16	06:29 17:49	06:38 19:22	05:54 20:22
4	07:20 16:42	16:13 (AL08)	07:04 17:17	06:27 17:50	06:37 19:23	05:54 20:23
5	07:20 16:43	16:14 (AL08)	07:03 17:18	06:26 17:51	06:35 19:24	05:52 20:23
6	07:20 16:44	16:15 (AL08)	07:02 17:19	06:24 17:52	06:34 19:25	05:50 20:24
7	07:20 16:45	16:16 (AL08)	07:01 17:21	06:23 17:53	06:32 19:26	05:49 20:24
8	07:20 16:46	16:18 (AL08)	07:00 17:22	06:21 17:55	06:30 19:27	05:48 20:25
9	07:20 16:47	16:20 (AL08)	06:59 17:23	06:19 17:56	06:29 19:28	05:47 20:26
10	07:20 16:48	16:21 (AL08)	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:26
11	07:20 16:49	16:22 (AL08)	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:27
12	07:20 16:50	16:23 (AL08)	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:27
13	07:19 16:51		06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04
14	07:19 16:52		06:53 17:29	06:11 18:01	06:21 19:34	05:42 20:05
15	07:19 16:53		06:52 17:30	06:10 18:02	06:19 19:35	05:41 20:06
16	07:18 16:54		06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:06
17	07:18 16:55		06:49 17:33	06:06 18:04	06:16 19:37	05:39 20:07
18	07:17 16:56		06:48 17:34	06:05 18:05	06:15 19:38	05:38 20:08
19	07:17 16:58		06:46 17:35	06:03 18:06	06:13 19:39	05:37 20:09
20	07:16 16:59		06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10
21	07:16 17:00		06:44 17:37	06:00 18:09	06:10 19:41	05:35 20:11
22	07:15 17:01		06:42 17:39	05:58 18:10	06:09 19:42	05:34 20:12
23	07:14 17:02		06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13
24	07:14 17:03		06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14
25	07:13 17:05		06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15
26	07:12 17:06		06:36 17:43	05:52 18:14	06:03 19:46	05:32 20:16
27	07:12 17:07		06:35 17:44	05:50 18:15	06:02 19:47	05:31 20:16
28	07:11 17:08		06:33 17:46	05:48 18:16	06:01 19:48	05:30 20:17
29	07:10 17:10			06:47 19:17	05:59 19:49	05:30 20:18
30	07:09 17:11			06:45 19:18	05:58 19:50	05:29 20:19
31	07:08 17:12			06:43 19:19		05:29 20:20
Potential sun hours	299		298	370	398	447
Total, worst case	27				37	1

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 Albano - Worst case Shadow receptor: R56 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (19)
Assumptions for shadow calculations

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

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

	July	August	September	October	November	December		
1	05:29	05:52	06:23	06:52	06:25	07:00	16:04 (AL08)	
	20:31	20:13	19:30	18:40	16:54	16:30	16:05 (AL08)	
2	05:29	05:53	06:23	06:53	06:27	07:01	16:03 (AL08)	
	20:31	20:12	19:29	18:39	16:53	16:30	2 16:05 (AL08)	
3	05:30	05:54	06:24	06:54	06:28	07:02	16:02 (AL08)	
	20:31	20:10	19:27	18:37	16:52	16:30	3 16:05 (AL08)	
4	05:30	05:55	06:25	06:55	06:29	07:03	16:02 (AL08)	
	20:31	20:09	19:25	18:35	16:51	16:30	2 16:04 (AL08)	
5	05:31	05:56	06:26	06:56	06:30	07:04	16:01 (AL08)	
	20:31	20:08	19:24	18:34	16:49	16:29	3 16:04 (AL08)	
6	05:31	05:57	06:27	06:57	06:31	07:05	16:01 (AL08)	
	20:30	20:07	19:22	18:32	16:48	16:29	3 16:04 (AL08)	
7	05:32	05:58	06:28	06:58	06:32	07:06	16:01 (AL08)	
	20:30	20:06	19:20	18:30	16:47	16:29	3 16:04 (AL08)	
8	05:33	05:59	06:29	06:59	06:34	07:07	16:01 (AL08)	
	20:30	20:05	19:19	18:29	16:46	16:29	3 16:04 (AL08)	
9	05:33	06:00	06:30	07:00	06:35	07:08	16:01 (AL08)	
	20:29	20:03	19:17	18:27	16:45	16:29	3 16:04 (AL08)	
10	05:34	06:01	06:31	07:01	06:36	07:08	16:02 (AL08)	
	20:29	20:02	19:15	18:26	16:44	16:29	2 16:04 (AL08)	
11	05:35	06:02	06:32	07:02	06:37	07:09	16:02 (AL08)	
	20:29	20:01	19:14	18:24	16:43	16:29	2 16:04 (AL08)	
12	05:35	06:03	19:35 (AL07)	06:33	07:03	06:38	07:10	16:02 (AL08)
	20:28	20:00	1 19:36 (AL07)	19:12	18:22	16:42	16:29	3 16:05 (AL08)
13	05:36	06:04	19:32 (AL07)	06:34	07:04	06:40	07:11	16:02 (AL08)
	20:28	19:58	3 19:35 (AL07)	19:10	18:21	16:41	16:30	2 16:04 (AL08)
14	05:37	06:05	19:30 (AL07)	06:35	07:05	06:41	07:12	16:02 (AL08)
	20:27	19:57	4 19:34 (AL07)	19:09	18:19	16:40	16:30	2 16:04 (AL08)
15	05:38	06:06	19:28 (AL07)	06:36	07:06	06:42	07:12	16:03 (AL08)
	20:27	19:56	5 19:33 (AL07)	19:07	18:18	16:40	16:30	2 16:05 (AL08)
16	05:38	06:07	19:27 (AL07)	06:37	07:07	06:43	07:13	16:03 (AL08)
	20:26	19:54	4 19:31 (AL07)	19:05	18:16	16:39	16:30	1 16:04 (AL08)
17	05:39	06:08	19:26 (AL07)	06:38	07:09	06:44	07:14	16:03 (AL08)
	20:25	19:53	4 19:30 (AL07)	19:04	18:15	16:38	16:31	2 16:05 (AL08)
18	05:40	06:09	19:25 (AL07)	06:39	07:10	06:45	07:14	16:04 (AL08)
	20:25	19:51	4 19:29 (AL07)	19:02	18:13	16:37	16:31	2 16:06 (AL08)
19	05:41	06:10	19:24 (AL07)	06:40	07:11	06:47	07:15	16:04 (AL08)
	20:24	19:50	3 19:27 (AL07)	19:00	18:12	16:36	16:31	1 16:05 (AL08)
20	05:42	06:11	19:23 (AL07)	06:41	07:12	06:48	07:16	16:05 (AL08)
	20:23	19:49	3 19:26 (AL07)	18:59	18:10	16:36	16:32	1 16:06 (AL08)
21	05:42	06:12	19:22 (AL07)	06:42	07:13	06:49	07:16	16:05 (AL08)
	20:23	19:47	3 19:25 (AL07)	18:57	18:09	16:35	16:32	1 16:06 (AL08)
22	05:43	06:13	19:21 (AL07)	06:43	07:14	06:50	07:17	16:06 (AL08)
	20:22	19:46	2 19:23 (AL07)	18:55	18:07	16:34	16:33	1 16:07 (AL08)
23	05:44	06:14	19:21 (AL07)	06:44	07:15	06:51	07:17	16:06 (AL08)
	20:21	19:44	1 19:22 (AL07)	18:54	18:06	16:34	16:33	1 16:07 (AL08)
24	05:45	06:15	19:20 (AL07)	06:45	07:16	06:52	07:18	16:07 (AL08)
	20:20	19:43	1 19:21 (AL07)	18:52	18:05	16:33	16:34	1 16:08 (AL08)
25	05:46	06:16		06:46	06:17	06:53	07:18	16:07 (AL08)
	20:19	19:41		18:50	17:03	16:33	16:34	2 16:09 (AL08)
26	05:47	06:17		06:47	06:19	06:54	07:18	16:07 (AL08)
	20:19	19:40		18:49	17:02	16:32	16:35	2 16:09 (AL08)
27	05:48	06:18		06:48	06:20	06:56	07:19	16:09 (AL08)
	20:18	19:38		18:47	17:01	16:32	16:35	1 16:10 (AL08)
28	05:49	06:19		06:49	06:21	06:57	07:19	16:09 (AL08)
	20:17	19:36		18:45	16:59	16:31	16:36	2 16:11 (AL08)
29	05:50	06:20		06:50	06:22	06:58	07:19	16:09 (AL08)
	20:16	19:35		18:44	16:58	16:31	16:37	2 16:11 (AL08)
30	05:50	06:21		06:51	06:23	06:59	07:20	16:10 (AL08)
	20:15	19:33		18:42	16:57	16:31	16:38	2 16:12 (AL08)
31	05:51	06:22			06:24		07:20	16:10 (AL08)
	20:14	19:32			16:55		16:38	2 16:12 (AL08)
Potential sun hours	458	427		375	346	299	289	
Total, worst case			38					60

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 Albano - Worst case Shadow receptor: R66 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (20)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:53 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:20 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:25	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	05:51 19:57	05:27 20:24	05:32 20:30	05:57 20:07	06:28 19:22	06:57 18:32	06:31 16:49	07:05 16:30
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:29 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	07:20 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:34 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:26 20:26	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:36 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:30
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11	07:04 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:06 18:20	06:41 16:41	07:12 16:30
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:12 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	05:25 20:29	05:39 20:26	06:07 19:54	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:05	06:17 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:17 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:14 19:39	05:37 20:09	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:00	07:11 18:12	06:47 16:37	07:15 16:31
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:30	05:42 20:24	06:11 19:49	06:41 18:59	07:12 18:11	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	05:26 20:31	05:43 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:08	06:50 16:35	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	07:16 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	05:27 20:31	05:46 20:20	06:16 19:41	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
26	07:12 17:06	06:37 17:43	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:31	05:47 20:19	06:17 19:40	06:47 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	05:27 20:31	05:48 20:18	06:18 19:38	06:48 18:47	06:20 17:01	06:56 16:32	07:19 16:36
28	07:11 17:08	06:34 17:46	05:49 18:16	06:01 19:48	05:31 20:17	05:28 20:32	05:49 20:17	06:19 19:37	06:49 18:45	06:21 16:59	06:57 16:32	07:19 16:36
29	07:10 17:10		06:47 19:17	05:59 19:49	05:30 20:18	05:28 20:32	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	07:09 17:11		06:45 19:18	05:58 19:50	05:29 20:19	05:29 20:31	05:51 20:15	06:21 19:33	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	07:08 17:12		06:44 19:19		05:29 20:20		05:52 20:14	06:22 19:32		06:24 16:56		07:20 16:39
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
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 Albano - Worst case Shadow receptor: R67 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:20 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:25	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:25	05:51 19:57	05:26 20:24	05:32 20:30	05:57 20:07	06:28 19:22	06:57 18:32	06:31 16:49	07:05 16:29
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:29 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	07:20 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:33 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:26 20:26	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:36 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:38 16:42	07:10 16:30
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11	07:04 18:21	06:40 16:41	07:11 16:30
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18	07:17 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
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Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
Total, worst case			140						141			

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 Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 14:54/4.0.531

SHADOW - Calendar

Calculation: WF Albano - Worst case Shadow receptor: R78 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (22)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	06:20 (AL05) 20:21	05:28 20:31	05:29 20:13	05:53 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:21 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 19:53	06:19 (AL05) 20:21	05:28 20:31	05:29 20:12	05:53 20:11	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:06 17:16	06:29 17:49	06:39 19:22	05:54 19:54	06:17 (AL05) 20:22	05:28 20:31	05:30 20:11	05:54 20:10	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
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Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289	
Total, worst case					3			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 Albano - Worst case Shadow receptor: R79 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:53 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
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22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:08	06:50 16:35	07:17 16:33
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31	07:08 17:12		06:44 19:19		05:29 20:20		05:52 20:14	06:22 19:32		06:25 16:56		07:20 16:39
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
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 Albano - Worst case Shadow receptor: R81 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)
Assumptions for shadow calculations

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

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

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

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:53 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:21 16:40	07:07 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:06 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:05 17:17	06:28 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:31 20:31	05:55 20:10	06:26 19:26	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:25	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	05:51 19:57	05:27 20:24	05:32 20:31	05:57 20:07	06:28 19:22	06:57 18:32	06:32 16:49	07:05 16:30
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:29 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	07:21 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:30 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:34 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:26 20:26	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:56 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:28	05:36 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:30
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11	07:05 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:06 18:20	06:41 16:41	07:12 16:30
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	07:18 16:54	06:50 17:32	06:08 18:04	06:18 19:36	05:40 20:07	05:25 20:29	05:39 20:26	06:07 19:54	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:56	06:49 17:33	06:07 18:05	06:17 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:18 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:14 19:39	05:37 20:10	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:01	07:11 18:12	06:47 16:37	07:15 16:31
20	07:16 16:59	06:45 17:37	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:31	05:42 20:24	06:11 19:49	06:41 18:59	07:12 18:11	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	05:26 20:31	05:43 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:08	06:50 16:35	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	07:17 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:54 18:13	06:05 19:45	05:32 20:15	05:27 20:31	05:46 20:20	06:16 19:41	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
26	07:13 17:06	06:37 17:44	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:32	05:47 20:19	06:17 19:40	06:47 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	05:27 20:32	05:48 20:18	06:18 19:38	06:48 18:47	06:20 17:01	06:56 16:32	07:19 16:36
28	07:11 17:09	06:34 17:46	05:49 18:16	06:01 19:48	05:31 20:17	05:28 20:32	05:49 20:17	06:19 19:37	06:49 18:45	06:21 16:59	06:57 16:32	07:19 16:36
29	07:10 17:10		06:47 19:17	05:59 19:50	05:30 20:18	05:28 20:32	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	07:09 17:11		06:45 19:18	05:58 19:51	05:29 20:19	05:29 20:32	05:51 20:15	06:21 19:34	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	07:08 17:12		06:44 19:19		05:29 20:20		05:52 20:14	06:22 19:32		06:25 16:56		07:20 16:39
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
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 Albano - Worst case Shadow receptor: R88 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)
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	07:21 16:40	07:08 17:13	06:32 17:47	07:51 (AL01) 08:54 (AL01)	06:42 19:20	05:57 19:52
2	07:21 16:40	07:07 17:15	06:31 17:48	07:50 (AL01) 08:54 (AL01)	06:40 19:21	05:56 19:53
3	07:21 16:41	07:06 17:16	06:29 17:49	07:50 (AL01) 08:54 (AL01)	06:39 19:22	05:54 19:54
4	07:21 16:42	07:05 17:17	06:28 17:50	07:49 (AL01) 08:54 (AL01)	06:37 19:24	05:53 19:55
5	07:21 16:43	07:04 17:18	06:26 17:51	07:49 (AL01) 08:55 (AL01)	06:35 19:25	07:23 (AL02) 19:56
6	07:21 16:44	07:02 17:20	06:24 17:53	07:48 (AL01) 08:54 (AL01)	06:34 19:26	07:19 (AL02) 19:57
7	07:21 16:45	07:01 17:21	06:23 17:54	07:48 (AL01) 08:55 (AL01)	06:32 19:27	07:17 (AL02) 19:58
8	07:21 16:46	07:00 17:22	06:21 17:55	07:47 (AL01) 08:54 (AL01)	06:31 19:28	07:15 (AL02) 19:59
9	07:20 16:47	06:59 17:23	06:20 17:56	07:46 (AL01) 08:53 (AL01)	06:29 19:29	07:13 (AL02) 20:00
10	07:20 16:48	06:58 17:25	06:18 17:57	07:47 (AL01) 08:53 (AL01)	06:27 19:30	07:12 (AL02) 20:01
11	07:20 16:49	06:57 17:26	06:17 17:58	07:46 (AL01) 08:52 (AL01)	06:26 19:31	07:10 (AL02) 20:02
12	07:20 16:50	06:56 17:27	06:15 17:59	07:46 (AL01) 08:51 (AL01)	06:24 19:32	07:10 (AL02) 20:03
13	07:20 16:51	06:54 17:28	06:13 18:00	07:46 (AL01) 08:51 (AL01)	06:23 19:33	07:08 (AL02) 20:04
14	07:19 16:52	06:53 17:29	06:12 18:01	07:46 (AL01) 08:50 (AL01)	06:21 19:34	07:08 (AL02) 20:05
15	07:19 16:53	06:52 17:31	06:10 18:02	07:46 (AL01) 08:50 (AL01)	06:20 19:35	07:07 (AL02) 20:06
16	07:19 16:54	06:51 17:32	06:08 18:04	07:46 (AL01) 08:48 (AL01)	06:18 19:36	07:07 (AL02) 20:07
17	07:18 16:56	06:49 17:33	06:07 18:05	07:46 (AL01) 08:47 (AL01)	06:17 19:37	07:06 (AL02) 20:08
18	07:18 16:57	06:48 17:34	06:05 18:06	07:47 (AL01) 08:46 (AL01)	06:15 19:38	07:07 (AL02) 20:09
19	07:17 16:58	06:47 17:35	06:03 18:07	07:47 (AL01) 08:45 (AL01)	06:14 19:39	07:06 (AL02) 20:10
20	07:17 16:59	06:45 17:37	06:02 18:08	07:47 (AL01) 08:43 (AL01)	06:12 19:40	07:06 (AL02) 20:11
21	07:16 17:00	06:44 17:38	06:00 18:09	07:48 (AL01) 08:42 (AL01)	06:11 19:41	07:06 (AL02) 20:11
22	07:15 17:01	06:42 17:39	05:59 18:10	07:49 (AL01) 08:40 (AL01)	06:09 19:42	07:07 (AL02) 20:12
23	07:15 17:02	06:41 17:40	05:57 18:11	07:49 (AL01) 08:38 (AL01)	06:08 19:43	07:06 (AL02) 20:13
24	07:14 17:04	06:40 17:41	05:55 18:12	07:51 (AL01) 08:37 (AL01)	06:06 19:44	07:07 (AL02) 20:14
25	07:13 17:05	06:38 17:42	05:54 18:13	07:51 (AL01) 08:34 (AL01)	06:05 19:45	07:08 (AL02) 20:15
26	07:13 17:06	06:37 17:44	05:52 18:14	07:52 (AL01) 08:31 (AL01)	06:04 19:46	07:08 (AL02) 20:16
27	07:12 17:07	06:35 17:45	05:50 18:15	07:55 (AL01) 08:29 (AL01)	06:02 19:48	07:10 (AL02) 20:17
28	07:11 17:09	06:34 17:46	05:49 18:16	07:56 (AL01) 08:26 (AL01)	06:01 19:49	07:11 (AL02) 20:18
29	07:10 17:10		06:47 19:17	08:59 (AL01) 09:22 (AL01)	05:59 19:50	07:12 (AL02) 20:18
30	07:09 17:11		06:45 19:18	09:03 (AL01) 09:17 (AL01)	05:58 19:51	07:14 (AL02) 20:19
31	07:08 17:12		06:44 19:19			05:29 20:20
Potential sun hours	299	298	370	398	447	451
Total, worst case		589	1658	798	9	

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

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

Calculation: WF Albano - Worst case Shadow receptor: R88 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)
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 20:32	05:53 20:13	06:23 19:30	07:09 (AL02) 18:40	06:52 18:40	08:25 (AL01) 16:54	06:26 16:31	07:00 16:31
2	05:29 20:31	05:53 20:12	06:24 19:29	07:10 (AL02) 18:39	06:53 18:39	08:25 (AL01) 16:53	06:27 16:30	07:01 16:30
3	05:30 20:31	05:54 20:11	06:25 19:27	07:11 (AL02) 18:37	06:54 18:37	08:24 (AL01) 16:52	06:28 16:30	07:02 16:30
4	05:30 20:31	05:55 20:10	06:26 19:26	07:12 (AL02) 18:36	06:55 18:36	08:24 (AL01) 16:51	06:29 16:30	07:03 16:30
5	05:31 20:31	05:56 20:09	06:27 19:24	07:13 (AL02) 18:34	06:56 18:34	08:24 (AL01) 16:50	06:30 16:30	07:04 16:30
6	05:32 20:31	05:57 20:07	06:28 19:22	07:15 (AL02) 18:32	06:57 18:32	08:24 (AL01) 16:49	06:32 16:30	07:05 16:30
7	05:32 20:30	05:58 20:06	06:29 19:21	07:18 (AL02) 18:31	06:58 18:31	08:23 (AL01) 16:47	06:33 16:29	07:06 16:29
8	05:33 20:30	05:59 20:05	06:30 19:19	07:21 (AL02) 18:29	06:59 18:29	08:23 (AL01) 16:46	06:34 16:29	07:07 16:29
9	05:34 20:30	06:00 20:04	06:31 19:17	07:24 (AL02) 18:27	07:00 18:27	08:23 (AL01) 16:45	06:35 16:29	07:08 16:29
10	05:34 20:29	06:01 20:02	06:31 19:16	07:27 (AL02) 18:26	07:01 18:26	08:23 (AL01) 16:44	06:36 16:29	07:09 16:29
11	05:35 20:29	06:02 20:01	06:32 19:14	07:30 (AL02) 18:24	07:02 18:24	08:25 (AL01) 16:43	06:37 16:29	07:10 16:29
12	05:36 20:28	06:03 20:00	06:33 19:12	07:33 (AL02) 18:23	07:04 18:23	08:25 (AL01) 16:42	06:39 16:30	07:11 16:30
13	05:36 20:28	06:04 19:59	06:34 19:11	07:36 (AL02) 18:21	07:05 18:21	08:25 (AL01) 16:42	06:40 16:30	07:11 16:30
14	05:37 20:27	06:05 19:57	06:35 19:09	07:39 (AL02) 18:20	07:06 18:20	08:26 (AL01) 16:41	06:41 16:30	07:12 16:30
15	05:38 20:27	06:06 19:56	06:36 19:07	07:42 (AL02) 18:18	07:07 18:18	08:26 (AL01) 16:40	06:42 16:30	07:13 16:30
16	05:39 20:26	06:07 19:54	06:37 19:06	07:45 (AL02) 18:17	07:08 18:17	08:27 (AL01) 16:39	06:43 16:30	07:13 16:30
17	05:39 20:26	06:08 19:53	06:38 19:04	07:48 (AL02) 18:15	07:09 18:15	08:27 (AL01) 16:38	06:45 16:31	07:14 16:31
18	05:40 20:25	06:09 19:52	06:39 19:02	07:51 (AL02) 18:14	07:10 18:14	08:28 (AL01) 16:37	06:46 16:31	07:15 16:31
19	05:41 20:24	06:10 19:50	06:40 19:01	07:54 (AL02) 18:12	07:11 18:12	08:30 (AL01) 16:37	06:47 16:31	07:15 16:31
20	05:42 20:24	06:11 19:49	06:41 18:59	07:57 (AL02) 18:11	07:12 18:11	08:31 (AL01) 16:36	06:48 16:32	07:16 16:32
21	05:43 20:23	06:12 19:47	06:42 18:57	08:00 (AL02) 18:09	07:13 18:09	08:33 (AL01) 16:35	06:49 16:32	07:16 16:32
22	05:43 20:22	06:13 19:46	06:43 18:56	08:03 (AL02) 18:08	07:14 18:08	08:34 (AL01) 16:35	06:50 16:33	07:17 16:33
23	05:44 20:21	06:14 19:44	06:44 18:54	08:06 (AL02) 18:06	07:15 18:06	08:36 (AL01) 16:34	06:51 16:33	07:18 16:33
24	05:45 20:21	06:15 19:43	06:45 18:52	08:09 (AL02) 18:05	07:17 18:05	08:38 (AL01) 16:33	06:53 16:34	07:18 16:34
25	05:46 20:20	06:16 19:41	06:46 18:50	08:12 (AL02) 17:03	06:18 17:03	07:42 (AL01) 16:33	06:54 16:33	07:19 16:34
26	05:47 20:19	06:17 19:40	06:47 18:49	08:15 (AL02) 17:02	06:19 17:02	07:47 (AL01) 16:32	06:55 16:35	07:19 16:35
27	05:48 20:18	06:18 19:38	06:48 18:47	08:18 (AL02) 17:01	06:20 17:01	07:52 (AL01) 16:32	06:56 16:36	07:19 16:36
28	05:49 20:17	06:19 19:37	06:49 18:45	08:21 (AL02) 16:59	06:21 16:59	07:57 (AL01) 16:32	06:57 16:36	07:19 16:36
29	05:50 20:16	06:20 19:35	06:50 18:44	08:24 (AL02) 16:58	06:22 16:58	08:02 (AL01) 16:31	06:58 16:37	07:20 16:37
30	05:51 20:15	06:21 19:34	06:51 18:42	08:27 (AL02) 16:57	06:23 16:57	08:07 (AL01) 16:31	06:59 16:38	07:20 16:38
31	05:52 20:14	06:22 19:32	06:52 18:40	08:30 (AL02) 16:56	06:25 16:56	08:12 (AL01) 16:31	07:00 16:39	07:21 16:39
Potential sun hours	458	427	375	346	299	289		
Total, worst case		634	1041	1427				

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 Albano - Worst case Shadow receptor: R93 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (26)

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	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:20 16:40	07:06 17:14	06:30 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:27 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:25	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:26 19:24	06:56 18:34	06:30 16:50	07:04 16:29
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:25	05:50 19:57	05:26 20:24	05:31 20:31	05:57 20:07	06:27 19:22	06:57 18:32	06:31 16:48	07:05 16:29
7	07:21 16:45	07:01 17:21	06:23 17:53	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:28 19:21	06:58 18:30	06:33 16:47	07:06 16:29
8	07:20 16:46	07:00 17:22	06:21 17:55	06:30 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:33 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:25 20:26	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:35 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:29
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11	07:04 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:11 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:05 18:19	06:41 16:40	07:12 16:30
15	07:19 16:53	06:52 17:30	06:10 18:02	06:19 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	05:25 20:29	05:38 20:26	06:07 19:54	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:04	06:16 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:17 16:56	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	05:37 20:10	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:00	07:11 18:12	06:47 16:36	07:15 16:31
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:30	05:42 20:24	06:11 19:49	06:41 18:59	07:12 18:10	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:10 19:41	05:35 20:11	05:25 20:31	05:42 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:34 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:08	06:50 16:34	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	07:16 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	05:26 20:31	05:46 20:20	06:16 19:41	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
26	07:12 17:06	06:36 17:43	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:31	05:47 20:19	06:17 19:40	06:47 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	05:27 20:32	05:48 20:18	06:18 19:38	06:48 18:47	06:20 17:01	06:56 16:32	07:19 16:35
28	07:11 17:08	06:33 17:46	05:48 18:16	06:01 19:48	05:30 20:17	05:28 20:32	05:49 20:17	06:19 19:37	06:49 18:45	06:21 16:59	06:57 16:31	07:19 16:36
29	07:10 17:10		06:47 19:17	05:59 19:49	05:30 20:18	05:28 20:32	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	07:09 17:11		06:45 19:18	05:58 19:50	05:29 20:19	05:28 20:32	05:50 20:15	06:21 19:33	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	07:08 17:12		06:43 19:19		05:29 20:20		05:51 20:14	06:22 19:32		06:24 16:55		07:20 16:38
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
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 Albano - Worst case Shadow receptor: R95 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (27)
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	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30		
2	07:20 16:40	07:06 17:14	06:30 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30		
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:27 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30		
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:25	06:55 18:35	06:29 16:51	07:03 16:30		
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:26 19:24	06:56 18:34	06:30 16:50	07:04 16:29		
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:25	05:50 19:57	05:26 20:24	05:31 20:31	05:57 20:07	06:27 19:22	06:57 18:32	06:31 16:48	07:05 16:29		
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:28 19:21	06:58 18:30	06:33 16:47	07:06 16:29		
8	07:20 16:46	07:00 17:22	06:21 17:55	06:30 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	07:07 16:29		
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:33 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29		
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:25 20:26	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29		
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29		
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:35 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:29		
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	19:30 (AL03) 19:35 (AL03)	06:34 19:11	07:04 18:21	06:40 16:41	07:11 16:30	
14	07:19 16:52	06:53 17:29	06:11 18:01	06:21 19:34	19:11 (AL03) 20:05	05:42 20:28	05:37 20:27	06:05 19:57	5 8	19:26 (AL03) 19:34 (AL03)	06:35 19:09	07:05 18:19	06:41 16:40	07:12 16:30
15	07:19 16:53	06:52 17:30	06:10 18:02	06:19 19:35	19:11 (AL03) 20:06	05:41 20:29	05:38 20:27	06:06 19:56	9	19:24 (AL03) 19:33 (AL03)	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	19:10 (AL03) 20:07	05:40 20:29	05:38 20:26	06:07 19:54	9	19:22 (AL03) 19:31 (AL03)	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:04	06:16 19:37	19:10 (AL03) 20:08	05:39 20:30	05:39 20:26	06:08 19:53	9	19:21 (AL03) 19:30 (AL03)	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:17 16:56	06:48 17:34	06:05 18:06	06:15 19:38	19:10 (AL03) 20:09	05:38 20:30	05:40 20:25	06:09 19:52	10	19:19 (AL03) 19:29 (AL03)	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	19:10 (AL03) 20:09	05:37 20:30	05:41 20:24	06:10 19:50	10	19:18 (AL03) 19:28 (AL03)	06:40 19:00	07:11 18:12	06:47 16:36	07:16 16:31
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	19:11 (AL03) 20:10	05:36 20:30	05:42 20:24	06:11 19:49	9	19:17 (AL03) 19:26 (AL03)	06:41 18:59	07:12 18:10	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:10 19:41	19:11 (AL03) 20:11	05:35 20:31	05:42 20:23	06:12 19:47	9	19:16 (AL03) 19:25 (AL03)	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	19:12 (AL03) 20:12	05:34 20:31	05:26 20:22	06:13 19:46	9	19:15 (AL03) 19:23 (AL03)	06:43 18:55	07:14 18:08	06:50 16:34	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	19:11 (AL03) 20:13	05:34 20:31	05:44 20:21	06:14 19:44	8	19:15 (AL03) 19:22 (AL03)	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	19:13 (AL03) 20:14	05:33 20:31	05:26 20:20	06:15 19:43	7	19:14 (AL03) 19:21 (AL03)	06:45 18:52	07:16 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	19:14 (AL03) 20:15	05:32 20:31	05:26 20:20	06:16 19:41	5	19:14 (AL03) 19:19 (AL03)	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
26	07:12 17:06	06:36 17:43	05:52 18:14	06:03 19:46	19:14 (AL03) 20:16	05:32 20:31	05:27 20:19	06:17 19:40	5	19:13 (AL03) 19:18 (AL03)	06:47 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	19:16 (AL03) 20:17	05:31 20:32	05:27 20:18	06:18 19:38	3	19:13 (AL03) 19:16 (AL03)	06:48 18:47	06:20 17:01	06:56 16:32	07:19 16:35
28	07:11 17:08	06:33 17:46	05:48 18:16	06:01 19:48	19:18 (AL03) 20:17	05:30 20:32	05:49 20:17	06:19 19:37	2	19:13 (AL03) 19:15 (AL03)	06:49 18:45	06:21 16:59	06:57 16:31	07:19 16:36
29	07:10 17:10	06:47 17:47	05:59 19:17	05:59 19:49	19:19 (AL03) 20:18	05:28 20:32	05:50 20:16	06:20 19:35			06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	07:09 17:11	06:45 17:48	05:58 19:18	05:58 19:50	19:23 (AL03) 20:19	05:28 20:31	05:50 20:15	06:21 19:33			06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	07:08 17:12	06:43 17:49	05:57 19:19	05:57 19:50	19:24 (AL03) 20:19	05:29 20:31	05:51 20:15	06:22 19:33			06:52 18:42	06:24 16:55	07:20 16:38	07:20 16:39
Potential sun hours	299	298	370	398	447	451	458	427	115	375	346	299	289	
Total, worst case				115					115					

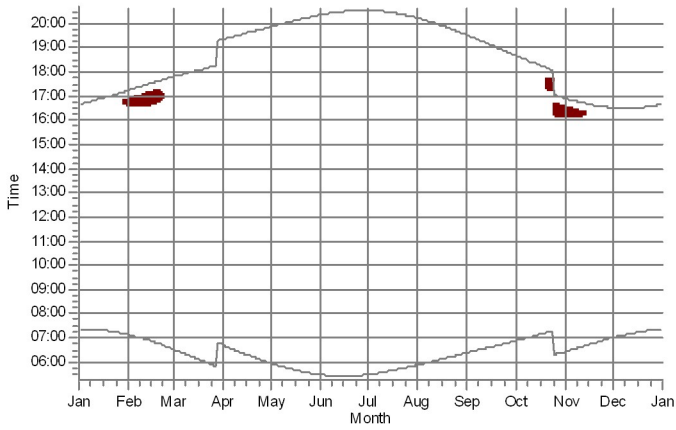
Table layout: For each day in each month the following matrix apply

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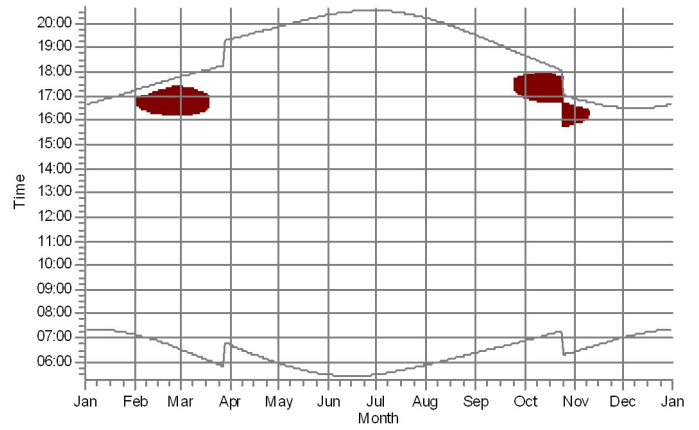
SHADOW - Calendar, graphical

Calculation: WF Albano - Worst case

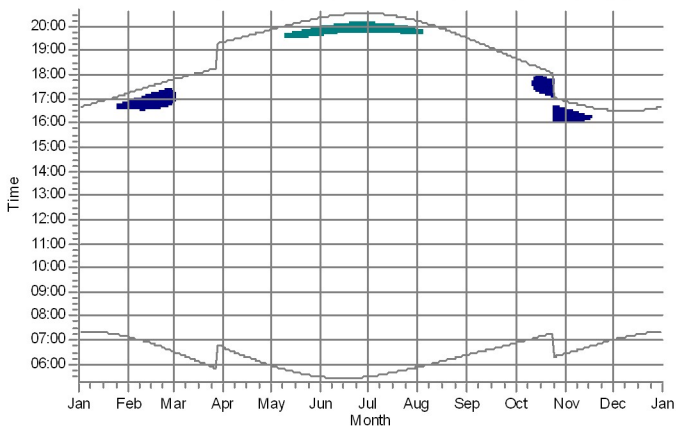
R1: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (1)



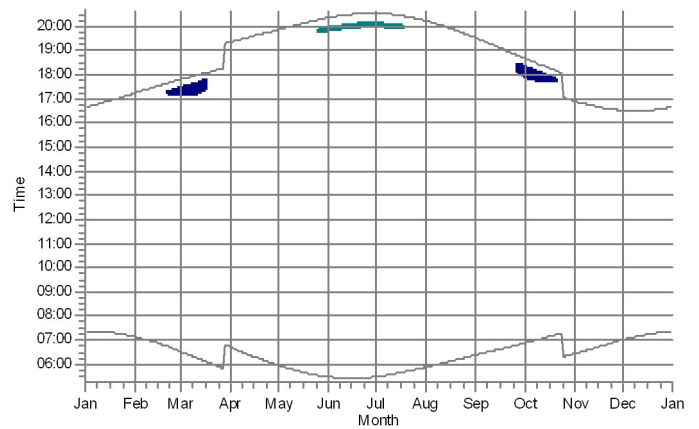
R10: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)



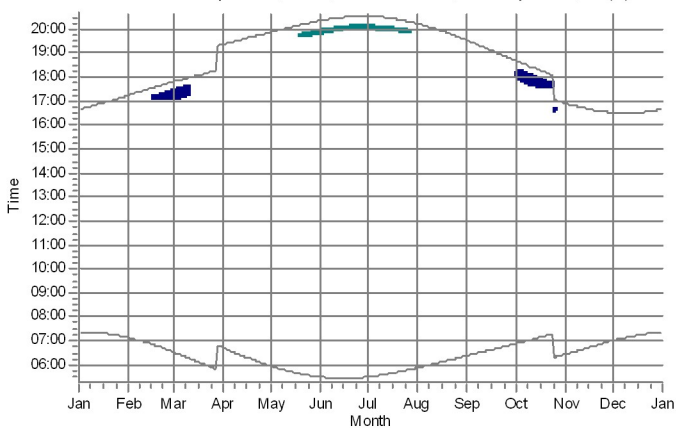
R12: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)



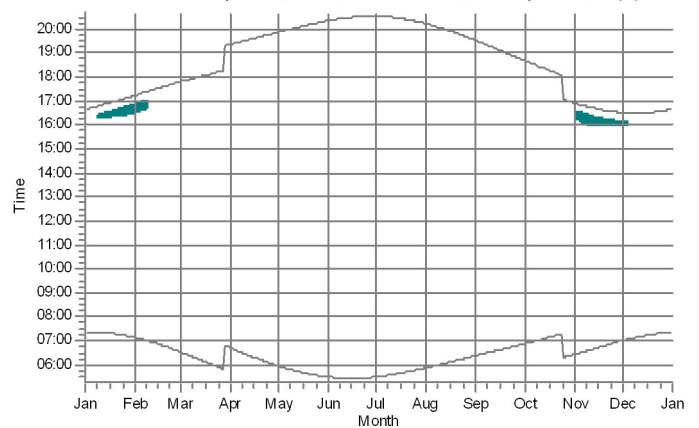
R17: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)



R18: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)



R19: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (6)



WTGs

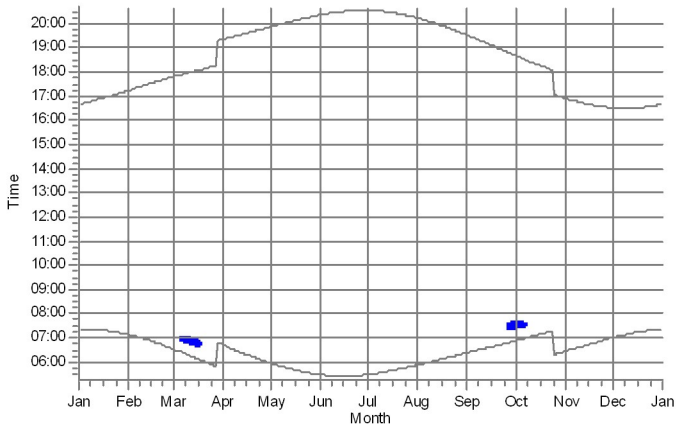
AL06: Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 m) (7)
AL07: Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 m) (8)

AL08: Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 m) (9)

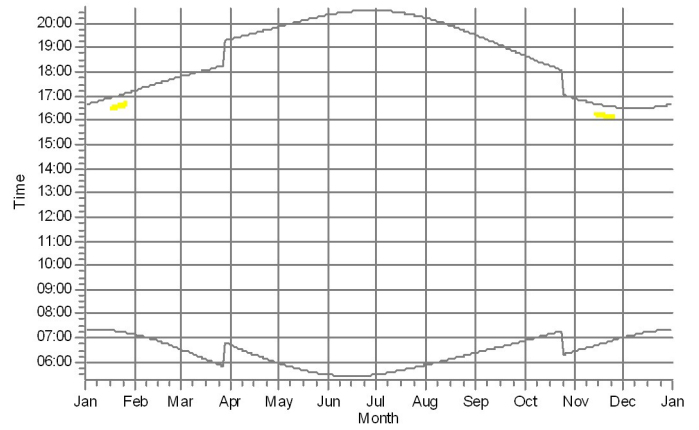
SHADOW - Calendar, graphical

Calculation: WF Albano - Worst case

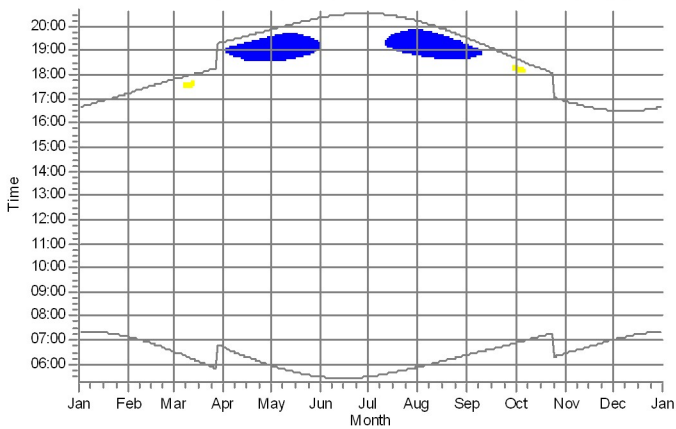
R20: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (7)



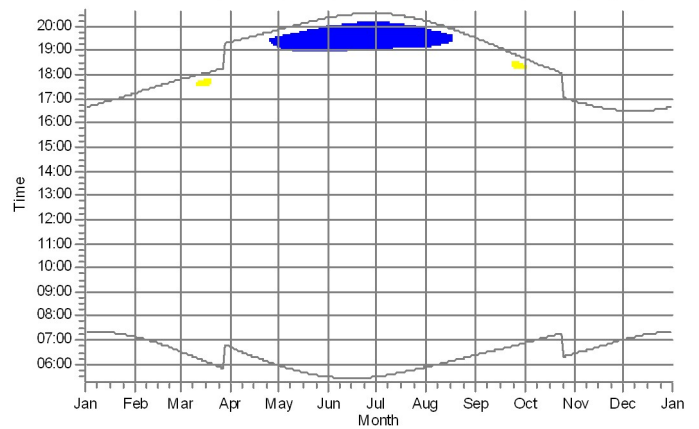
R26: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)



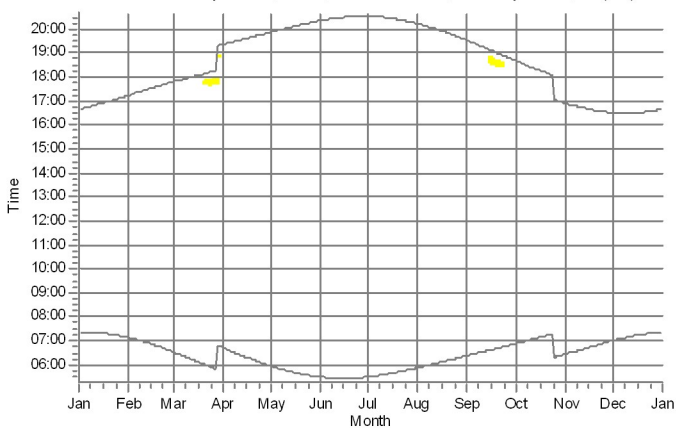
R30: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)



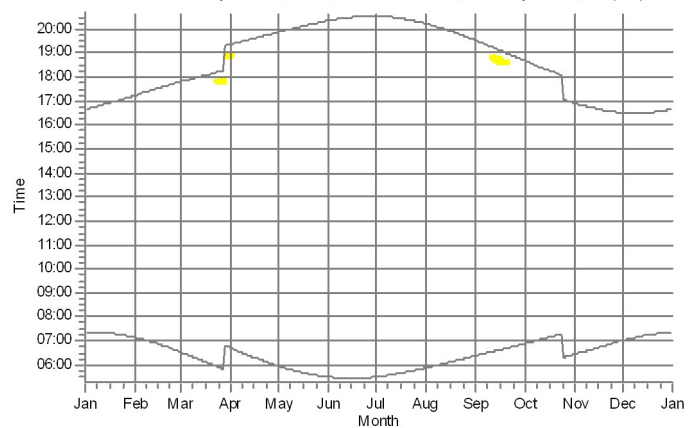
R31: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)



R33: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (11)



R35: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (12)



WTGs

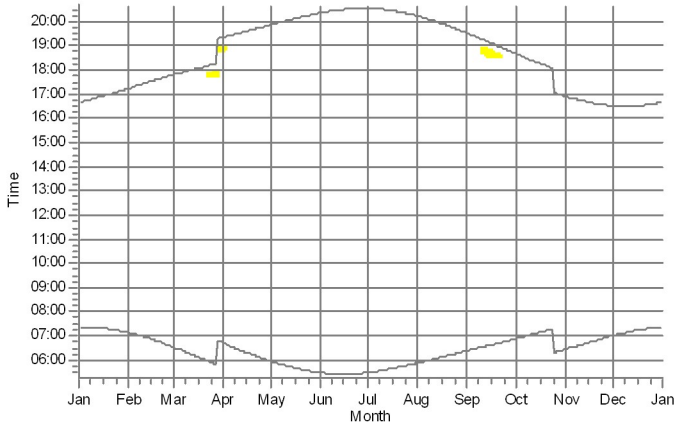
AL02: Siemens Gamesa SG 6.0-170 6000 170.0 IOI hub: 135,0 m (TOT: 220,0 m) (3)

AL03: Siemens Gamesa SG 6.0-170 6000 170.0 IOI hub: 135,0 m (TOT: 220,0 m) (4)

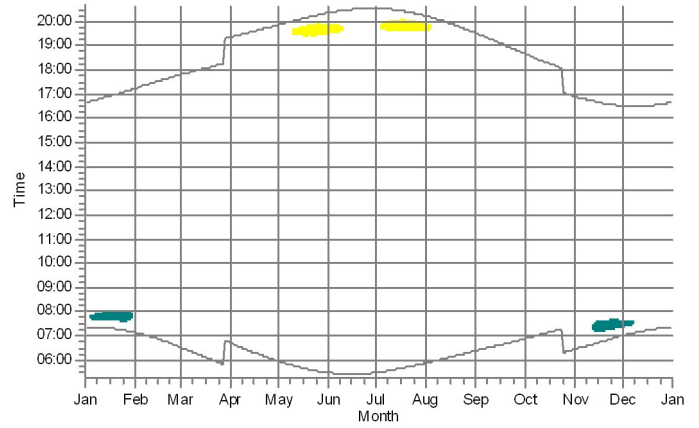
SHADOW - Calendar, graphical

Calculation: WF Albano - Worst case

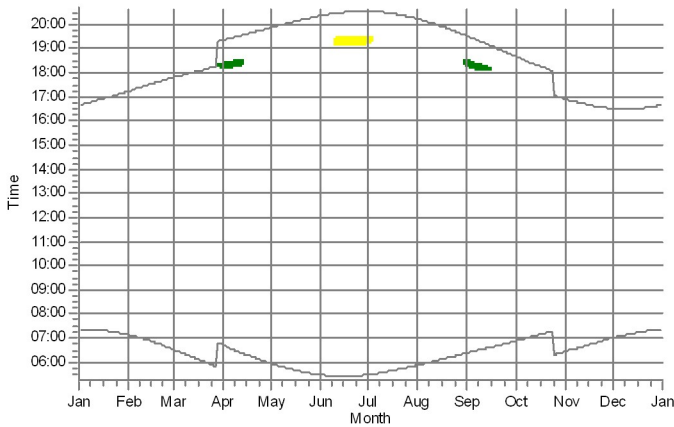
R36a: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (13)



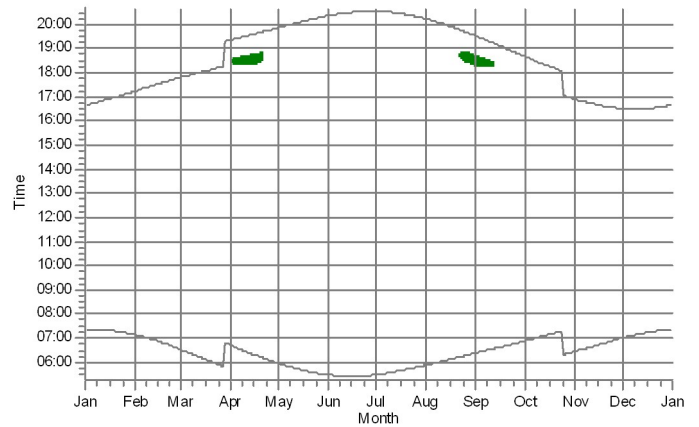
R41: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)



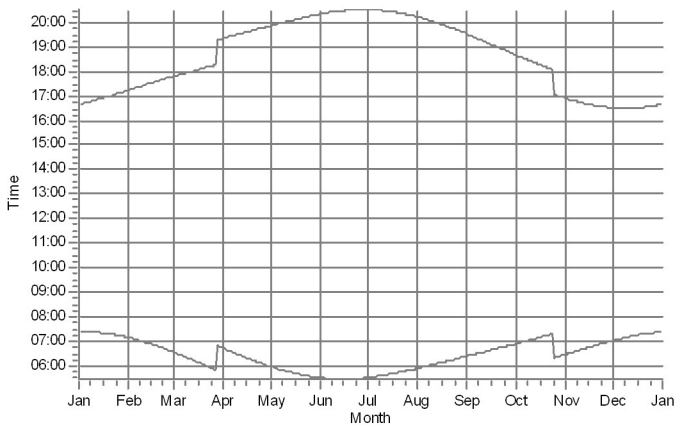
R43: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)



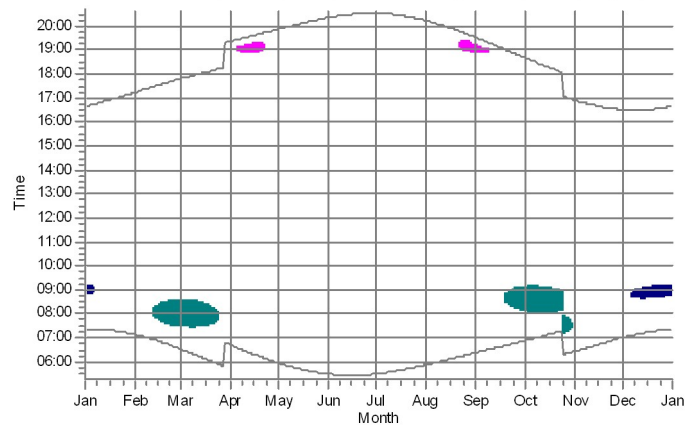
R44: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (16)



R45: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (17)



R49: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)



WTGs

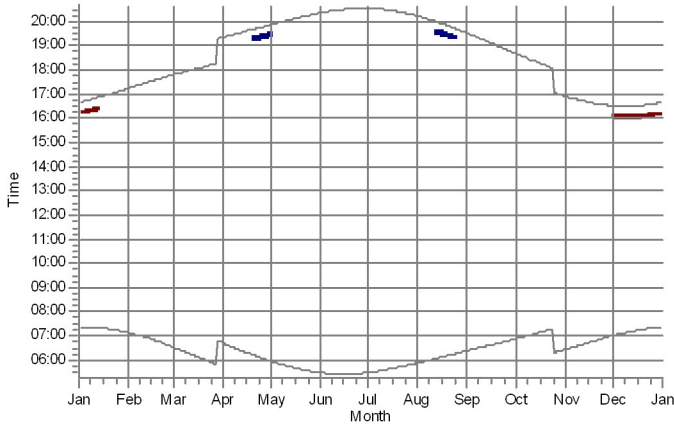
- AL01: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (2)
- AL02: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (3)
- AL05: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (6)

- AL06: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (7)
- AL07: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (8)

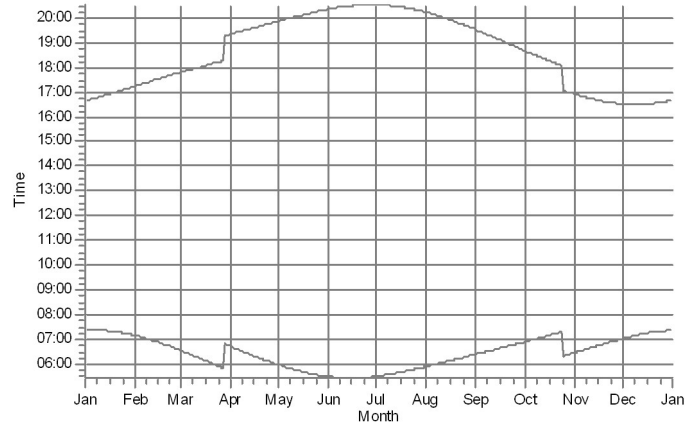
SHADOW - Calendar, graphical

Calculation: WF Albano - Worst case

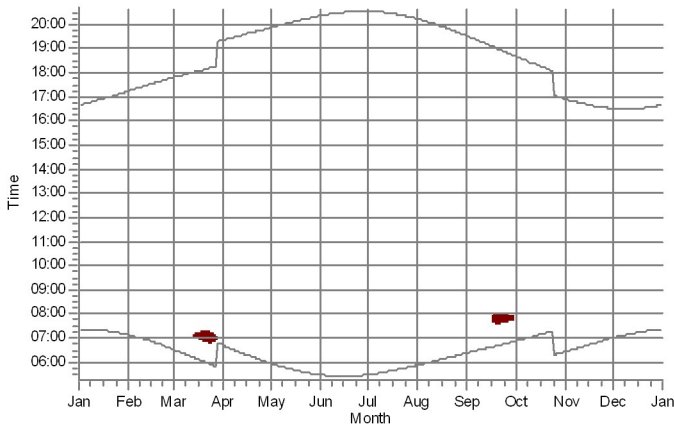
R56: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)



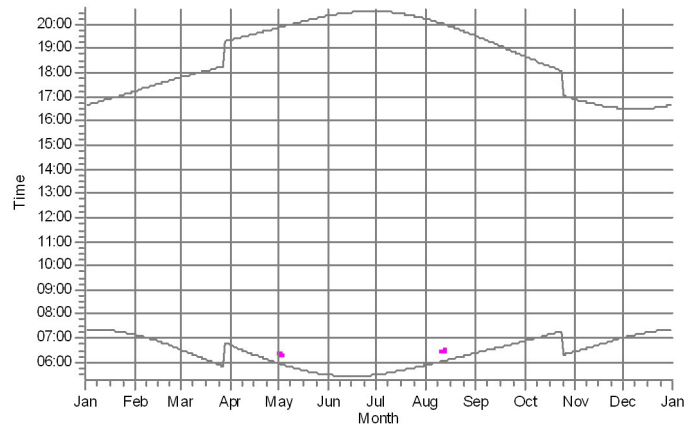
R66: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (20)



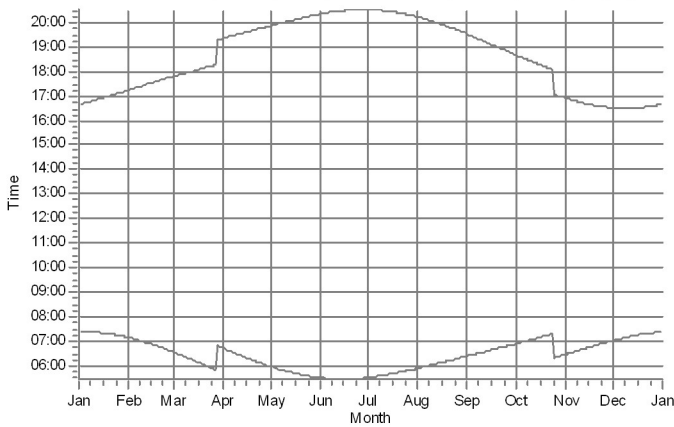
R67: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)



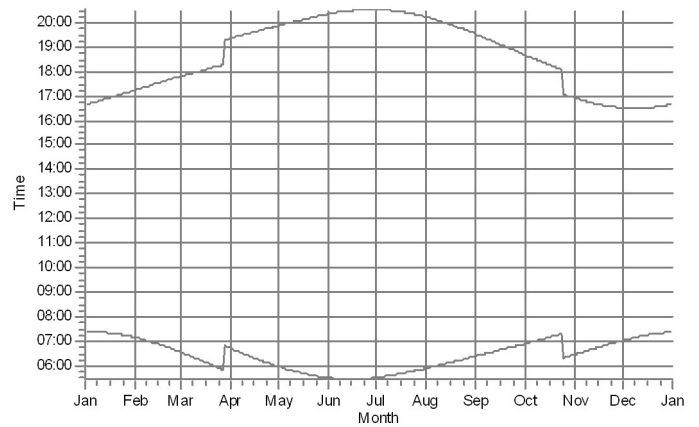
R78: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (22)



R79: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)



R81: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)



WTGs

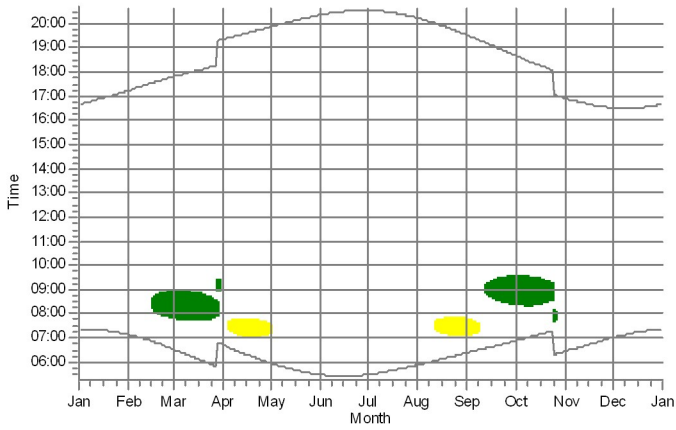
- AL05: Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 m) (6)
- AL07: Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 m) (8)

- AL08: Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 m) (9)

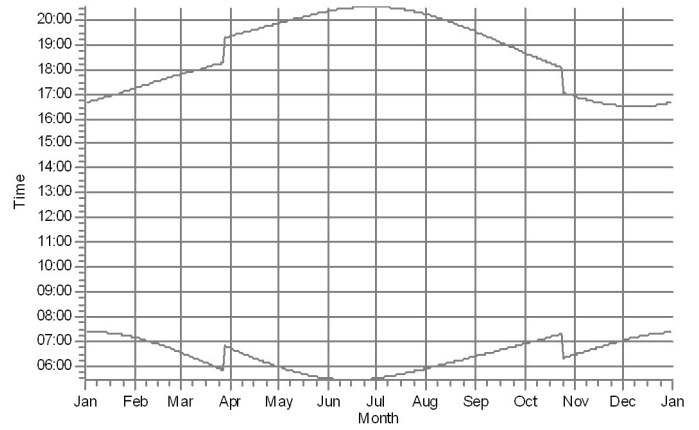
SHADOW - Calendar, graphical

Calculation: WF Albano - Worst case

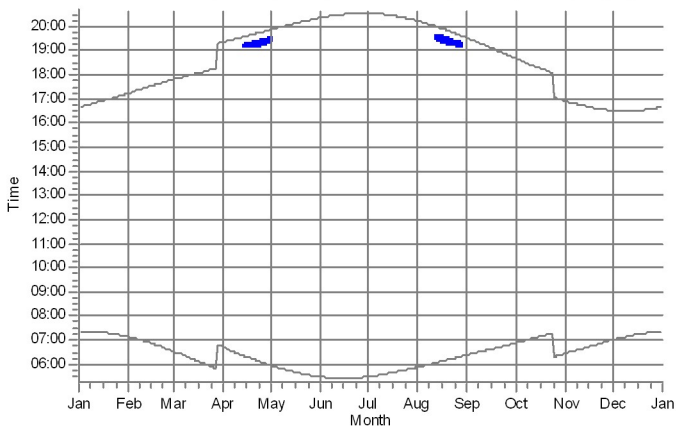
R88: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)



R93: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (26)



R95: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (27)



WTGs

- AL01: Siemens Gamesa SG 6.0-170 6000 170.0 !OI! hub: 135,0 m (TOT: 220,0 m) (2)
- AL02: Siemens Gamesa SG 6.0-170 6000 170.0 !OI! hub: 135,0 m (TOT: 220,0 m) (3)

- AL03: Siemens Gamesa SG 6.0-170 6000 170.0 !OI! hub: 135,0 m (TOT: 220,0 m) (4)

SHADOW - Calendar per WTG

Calculation: WF Albano - Worst case WTG: AL01 - 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
1	07:20 16:40	07:08 17:13	06:32 07:51-08:54/63 17:47	06:42 18:16-18:20/4 19:20	05:57 19:52	05:28 20:21
2	07:21 16:40	07:07 17:15	06:31 07:50-08:54/64 17:48	06:40 18:27-18:30/3 19:21 18:16-18:21/5	05:55 19:53	05:28 20:21
3	07:21 16:41	07:06 17:16	06:29 07:50-08:54/64 17:49	06:39 18:26-18:30/4 19:22 18:15-18:22/7	05:54 19:54	05:28 20:22
4	07:21 16:42	07:05 17:17	06:28 07:49-08:54/65 17:50	06:37 18:25-18:31/6 19:24 18:15-18:22/7	05:53 19:55	05:27 20:23
5	07:21 16:43	07:04 17:18	06:26 07:49-08:55/66 17:51	06:35 18:16-18:33/17 19:25	05:52 19:56	05:27 20:24
6	07:21 16:44	07:02 17:20	06:24 07:48-08:54/66 17:53	06:34 18:16-18:33/17 19:26	05:51 19:57	05:26 20:24
7	07:21 16:45	07:01 17:21	06:23 07:48-08:55/67 17:54	06:32 18:17-18:35/18 19:27	05:49 19:58	05:26 20:25
8	07:21 16:46	07:00 17:22	06:21 07:47-08:54/67 17:55	06:31 18:17-18:35/18 19:28	05:48 19:59	05:26 20:25
9	07:20 16:47	06:59 17:23	06:20 07:46-08:53/67 17:56	06:29 18:17-18:36/19 19:29	05:47 20:00	05:26 20:26
10	07:20 16:48	06:58 17:24	06:18 07:47-08:53/66 17:57	06:27 18:19-18:37/18 19:30	05:46 20:01	05:26 20:27
11	07:20 16:49	06:57 17:26	06:16 07:46-08:52/66 17:58	06:26 18:20-18:38/18 19:31	05:45 20:02	05:25 20:27
12	07:20 16:50	06:56 17:27	06:15 07:46-08:51/65 17:59	06:24 18:22-18:39/17 19:32	05:44 20:03	05:25 20:28
13	07:20 16:51	06:54 17:28	06:13 07:46-08:51/65 18:00	06:23 18:23-18:39/16 19:33	05:43 20:04	05:25 20:28
14	07:19 16:52	06:53 17:29	06:12 07:46-08:50/64 18:01	06:21 18:24-18:40/16 19:34	05:42 20:05	05:25 20:28
15	07:19 16:53	06:52 17:31	06:10 07:46-08:50/64 18:02	06:20 18:24-18:41/17 19:35	05:41 20:06	05:25 20:29
16	07:18 16:54	06:51 08:15-08:34/19 17:32	06:08 07:46-08:48/62 18:04	06:18 18:25-18:42/17 19:36	05:40 20:07	05:25 20:29
17	07:18 16:55	06:49 08:11-08:37/26 17:33	06:07 07:46-08:47/61 18:05	06:17 18:26-18:42/16 19:37	05:39 20:08	05:25 20:30
18	07:18 16:57	06:48 08:08-08:40/32 17:34	06:05 07:47-08:46/59 18:06	06:15 18:28-18:43/15 19:38	05:38 20:09	05:25 20:30
19	07:17 16:58	06:47 08:06-08:43/37 17:35	06:03 07:47-08:45/58 18:07	06:14 18:29-18:43/14 19:39	05:37 20:10	05:25 20:30
20	07:17 16:59	06:45 08:03-08:45/42 17:37	06:02 07:47-08:43/56 18:08	06:12 18:32-18:45/13 19:40	05:36 20:11	05:25 20:31
21	07:16 17:00	06:44 08:02-08:47/45 17:38	06:00 07:48-08:42/54 18:09	06:11 18:32-18:45/13 19:41	05:35 20:11	05:26 20:31
22	07:15 17:01	06:42 07:59-08:48/49 17:39	05:58 07:49-08:40/51 18:10	06:09 18:32-18:45/13 19:42	05:35 20:12	05:26 20:31
23	07:15 17:02	06:41 07:58-08:49/51 17:40	05:57 07:49-08:38/49 18:11	06:08 18:32-18:45/13 19:43	05:34 20:13	05:26 20:31
24	07:14 17:04	06:40 07:57-08:51/54 17:41	05:55 07:51-08:37/46 18:12	06:06 18:32-18:45/13 19:44	05:33 20:14	05:26 20:31
25	07:13 17:05	06:38 07:56-08:51/55 17:42	05:54 07:51-08:34/43 18:13	06:05 18:32-18:45/13 19:45	05:32 20:15	05:27 20:32
26	07:13 17:06	06:37 07:55-08:53/58 17:44	05:52 07:52-08:31/39 18:14	06:03 18:32-18:45/13 19:46	05:32 20:16	05:27 20:32
27	07:12 17:07	06:35 07:53-08:53/60 17:45	05:50 07:55-08:29/34 18:15	06:02 18:32-18:45/13 19:47	05:31 20:17	05:27 20:32
28	07:11 17:09	06:34 07:53-08:54/61 17:46	05:49 07:56-08:26/30 18:16	06:01 18:32-18:45/13 19:49	05:31 20:18	05:28 20:32
29	07:10 17:10		06:47 08:59-09:22/23 19:17 18:17-18:18/1	05:59 18:32-18:45/13 19:50	05:30 20:18	05:28 20:32
30	07:09 17:11		06:45 09:03-09:17/14 19:18 18:17-18:19/2	05:58 18:32-18:45/13 19:51	05:29 20:19	05:29 20:32
31	07:08 17:12		06:44 18:16-18:20/4 19:19		05:29 20:20	
Potential sun hours	299	298	370	398	447	451
Sum of minutes with flicker	0	589	1665	302	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 Albano - Worst case WTG: AL01 - 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

	July	August	September	October	November	December
1	05:29 20:32	05:53 20:13	06:23 18:19-18:36/17 19:30	06:52 08:25-09:31/66 18:40	06:26 16:54	07:00 16:30
2	05:29 20:31	05:53 20:12	06:24 18:17-18:35/18 19:29	06:53 08:25-09:31/66 18:39	06:27 16:53	07:01 16:30
3	05:30 20:31	05:54 20:11	06:25 18:15-18:34/19 19:27	06:54 08:24-09:31/67 18:37	06:28 16:52	07:02 16:30
4	05:30 20:31	05:55 20:10	06:26 18:14-18:32/18 19:26	06:55 08:24-09:31/67 18:36	06:29 16:51	07:03 16:30
5	05:31 20:31	05:56 20:08	06:27 18:13-18:31/18 19:24	06:56 08:24-09:31/67 18:34	06:30 16:50	07:04 16:30
6	05:32 20:31	05:57 20:07	06:28 18:12-18:30/18 19:22	06:57 08:24-09:30/66 18:32	06:32 16:49	07:05 16:30
7	05:32 20:30	05:58 20:06	06:29 18:20-18:28/8 19:21	06:58 08:23-09:30/67 18:31	06:33 16:47	07:06 16:29
8	05:33 20:30	05:59 20:05	06:30 18:20-18:26/6 19:19	06:59 08:23-09:30/67 18:29	06:34 16:46	07:07 16:29
9	05:33 20:30	06:00 20:04	06:31 18:20-18:25/5 19:17	07:00 08:23-09:29/66 18:27	06:35 16:45	07:08 16:29
10	05:34 20:29	06:01 20:02	06:31 18:20-18:23/3 19:16	07:01 08:23-09:28/65 18:26	06:36 16:44	07:09 16:29
11	05:35 20:29	06:02 20:01	06:32 18:21-18:22/1 19:14	07:02 08:25-09:29/64 18:24	06:37 16:43	07:10 16:29
12	05:36 20:28	06:03 20:00	06:33 18:08-18:12/4 19:12	07:03 08:25-09:28/63 18:23	06:39 16:42	07:10 16:30
13	05:36 20:28	06:04 19:59	06:34 08:56-09:08/12 19:11	07:05 08:25-09:27/62 18:21	06:40 16:41	07:11 16:30
14	05:37 20:27	06:05 19:57	06:35 08:50-09:13/23 19:09	07:06 08:26-09:26/60 18:20	06:41 16:41	07:12 16:30
15	05:38 20:27	06:06 19:56	06:36 08:46-09:15/29 19:07	07:07 08:26-09:25/59 18:18	06:42 16:40	07:13 16:30
16	05:39 20:26	06:07 19:54	06:37 08:43-09:17/34 19:06	07:08 08:27-09:24/57 18:16	06:43 16:39	07:13 16:30
17	05:39 20:26	06:08 19:53	06:38 08:41-09:19/38 19:04	07:09 08:27-09:22/55 18:15	06:44 16:38	07:14 16:31
18	05:40 20:25	06:09 19:52	06:39 08:39-09:21/42 19:02	07:10 08:28-09:21/53 18:13	06:46 16:37	07:15 16:31
19	05:41 20:24	06:10 19:50	06:40 08:37-09:23/46 19:01	07:11 08:30-09:20/50 18:12	06:47 16:37	07:15 16:31
20	05:42 20:24	06:11 19:49	06:41 08:36-09:24/48 18:59	07:12 08:31-09:19/48 18:11	06:48 16:36	07:16 16:32
21	05:43 20:23	06:12 19:47	06:42 08:34-09:25/51 18:57	07:13 08:33-09:17/44 18:09	06:49 16:35	07:16 16:32
22	05:43 20:22	06:13 18:41-18:44/3 19:46	06:43 08:33-09:26/53 18:56	07:14 08:34-09:15/41 18:08	06:50 16:35	07:17 16:33
23	05:44 20:21	06:14 18:36-18:48/12 19:44	06:44 08:32-09:27/55 18:54	07:15 08:36-09:12/36 18:06	06:51 16:34	07:17 16:33
24	05:45 20:21	06:15 18:33-18:47/14 19:43	06:45 08:31-09:28/57 18:52	07:17 08:38-09:09/31 18:05	06:53 16:33	07:18 16:34
25	05:46 20:20	06:16 18:31-18:46/15 19:41	06:46 08:30-09:29/59 18:50	06:18 07:42-08:07/25 17:03	06:54 16:33	07:18 16:34
26	05:47 20:19	06:17 18:29-18:45/16 19:40	06:47 08:29-09:29/60 18:49	06:19 07:47-08:02/15 17:02	06:55 16:32	07:19 16:35
27	05:48 20:18	06:18 18:27-18:44/17 19:38	06:48 08:28-09:30/62 18:47	06:20 17:01	06:56 16:32	07:19 16:36
28	05:49 20:17	06:19 18:26-18:42/16 19:37	06:49 08:27-09:30/63 18:45	06:21 16:59	06:57 16:32	07:19 16:36
29	05:50 20:16	06:20 18:25-18:41/16 19:35	06:50 08:26-09:30/64 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	05:51 20:15	06:21 18:23-18:39/16 19:34	06:51 08:26-09:31/65 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	05:52 20:14	06:22 18:21-18:38/17 19:32		06:25 16:56		07:20 16:39
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	0	142	1031	1427	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 Albano - Worst case WTG: AL02 - 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	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	18:47-18:59/12 19:52	05:57 20:21
2	07:21 16:40	07:07 17:15	06:31 17:48	06:40 19:21	18:50-18:59/9 19:53	05:55 20:21
3	07:21 16:41	07:06 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 20:22
4	07:21 16:42	07:05 17:17	06:28 17:50	06:37 19:23	05:53 19:55	05:27 20:23
5	07:21 16:43	07:04 17:18	06:26 17:51	06:35 19:25	07:23-07:36/13 19:56	05:52 20:23
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	07:19-07:38/19 19:57	05:51 20:24
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	07:17-07:41/24 19:58	05:49 20:25
8	07:21 16:46	07:00 17:22	06:21 17:55	06:31 19:28	07:15-07:42/27 19:59	05:48 20:25
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	07:13-07:42/29 20:00	05:47 20:26
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	07:12-07:44/32 20:01	05:46 20:27
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	07:10-07:44/34 20:02	05:45 20:27
12	07:20 16:50	06:56 17:27	06:15 17:59	06:24 19:32	07:10-07:45/35 20:03	05:44 20:28
13	07:20 16:51	06:54 17:28	06:13 18:00	06:23 19:33	07:08-07:45/37 20:04	05:43 20:28
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	07:08-07:45/37 20:05	05:42 20:28
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	07:07-07:45/38 20:06	05:41 20:29
16	07:18 16:54	06:51 17:32	06:08 18:03	06:18 19:36	07:07-07:45/38 20:07	05:40 20:29
17	07:18 16:55	06:49 17:33	06:07 18:05	06:17 19:37	07:06-07:44/38 20:08	05:39 20:30
18	07:18 16:57	16:30-16:31/1 17:34	06:48 18:06	06:15 19:38	07:07-07:45/38 20:09	05:38 20:30
19	07:17 16:58	16:31-16:33/2 17:35	06:47 18:07	06:14 19:39	07:06-07:44/38 20:10	05:37 20:30
20	07:17 16:59	16:32-16:34/2 17:36	06:45 18:08	06:12 19:40	07:06-07:43/37 20:11	05:36 20:31
21	07:16 17:00	16:33-16:36/3 17:38	06:44 18:09	06:11 19:41	07:06-07:42/36 20:11	05:35 20:31
22	07:15 17:01	16:33-16:37/4 17:39	06:42 18:10	06:09 19:42	07:07-07:42/35 20:12	05:35 20:31
23	07:15 17:02	16:34-16:38/4 17:40	06:41 18:11	06:08 19:43	07:06-07:40/34 20:13	05:34 20:31
24	07:14 17:04	16:35-16:39/4 17:41	06:39 18:12	06:06 19:44	07:07-07:40/33 20:14	05:33 20:31
25	07:13 17:05	16:37-16:41/4 17:42	06:38 18:13	06:05 19:45	07:08-07:39/31 20:15	05:32 20:31
26	07:13 17:06	16:39-16:42/3 17:43	06:37 18:14	06:03 19:46	07:08-07:37/29 20:16	05:32 20:32
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	07:10-07:36/26 20:17	05:31 20:32
28	07:11 17:08	06:34 17:46	05:49 18:16	06:01 19:49	07:11-07:35/24 20:18	05:30 20:32
29	07:10 17:10	06:47 19:17	18:45-18:56/11 19:17	05:59 19:50	07:12-07:32/20 20:18	05:30 20:32
30	07:09 17:11	06:45 19:18	18:46-18:58/12 19:18	05:58 19:51	07:14-07:30/16 20:19	05:29 20:32
31	07:08 17:12	06:44 19:19	18:46-18:58/12 19:19	05:57 20:20	07:14-07:30/16 20:20	05:29 20:32
Potential sun hours	299	298	370	398	447	451
Sum of minutes with flicker	27	0	148	819	382	401

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 Albano - Worst case WTG: AL02 - 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 19:16-19:27/11 20:32	05:52 19:41-19:49/8 20:13	06:23 07:09-07:43/34 19:30	06:52 18:14-18:18/4 18:40	06:26 16:54	07:00 16:30
2	05:29 19:19-19:27/8 20:31	05:53 19:43-19:48/5 20:12	06:24 07:10-07:42/32 19:29	06:53 18:12-18:16/4 18:39	06:27 16:53	07:01 16:30
3	05:30 19:21-19:26/5 20:31	05:54 19:45-19:47/2 20:11	06:25 07:11-07:41/30 19:27	06:54 18:10-18:15/5 18:37	06:28 16:52	07:02 16:30
4	05:30 19:45-19:50/5 20:31	05:55 20:10	06:26 07:12-07:39/27 19:26	06:55 18:09-18:13/4 18:35	06:29 16:51	07:03 16:30
5	05:31 19:43-19:51/8 20:31	05:56 20:08	06:27 07:13-07:37/24 19:24	06:56 18:09-18:11/2 18:34	06:30 16:50	07:04 16:30
6	05:32 19:43-19:53/10 20:31	05:57 20:07	06:28 07:15-07:35/20 19:22	06:57 18:08-18:09/1 18:32	06:32 16:49	07:05 16:29
7	05:32 19:43-19:54/11 20:30	05:58 20:06	06:29 07:18-07:31/13 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	05:33 19:41-19:55/14 20:30	05:59 20:05	06:30 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	05:33 19:41-19:56/15 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	05:34 19:40-19:56/16 20:29	06:01 20:02	06:31 18:44-18:51/7 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	05:35 19:40-19:57/17 20:29	06:02 20:01	06:32 18:41-18:52/11 19:14	07:02 18:24	06:37 16:43	07:10 16:29
12	05:36 19:40-19:58/18 20:28	06:03 07:25-07:36/11 20:00	06:33 18:39-18:51/12 19:12	07:03 18:23	06:39 16:42	07:10 16:30
13	05:36 19:40-19:59/19 20:28	06:04 07:22-07:39/17 19:59	06:34 18:36-18:48/12 19:11	07:05 18:21	06:40 16:41	07:11 16:30
14	05:37 19:39-19:59/20 20:27	06:05 07:20-07:41/21 19:57	06:35 18:35-18:46/11 19:09	07:06 18:20	06:41 16:41	07:12 16:30
15	05:38 19:39-20:00/21 20:27	06:06 07:18-07:42/24 19:56	06:36 18:34-18:45/11 19:07	07:07 18:18	06:42 16:15-16:16/1 16:40	07:13 16:30
16	05:38 19:39-20:00/21 20:26	06:07 07:16-07:43/27 19:54	06:37 18:34-18:43/9 19:06	07:08 18:16	06:43 16:12-16:15/3 16:39	07:13 16:30
17	05:39 19:39-20:01/22 20:26	06:08 07:15-07:44/29 19:53	06:38 18:33-18:41/8 19:04	07:09 18:15	06:44 16:10-16:14/4 16:38	07:14 16:31
18	05:40 19:38-20:00/22 20:25	06:09 07:14-07:45/31 19:52	06:39 18:32-18:40/8 19:02	07:10 18:13	06:46 16:09-16:13/4 16:37	07:15 16:31
19	05:41 19:38-20:00/22 20:24	06:10 07:13-07:46/33 19:50	06:40 18:31-18:38/7 19:01	07:11 18:12	06:47 16:09-16:13/4 16:37	07:15 16:31
20	05:42 19:38-19:59/21 20:24	06:11 07:12-07:46/34 19:49	06:41 18:30-18:37/7 18:59	07:12 18:11	06:48 16:08-16:12/4 16:36	07:16 16:32
21	05:43 19:38-19:59/21 20:23	06:12 07:11-07:47/36 19:47	06:42 18:30-18:35/5 18:57	07:13 18:09	06:49 16:08-16:11/3 16:35	07:16 16:32
22	05:43 19:38-19:58/20 20:22	06:13 07:11-07:47/36 19:46	06:43 18:29-18:33/4 18:55	07:14 18:08	06:50 16:08-16:10/2 16:35	07:17 16:33
23	05:44 19:37-19:57/20 20:21	06:14 07:10-07:47/37 19:44	06:44 18:29-18:31/2 18:54	07:15 18:06	06:51 16:07-16:09/2 16:34	07:17 16:33
24	05:45 19:38-19:56/18 20:21	06:15 07:10-07:47/37 19:43	06:45 18:25-18:30/5 18:52	07:17 18:05	06:53 16:08-16:09/1 16:33	07:18 16:34
25	05:46 19:38-19:55/17 20:20	06:16 07:09-07:47/38 19:41	06:46 18:22-18:28/6 18:50	06:18 17:03	06:54 16:08-16:09/1 16:33	07:18 16:34
26	05:47 19:38-19:55/17 20:19	06:17 07:09-07:47/38 19:40	06:47 18:20-18:26/6 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	05:48 19:39-19:54/15 20:18	06:18 07:09-07:47/38 19:38	06:48 18:19-18:25/6 18:47	06:20 17:01	06:56 16:32	07:19 16:36
28	05:49 19:39-19:53/14 20:17	06:19 07:09-07:47/38 19:37	06:49 18:18-18:23/5 18:45	06:21 16:59	06:57 16:31	07:19 16:36
29	05:50 19:40-19:52/12 20:16	06:20 07:09-07:46/37 19:35	06:50 18:17-18:21/4 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	05:51 19:40-19:52/12 20:15	06:21 07:09-07:46/37 19:34	06:51 18:16-18:20/4 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	05:52 19:40-19:50/10 20:14	06:22 07:09-07:44/35 19:32		06:25 16:56		07:20 16:39
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	482	649	330	20	29	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 Albano - Worst case WTG: AL03 - 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	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 18:37-19:29/52 19:52	05:28 19:01-19:56/55 20:21
2	07:21 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 18:37-19:30/53 19:53	05:28 19:01-19:56/55 20:21
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 18:37-19:30/53 19:54	05:27 19:02-19:57/55 20:22
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	18:59-19:02/3 05:53 18:37-19:31/54 19:55	05:27 19:01-19:57/56 20:23
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	18:57-19:03/6 05:52 18:38-19:33/55 19:56	05:27 19:02-19:58/56 20:23
6	07:21 16:44	07:02 17:19	06:24 06:56-06:58/2 17:52	06:34 19:26	18:54-19:04/10 05:50 18:38-19:34/56 19:57	05:26 19:02-19:59/57 20:24
7	07:21 16:45	07:01 17:21	06:23 06:55-06:59/4 17:54	06:32 19:27	18:51-19:05/14 05:49 18:39-19:35/56 19:58	05:26 19:03-20:00/57 20:25
8	07:21 16:46	07:00 17:22	06:21 06:54-06:59/5 17:55	06:31 19:28	18:50-19:06/16 05:48 18:39-19:36/57 19:59	05:26 19:02-20:00/58 20:25
9	07:20 16:47	06:59 17:23	06:20 06:52-06:59/7 17:56	06:29 19:29	18:48-19:07/19 05:47 18:40-19:37/57 20:00	05:26 19:02-20:00/58 20:26
10	07:20 16:48	06:58 17:24	06:18 06:51-06:59/8 17:57	06:27 19:30	18:47-19:08/21 05:46 18:41-19:38/57 20:01	05:25 19:03-20:01/58 20:26
11	07:20 16:49	06:57 17:26	06:16 06:49-06:58/9 17:58	06:26 19:31	18:45-19:09/24 05:45 18:41-19:39/58 20:02	05:25 19:03-20:02/59 20:27
12	07:20 16:50	06:56 17:27	06:15 06:48-06:57/9 17:59	06:24 19:32	18:45-19:11/26 05:44 18:42-19:40/58 20:03	05:25 19:04-20:02/58 20:27
13	07:19 16:51	06:54 17:28	06:13 06:47-06:57/10 18:00	06:23 19:33	18:43-19:11/28 05:43 18:43-19:41/58 20:04	05:25 19:04-20:03/59 20:28
14	07:19 16:52	06:53 17:29	06:12 06:45-06:56/11 18:01	06:21 19:34	18:43-19:13/30 05:42 18:43-19:41/58 20:05	05:25 19:04-20:03/59 20:28
15	07:19 16:53	06:52 17:30	06:10 06:44-06:55/11 18:02	06:20 19:35	18:41-19:13/32 05:41 18:44-19:42/58 20:06	05:25 19:04-20:04/60 20:29
16	07:18 16:54	06:50 17:32	06:08 06:43-06:52/9 18:03	06:18 19:36	18:40-19:14/34 05:40 18:45-19:43/58 20:07	05:25 19:05-20:04/59 20:29
17	07:18 16:55	06:49 17:33	06:07 06:44-06:47/3 18:05	06:16 19:37	18:40-19:15/35 05:39 18:46-19:44/58 20:08	05:25 19:05-20:04/59 20:30
18	07:18 16:57	06:48 17:34	06:05 18:06	06:15 19:38	18:40-19:17/37 05:38 18:47-19:45/58 20:09	05:25 19:05-20:04/59 20:30
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	18:38-19:17/39 05:37 18:47-19:45/58 20:10	05:25 19:05-20:05/60 20:30
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	18:38-19:18/40 05:36 18:49-19:47/58 20:10	05:25 19:06-20:06/60 20:31
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	18:37-19:19/42 05:35 18:50-19:47/57 20:11	05:26 19:06-20:06/60 20:31
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	18:37-19:20/43 05:35 18:51-19:48/57 20:12	05:26 19:06-20:06/60 20:31
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	18:37-19:21/44 05:34 18:52-19:49/57 20:13	05:26 19:06-20:06/60 20:31
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	18:37-19:22/45 05:33 18:54-19:50/56 20:14	05:26 19:07-20:06/59 20:31
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	18:37-19:23/46 05:32 18:55-19:50/55 20:15	05:27 19:07-20:06/59 20:31
26	07:13 17:06	06:37 17:43	05:52 18:14	06:03 19:46	18:36-19:24/48 05:32 18:57-19:51/54 20:16	05:27 19:07-20:06/59 20:32
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	18:36-19:25/49 05:31 18:59-19:52/53 20:17	05:27 19:07-20:07/60 20:32
28	07:11 17:08	06:34 17:46	05:48 18:16	06:01 19:48	18:37-19:26/49 05:30 19:00-19:53/53 20:17	05:28 19:07-20:06/59 20:32
29	07:10 17:10		06:47 19:17	05:59 19:49	18:36-19:26/50 05:30 19:01-19:54/53 20:18	05:28 19:07-20:06/59 20:32
30	07:09 17:11		06:45 19:18	05:58 19:51	18:36-19:28/52 05:29 19:00-19:54/54 20:19	05:28 19:08-20:06/58 20:32
31	07:08 17:12		06:44 19:19		05:29 19:01-19:55/54 20:20	
Potential sun hours	299	298	370	398	447	451
Sum of minutes with flicker	0	0	88	882	1733	1750

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 Albano - Worst case WTG: AL03 - 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 19:07-20:06/59 20:31	05:52 18:51-19:49/58 20:13	06:23 18:44-19:08/24 19:30	06:52 07:27-07:37/10 18:40	06:26 07:00 16:54	07:00 16:30
2	05:29 19:08-20:06/58 20:31	05:53 18:51-19:48/57 20:12	06:24 18:45-19:06/21 19:29	06:53 07:27-07:37/10 18:39	06:27 07:01 16:53	07:01 16:30
3	05:30 19:08-20:06/58 20:31	05:54 18:50-19:47/57 20:11	06:25 18:46-19:05/19 19:27	06:54 07:28-07:37/9 18:37	06:28 07:02 16:52	07:02 16:30
4	05:30 19:08-20:06/58 20:31	05:55 18:49-19:46/57 20:10	06:26 18:47-19:03/16 19:25	06:55 07:29-07:36/7 18:35	06:29 07:03 16:51	07:03 16:30
5	05:31 19:08-20:05/57 20:31	05:56 18:49-19:45/56 20:08	06:27 18:48-19:02/14 19:24	06:56 07:30-07:36/6 18:34	06:30 07:04 16:50	07:04 16:30
6	05:32 19:08-20:06/58 20:31	05:57 18:48-19:44/56 20:07	06:27 18:50-19:00/10 19:22	06:57 07:30-07:35/5 18:32	06:31 07:05 16:48	07:05 16:29
7	05:32 19:09-20:06/57 20:30	05:58 18:48-19:43/55 20:06	06:28 18:51-18:59/8 19:21	06:58 07:31-07:34/3 18:31	06:33 07:06 16:47	07:06 16:29
8	05:33 19:08-20:05/57 20:30	05:59 18:47-19:42/55 20:05	06:29 18:53-18:57/4 19:19	06:59 07:00 18:29	06:34 07:07 16:46	07:07 16:29
9	05:33 19:09-20:05/56 20:30	06:00 18:47-19:41/54 20:04	06:30 07:00 19:17	07:00 07:00 18:27	06:35 07:08 16:45	07:08 16:29
10	05:34 19:08-20:04/56 20:29	06:01 18:46-19:40/54 20:02	06:31 07:00 19:16	07:01 07:00 18:26	06:36 07:09 16:44	07:09 16:29
11	05:35 19:09-20:04/55 20:29	06:02 18:46-19:39/53 20:01	06:32 07:00 19:14	07:02 07:00 18:24	06:37 07:09 16:43	07:09 16:29
12	05:35 19:09-20:04/55 20:28	06:03 18:45-19:37/52 20:00	06:33 07:00 19:12	07:03 07:00 18:23	06:39 07:10 16:42	07:10 16:29
13	05:36 19:09-20:04/55 20:28	06:04 18:44-19:35/51 19:58	06:34 07:00 19:11	07:04 07:00 18:21	06:40 07:11 16:41	07:11 16:30
14	05:37 19:09-20:02/53 20:27	06:05 18:44-19:34/50 19:57	06:35 07:00 19:09	07:06 07:00 18:19	06:41 07:12 16:40	07:12 16:30
15	05:38 19:09-20:02/53 20:27	06:06 18:43-19:33/50 19:56	06:36 07:00 19:07	07:07 07:00 18:18	06:42 07:13 16:40	07:13 16:30
16	05:38 19:09-20:02/53 20:26	06:07 18:43-19:31/48 19:54	06:37 07:00 19:06	07:08 07:00 18:16	06:43 07:13 16:39	07:13 16:30
17	05:39 19:07-20:01/54 20:26	06:08 18:43-19:30/47 19:53	06:38 07:00 19:04	07:09 07:00 18:15	06:44 07:14 16:38	07:14 16:31
18	05:40 19:06-20:00/54 20:25	06:09 18:43-19:29/46 19:52	06:39 07:00 19:02	07:10 07:00 18:13	06:46 07:15 16:37	07:15 16:31
19	05:41 19:04-20:00/56 20:24	06:10 18:42-19:28/46 19:50	06:40 07:00 19:00	07:11 07:00 18:12	06:47 07:15 16:36	07:15 16:31
20	05:42 19:03-19:59/56 20:24	06:11 18:42-19:26/44 19:49	06:41 07:00 18:59	07:12 07:00 18:10	06:48 07:16 16:36	07:16 16:32
21	05:42 19:02-19:59/57 20:23	06:12 18:42-19:25/43 19:47	06:42 07:00 18:57	07:13 07:00 18:09	06:49 07:16 16:35	07:16 16:32
22	05:43 19:01-19:58/57 20:22	06:13 18:42-19:23/41 19:46	06:43 07:00 18:55	07:14 07:00 18:08	06:50 07:17 16:34	07:17 16:33
23	05:44 18:59-19:57/58 20:21	06:14 18:42-19:22/40 19:44	06:44 07:00 18:54	07:15 07:00 18:06	06:51 07:17 16:34	07:17 16:33
24	05:45 18:58-19:56/58 20:20	06:15 18:42-19:21/39 19:43	06:45 07:00 18:52	07:16 07:00 18:05	06:52 07:18 16:33	07:18 16:34
25	05:46 18:58-19:55/57 20:20	06:16 18:43-19:19/36 19:41	06:46 07:00 18:50	06:18 07:00 17:03	06:54 07:18 16:33	07:18 16:34
26	05:47 18:57-19:55/58 20:19	06:17 18:43-19:18/35 19:40	06:47 07:00 18:49	06:19 07:00 17:02	06:55 07:19 16:32	07:19 16:35
27	05:48 18:56-19:54/58 20:18	06:18 18:43-19:16/33 19:38	06:48 07:24-07:33/9 18:47	06:20 07:00 17:01	06:56 07:19 16:32	07:19 16:36
28	05:49 18:55-19:53/58 20:17	06:19 18:43-19:15/32 19:37	06:49 07:24-07:35/11 18:45	06:21 07:00 16:59	06:57 07:19 16:31	07:19 16:36
29	05:50 18:54-19:53/59 20:16	06:20 18:43-19:12/29 19:35	06:50 07:25-07:36/11 18:44	06:22 07:00 16:58	06:58 07:20 16:31	07:20 16:37
30	05:51 18:54-19:52/58 20:15	06:21 18:43-19:11/28 19:34	06:51 07:26-07:36/10 18:42	06:23 07:00 16:57	06:59 07:20 16:31	07:20 16:38
31	05:51 18:52-19:50/58 20:14	06:22 18:44-19:09/25 19:32		06:24 07:00 16:56		07:20 16:38
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	1754	1427	157	50	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 Albano - Worst case WTG: AL04 - 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	July	August	September	October	November	December
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:53 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:20 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:26	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	05:51 19:57	05:26 20:24	05:32 20:31	05:57 20:07	06:28 19:22	06:57 18:32	06:31 16:49	07:05 16:30
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:29 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	07:20 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:33 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:26 20:26	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:56 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:36 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:30
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11	07:04 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:06 18:20	06:41 16:41	07:12 16:30
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	05:25 20:29	05:39 20:26	06:07 19:54	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:05	06:17 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:17 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:14 19:39	05:37 20:10	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:01	07:11 18:12	06:47 16:37	07:15 16:31
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:30	05:42 20:24	06:11 19:49	06:41 18:59	07:12 18:11	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	05:26 20:31	05:43 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:08	06:50 16:35	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	07:16 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	05:27 20:31	05:46 20:20	06:16 19:41	06:46 18:50	07:18 17:03	06:54 16:33	07:18 16:34
26	07:12 17:06	06:37 17:43	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:31	05:47 20:19	06:17 19:40	06:47 18:49	07:19 17:02	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	05:27 20:32	05:48 20:18	06:18 19:38	06:48 18:47	07:20 17:01	06:56 16:32	07:19 16:36
28	07:11 17:08	06:34 17:46	05:49 18:16	06:01 19:48	05:31 20:17	05:28 20:32	05:49 20:17	06:19 19:37	06:49 18:45	07:21 16:59	06:57 16:32	07:19 16:36
29	07:10 17:10		06:47 19:17	05:59 19:49	05:30 20:18	05:28 20:32	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	07:09 17:11		06:45 19:18	05:58 19:51	05:29 20:19	05:29 20:32	05:51 20:15	06:21 19:34	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	07:08 17:12		06:44 19:19		05:29 20:20		05:52 20:14	06:22 19:32		06:24 16:56		07:20 16:39
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

Day in month	Sun rise (hh:mm) 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 Albano - Worst case WTG: AL05 - 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	July	August	September	October	November	December		
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	06:20-06:21/1	05:28 20:21	05:29 20:31	05:52 20:13	06:23 19:30	18:56-19:08/12	06:52 18:40	06:26 16:54	07:00 16:30
2	07:20 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 19:53	06:19-06:20/1	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	18:56-19:06/10	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	06:17-06:18/1	05:27 20:22	05:30 20:31	05:54 20:11	06:25 19:27	18:56-19:05/9	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55		05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:25	18:56-19:03/7	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56		05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	18:56-19:02/6	06:56 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	05:50 19:57	19:01-19:04/3	05:26 20:24	05:32 20:31	05:57 20:07	06:28 19:22	18:57-19:00/3	06:57 18:32	06:31 16:48	07:05 16:29
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	18:59-19:05/6	05:26 20:25	05:32 20:30	05:58 20:06	06:28 19:21	18:58-18:59/1	06:58 18:31	06:33 16:47	07:06 16:29
8	07:20 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	18:59-19:06/7	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19		06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	18:58-19:07/9	05:26 20:26	05:33 20:30	06:00 20:04	06:30 19:17		07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	18:58-19:08/10	05:25 20:26	05:34 20:29	06:01 20:02	06:31 19:16	06:27-06:28/1	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	18:57-19:09/12	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	06:28-06:29/1	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	18:57-19:11/14	05:25 20:27	05:35 20:28	06:03 20:00	06:33 19:12	06:29-06:30/1	07:03 18:23	06:39 16:42	07:10 16:30
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	18:57-19:11/14	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11		07:04 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	18:56-19:12/16	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09		07:06 18:19	06:41 16:41	07:12 16:30
15	07:19 16:53	06:52 17:30	06:10 18:02	06:20 19:35	05:41 20:06	18:57-19:13/16	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07		07:07 18:18	06:42 16:40	07:13 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	18:57-19:14/17	05:25 20:29	05:38 20:26	06:07 19:54	06:37 19:06		07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:05	06:17 19:37	05:39 20:08	18:58-19:15/17	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04		07:09 18:15	06:44 16:38	07:14 16:31
18	07:17 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	18:59-19:15/16	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02		07:10 18:13	06:44 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	05:37 20:10	19:00-19:17/17	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:00		07:11 18:12	06:47 16:37	07:15 16:31
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	19:03-19:15/12	05:25 20:30	05:42 20:24	06:11 19:49	06:41 18:59		07:12 18:10	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	19:06-19:10/4	05:26 20:31	05:43 20:23	06:12 19:47	06:42 18:57		07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12		05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	19:10-19:16/6	07:14 18:08	06:50 16:35	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13		05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	19:06-19:19/13	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14		05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	19:04-19:21/17	07:16 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15		05:27 20:31	05:46 20:20	06:16 19:41	06:46 18:50	19:02-19:19/17	07:17 18:04	06:53 16:33	07:18 16:34
26	07:12 17:06	06:37 17:43	05:52 18:14	06:03 19:46	05:32 20:16		05:27 20:31	05:47 20:19	06:17 19:40	06:47 18:49	19:01-19:18/17	07:18 18:03	06:54 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17		05:27 20:32	05:48 20:18	06:18 19:38	06:48 18:47	19:00-19:16/16	07:19 18:02	06:55 16:32	07:19 16:36
28	07:11 17:08	06:34 17:46	05:48 18:16	06:01 19:48	05:30 20:17		05:28 20:32	05:49 20:17	06:19 19:37	06:49 18:45	18:59-19:15/16	07:20 18:01	06:56 16:31	07:19 16:36
29	07:10 17:10		06:47 19:17	05:59 19:49	05:30 20:18		05:28 20:32	05:50 20:16	06:20 19:35	06:50 18:44	18:57-19:12/15	07:21 18:00	06:57 16:31	07:20 16:37
30	07:09 17:11		06:45 19:18	05:58 19:51	05:29 20:19		05:28 20:32	05:51 20:15	06:21 19:33	06:51 18:42	18:56-19:11/15	07:22 18:00	06:58 16:31	07:20 16:38
31	07:08 17:12		06:44 19:19		05:29 20:20			05:52 20:14	06:22 19:32		18:56-19:09/13	07:23 18:00	06:59 16:56	07:20 16:38
	Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289	0
	Sum of minutes with flicker	0	0	0	190	3	0	0	148	48	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: WF Albano - Worst case WTG: AL06 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! 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

	January	February	March	April	May	June
1	07:20 16:39	07:07 16:33-16:49/16 17:13	06:32 07:32-08:31/59 17:47	06:42 19:20	05:57 19:51	05:28 19:41-19:55/14 20:20
2	07:20 16:40	07:06 16:34-16:51/17 17:14	06:30 07:32-08:31/59 17:48	06:40 19:21	05:55 19:52	05:28 19:41-19:56/15 20:21
3	07:20 16:41	07:05 16:35-16:52/17 17:16	06:29 07:32-08:31/59 17:49	06:39 19:22	05:54 19:54	05:27 19:42-19:57/15 20:22
4	07:21 16:42	07:04 16:37-16:53/16 17:17	06:27 07:31-08:31/60 17:50	06:37 19:23	05:53 19:55	05:27 19:42-19:57/15 20:23
5	07:21 07:46-07:47/1 16:43	07:03 16:39-16:55/16 17:18	06:26 07:31-08:31/60 17:51	06:35 19:24	05:52 19:56	05:27 19:43-19:58/15 20:23
6	07:21 07:45-07:48/3 16:44	07:02 16:41-16:56/15 17:19	06:24 07:31-08:30/59 17:52	06:34 19:25	05:50 19:57	05:26 19:44-19:59/15 20:24
7	07:20 07:45-07:49/4 16:45	07:01 16:44-16:58/14 17:21	06:23 07:30-08:29/59 17:54	06:32 19:26	05:49 19:58	05:26 19:45-20:00/15 20:25
8	07:20 07:45-07:50/5 16:46	07:00 16:47-16:59/12 17:22	06:21 07:31-08:29/58 17:55	06:30 19:27	05:48 19:59	05:26 19:45-20:00/15 20:25
9	07:20 07:45-07:52/7 16:47 16:20-16:21/1	06:59 17:23	06:20 07:30-08:28/58 17:56	06:29 19:29	05:47 20:00	05:26 19:45-20:00/15 20:26
10	07:20 07:46-07:53/7 16:48 16:21-16:23/2	06:58 17:24	06:18 07:31-08:28/57 17:57	06:27 19:30	05:46 19:35-19:37/2 20:01	05:25 19:46-20:01/15 20:26
11	07:20 07:45-07:53/8 16:49 16:20-16:23/3	06:57 17:26	06:16 07:31-08:27/56 17:58	06:26 19:31	05:45 19:35-19:38/3 20:02	05:25 19:47-20:02/15 20:27
12	07:20 07:45-07:54/9 16:50 16:21-16:25/4	06:55 17:27	06:15 07:31-08:25/54 17:59	06:24 19:32	05:44 19:35-19:39/4 20:03	05:25 19:47-20:02/15 20:27
13	07:19 07:46-07:55/9 16:51 16:22-16:26/4	06:54 07:59-08:09/10 17:28	06:13 07:32-08:25/53 18:00	06:23 19:33	05:43 19:36-19:41/5 20:04	05:25 19:48-20:03/15 20:28
14	07:19 07:45-07:55/10 16:52 16:21-16:27/6	06:53 07:53-08:14/21 17:29	06:11 07:32-08:23/51 18:01	06:21 19:34	05:42 19:36-19:41/5 20:05	05:25 19:48-20:03/15 20:28
15	07:19 07:45-07:57/12 16:53 16:22-16:28/6	06:52 07:50-08:17/27 17:30	06:10 07:32-08:22/50 18:02	06:19 19:35	05:41 19:36-19:42/6 20:06	05:25 19:49-20:03/14 20:29
16	07:18 07:43-07:57/14 16:54 16:22-16:29/7	06:50 07:48-08:20/32 17:32	06:08 07:33-08:21/48 18:03	06:18 19:36	05:40 19:35-19:43/8 20:07	05:25 19:49-20:04/15 20:29
17	07:18 07:43-07:58/15 16:55 16:23-16:31/8	06:49 07:45-08:21/36 17:33	06:07 07:34-08:19/45 18:04	06:16 19:37	05:39 19:35-19:44/9 20:08	05:25 19:50-20:04/14 20:29
18	07:17 07:43-07:58/15 16:56 16:23-16:31/8	06:48 07:43-08:23/40 17:34	06:05 07:34-08:16/42 18:05	06:15 19:38	05:38 19:35-19:44/9 20:08	05:25 19:50-20:04/14 20:30
19	07:17 07:43-07:59/16 16:58 16:24-16:33/9	06:46 07:42-08:25/43 17:35	06:03 07:36-08:15/39 18:07	06:13 19:39	05:37 19:35-19:45/10 20:09	05:25 19:50-20:04/14 20:30
20	07:16 07:42-07:58/16 16:59 16:24-16:34/10	06:45 07:40-08:26/46 17:36	06:02 07:37-08:12/35 18:08	06:12 19:40	05:36 19:35-19:46/11 20:10	05:25 19:51-20:06/15 20:30
21	07:16 07:41-07:58/17 17:00 16:24-16:35/11	06:44 07:39-08:27/48 17:38	06:00 07:39-08:09/30 18:09	06:10 19:41	05:35 19:36-19:47/11 20:11	05:26 19:51-20:06/15 20:31
22	07:15 07:42-07:59/17 17:01 16:25-16:37/12	06:42 07:38-08:28/50 17:39	05:58 07:42-08:07/25 18:10	06:09 19:42	05:35 19:36-19:48/12 20:12	05:26 19:51-20:06/15 20:31
23	07:15 07:41-07:59/18 17:02 16:26-16:38/12	06:41 07:37-08:29/52 17:40	05:57 07:45-08:02/17 18:11	06:08 19:43	05:34 19:36-19:48/12 20:13	05:26 19:51-20:05/14 20:31
24	07:14 07:39-07:58/19 17:04 16:26-16:39/13	06:39 07:35-08:29/54 17:41	05:55 18:12	06:06 19:44	05:33 19:37-19:50/13 20:14	05:26 19:51-20:05/14 20:31
25	07:13 07:40-07:59/19 17:05 16:26-16:40/14	06:38 07:35-08:30/55 17:42	05:53 18:13	06:05 19:45	05:32 19:37-19:50/13 20:15	05:26 19:52-20:06/14 20:31
26	07:12 07:41-07:58/17 17:06 16:28-16:42/14	06:36 07:34-08:30/56 17:43	05:52 18:14	06:03 19:46	05:32 19:38-19:51/13 20:16	05:27 19:51-20:06/15 20:31
27	07:12 07:42-07:57/15 17:07 16:28-16:43/15	06:35 07:34-08:31/57 17:45	05:50 18:15	06:02 19:47	05:31 19:39-19:52/13 20:17	05:27 19:51-20:06/15 20:31
28	07:11 07:44-07:56/12 17:08 16:29-16:44/15	06:33 07:33-08:31/58 17:46	05:48 18:16	06:01 19:48	05:30 19:39-19:52/13 20:17	05:28 19:52-20:06/14 20:31
29	07:10 07:46-07:54/8 17:10 16:30-16:46/16		06:47 19:17	05:59 19:49	05:30 19:40-19:54/14 20:18	05:28 19:51-20:06/15 20:31
30	07:09 16:31-16:47/16 17:11		06:45 19:18	05:58 19:50	05:29 19:40-19:54/14 20:19	05:28 19:52-20:06/14 20:31
31	07:08 16:32-16:48/16 17:12		06:43 19:19		05:29 19:41-19:55/14 20:20	
Potential sun hours	299	298	370	398	447	451
Sum of minutes with flicker	515	808	1133	0	214	440

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 Albano - Worst case WTG: AL06 - 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

	July	August	September	October	November	December
1	05:29 19:51-20:06/15 20:31	05:52 19:46-19:49/3 20:13	06:23 19:30	06:52 08:10-09:05/55 18:40	06:26 16:54	07:00 07:27-07:35/8 16:30 16:02-16:05/3
2	05:29 19:51-20:06/15 20:31	05:53 19:46-19:48/2 20:12	06:24 19:29	06:53 08:10-09:05/55 18:39	06:27 16:23-16:25/2 16:53	07:01 07:28-07:35/7 16:30 16:03-16:05/2
3	05:30 19:51-20:06/15 20:31	05:54 19:46-19:47/1 20:11	06:25 19:27	06:54 08:09-09:05/56 18:37	06:28 16:15-16:28/13 16:52	07:02 07:29-07:35/6 16:30 16:03-16:05/2
4	05:30 19:51-20:06/15 20:31	05:55 20:09	06:25 19:25	06:55 08:08-09:06/58 18:35	06:29 16:13-16:27/14 16:51	07:03 07:30-07:35/5 16:30
5	05:31 19:50-20:05/15 20:31	05:56 20:08	06:26 19:24	06:56 08:07-09:06/59 18:34	06:30 16:10-16:26/16 16:50	07:04 07:30-07:34/4 16:29
6	05:31 19:50-20:05/15 20:30	05:57 20:07	06:27 19:22	06:57 08:07-09:06/59 18:32	06:31 16:08-16:25/17 16:48	07:05 07:31-07:34/3 16:29
7	05:32 19:50-20:05/15 20:30	05:58 20:06	06:28 19:20	06:58 08:06-09:06/60 18:30	06:33 16:07-16:23/16 16:47	07:06 07:32-07:33/1 16:29
8	05:33 19:50-20:05/15 20:30	05:59 20:05	06:29 19:19	06:59 08:06-09:06/60 18:29	06:34 16:06-16:23/17 16:46	07:07 16:29
9	05:33 19:50-20:05/15 20:29	06:00 20:03	06:30 19:17	07:00 08:06-09:05/59 18:27	06:35 16:05-16:21/16 16:45	07:08 16:29
10	05:34 19:49-20:04/15 20:29	06:01 20:02	06:31 19:16	07:01 08:05-09:05/60 18:26	06:36 16:03-16:20/17 16:44	07:08 16:29
11	05:35 19:49-20:04/15 20:29	06:02 20:01	06:32 19:14	07:02 08:05-09:05/60 18:24	06:37 16:02-16:19/17 16:43	07:09 16:29
12	05:35 19:49-20:04/15 20:28	06:03 20:00	06:33 19:12	07:03 08:05-09:04/59 18:22	06:38 16:02-16:19/17 16:42	07:10 16:29
13	05:36 19:48-20:02/14 20:28	06:04 19:58	06:34 19:10	07:04 08:06-09:05/59 18:21	06:40 07:18-07:26/8 16:41 16:02-16:17/15	07:11 16:30
14	05:37 19:48-20:02/14 20:27	06:05 19:57	06:35 19:09	07:05 08:06-09:04/58 18:19	06:41 07:16-07:28/12 16:40 16:01-16:16/15	07:12 16:30
15	05:38 19:48-20:02/14 20:27	06:06 19:56	06:36 19:07	07:06 08:06-09:03/57 18:18	06:42 07:15-07:30/15 16:40 16:00-16:15/15	07:12 16:30
16	05:38 19:48-20:02/14 20:26	06:07 19:54	06:37 19:05	07:08 08:07-09:02/55 18:16	06:43 07:14-07:31/17 16:39 16:01-16:15/14	07:13 16:30
17	05:39 19:47-20:00/13 20:25	06:08 19:53	06:38 19:04	07:09 08:07-09:01/54 18:15	06:44 07:13-07:32/19 16:38 16:00-16:14/14	07:14 16:31
18	05:40 19:47-20:00/13 20:25	06:09 19:51	06:39 19:02	07:10 08:07-09:00/53 18:13	06:45 07:13-07:32/19 16:37 16:00-16:13/13	07:14 16:31
19	05:41 19:47-20:00/13 20:24	06:10 19:50	06:40 19:00	07:11 08:08-08:59/51 18:12	06:47 07:16-07:34/18 16:36 16:00-16:12/12	07:15 16:31
20	05:42 19:47-19:59/12 20:23	06:11 19:49	06:41 08:32-08:47/15 18:59	07:12 08:08-08:58/50 18:10	06:48 07:17-07:34/17 16:36 16:00-16:12/12	07:16 16:32
21	05:42 19:47-19:59/12 20:23	06:12 19:47	06:42 08:28-08:51/23 18:57	07:13 08:10-08:58/48 18:09	06:49 07:17-07:34/17 16:35 16:00-16:11/11	07:16 16:32
22	05:43 19:46-19:57/11 20:22	06:13 19:46	06:43 08:25-08:54/29 18:55	07:14 08:11-08:56/45 18:08	06:50 07:18-07:34/16 16:34 16:00-16:10/10	07:17 16:33
23	05:44 19:46-19:57/11 20:21	06:14 19:44	06:44 08:22-08:56/34 18:54	07:15 08:12-08:54/42 18:06	06:51 07:19-07:35/16 16:34 16:00-16:09/9	07:17 16:33
24	05:45 19:46-19:56/10 20:20	06:15 19:43	06:45 08:20-08:58/38 18:52	07:16 08:14-08:53/39 18:05	06:52 07:21-07:36/15 16:33 16:00-16:08/8	07:18 16:34
25	05:46 19:46-19:55/9 20:19	06:16 19:41	06:46 08:18-08:59/41 18:50	06:17 07:15-07:50/35 17:03	06:53 07:21-07:36/15 16:33 16:01-16:09/8	07:18 16:34
26	05:47 19:46-19:55/9 20:19	06:17 19:40	06:47 08:17-09:01/44 18:49	06:19 07:18-07:49/31 17:02	06:55 07:22-07:36/14 16:32 16:01-16:08/7	07:19 16:35
27	05:48 19:46-19:54/8 20:18	06:18 19:38	06:48 08:15-09:02/47 18:47	06:20 07:20-07:46/26 17:01	06:56 07:24-07:36/12 16:32 16:01-16:07/6	07:19 16:36
28	05:49 19:46-19:53/7 20:17	06:19 19:37	06:49 08:14-09:03/49 18:45	06:21 07:23-07:42/19 16:59	06:57 07:25-07:35/10 16:31 16:02-16:07/5	07:19 16:36
29	05:50 19:46-19:52/6 20:16	06:20 19:35	06:50 08:13-09:03/50 18:44	06:22 07:30-07:35/5 16:58	06:58 07:26-07:35/9 16:31 16:02-16:06/4	07:20 16:37
30	05:50 19:45-19:51/6 20:15	06:21 19:33	06:51 08:11-09:04/53 18:42	06:23 16:57	06:59 07:26-07:35/9 16:31 16:02-16:06/4	07:20 16:38
31	05:51 19:45-19:50/5 20:14	06:22 19:32	 	06:24 16:55	 	07:20 16:38
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	381	6	423	1427	602	41

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 Albano - Worst case WTG: AL07 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! 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
1	07:20 08:52-09:09/17 16:39	07:07 16:37-16:49/12 17:13	06:32 16:58-17:26/28 17:47	06:42 19:20	05:57 19:28-19:29/1 19:51	05:28 20:20
2	07:20 08:53-09:08/15 16:40	07:06 16:37-16:51/14 17:14	06:30 17:07-17:26/19 17:48	06:40 19:21	05:55 19:52	05:28 20:21
3	07:20 08:54-09:08/14 16:41	07:05 16:37-16:52/15 17:16	06:29 17:08-17:28/20 17:49	06:39 19:22	05:54 19:53	05:27 20:22
4	07:21 08:56-09:07/11 16:42	07:04 16:37-16:54/17 17:17	06:27 17:08-17:29/21 17:50	06:37 19:23	05:53 19:55	05:27 20:23
5	07:21 08:59-09:05/6 16:43	07:03 16:37-16:55/18 17:18	06:26 17:10-17:31/21 17:51	06:35 19:24	05:52 19:56	05:27 20:23
6	07:21 16:44	07:02 16:37-16:56/19 17:19	06:24 17:10-17:31/21 17:52	06:34 19:25	05:50 19:57	05:26 20:24
7	07:20 16:45	07:01 16:37-16:58/21 17:21	06:23 17:11-17:32/21 17:54	06:32 19:26	05:49 19:58	05:26 20:25
8	07:20 16:46	07:00 16:37-16:59/22 17:22	06:21 17:13-17:34/21 17:55	06:30 19:27	05:48 19:59	05:26 20:25
9	07:20 16:47	06:59 16:36-17:00/24 17:23	06:19 17:14-17:35/21 17:56	06:29 19:29	05:47 20:00	05:26 20:26
10	07:20 16:48	06:58 16:36-17:01/25 17:24	06:18 17:14-17:35/21 17:57	06:27 19:30	05:46 20:01	05:25 20:26
11	07:20 16:49	06:57 16:37-17:03/26 17:26	06:16 17:16-17:37/21 17:58	06:26 19:31	05:45 20:02	05:25 20:27
12	07:20 16:50	06:55 16:37-17:04/27 17:27	06:15 17:17-17:38/21 17:59	06:24 19:32	05:44 20:03	05:25 20:27
13	07:19 16:51	06:54 16:37-17:05/28 17:28	06:13 17:19-17:40/21 18:00	06:23 19:33	05:43 20:04	05:25 20:28
14	07:19 16:52	06:53 16:37-17:07/30 17:29	06:11 17:20-17:40/20 18:01	06:21 19:34	05:42 20:05	05:25 20:28
15	07:19 16:53	06:52 16:38-17:08/30 17:30	06:10 17:22-17:41/19 18:02	06:19 19:35	05:41 20:06	05:25 20:29
16	07:18 16:54	06:50 16:39-17:10/31 17:32	06:08 17:26-17:43/17 18:03	06:18 19:36	05:40 20:07	05:25 20:29
17	07:18 16:55	06:49 16:39-17:10/31 17:33	06:07 18:04	06:16 19:37	05:39 20:08	05:25 20:29
18	07:17 16:56	06:48 16:40-17:12/32 17:34	06:05 18:05	06:15 19:38	05:38 20:08	05:25 20:30
19	07:17 16:58	06:46 16:40-17:13/33 17:35	06:03 18:07	06:13 19:39	05:37 20:09	05:25 20:30
20	07:16 16:59	06:45 16:41-17:14/33 17:36	06:02 18:08	06:12 19:17-19:18/1 19:40	05:36 20:10	05:25 20:30
21	07:16 17:00	06:44 16:42-17:16/34 17:38	06:00 18:09	06:10 19:17-19:19/2 19:41	05:35 20:11	05:26 20:31
22	07:15 17:01	06:42 16:43-17:17/34 17:39	05:58 18:10	06:09 19:17-19:20/3 19:42	05:35 20:12	05:26 20:31
23	07:14 17:02	06:41 16:44-17:18/34 17:40	05:57 18:11	06:08 19:17-19:21/4 19:43	05:34 20:13	05:26 20:31
24	07:14 17:04	06:39 16:45-17:19/34 17:41	05:55 18:12	06:06 19:18-19:22/4 19:44	05:33 20:14	05:26 20:31
25	07:13 17:05	06:38 16:47-17:21/34 17:42	05:53 18:13	06:05 19:19-19:23/4 19:45	05:32 20:15	05:27 20:31
26	07:12 17:06	16:40-16:42/2 17:43	06:36 16:48-17:22/34 18:14	05:52 19:46	06:03 19:19-19:24/5 20:16	05:27 20:31
27	07:12 17:07	16:39-16:43/4 17:45	06:35 16:51-17:23/32 18:15	05:50 19:47	06:02 19:21-19:25/4 20:16	05:27 20:31
28	07:11 17:08	16:39-16:44/5 17:46	06:33 16:53-17:24/31 18:16	05:48 19:48	06:01 19:22-19:26/4 20:17	05:28 20:31
29	07:10 17:10	16:38-16:46/8	06:47 19:17	05:59 19:23-19:26/3 19:49	05:30 20:18	05:28 20:31
30	07:09 17:11	16:38-16:47/9	06:45 19:18	05:58 19:25-19:28/3 19:50	05:29 20:19	05:28 20:31
31	07:08 17:12	16:37-16:48/11	06:43 19:19		05:29 20:20	
Potential sun hours	299	298	370	398	447	451
Sum of minutes with flicker	102	755	333	37	1	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 Albano - Worst case WTG: AL07 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! 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

	July	August	September	October	November	December
1	05:29 20:31	05:52 20:13	06:23 19:30	06:52 17:57-18:18/21 18:40	06:26 16:06-16:31/25 16:54	07:00 16:30
2	05:29 20:31	05:53 20:12	06:24 19:29	06:53 17:55-18:16/21 18:39	06:27 16:06-16:29/23 16:53	07:01 16:30
3	05:30 20:31	05:54 20:11	06:25 19:27	06:54 17:54-18:15/21 18:37	06:28 16:06-16:28/22 16:52	07:02 16:30
4	05:30 20:31	05:55 20:09	06:25 19:25	06:55 17:52-18:13/21 18:35	06:29 16:07-16:27/20 16:51	07:03 16:30
5	05:31 20:31	05:56 20:08	06:26 19:24	06:56 17:51-18:11/20 18:34	06:30 16:07-16:26/19 16:50	07:04 16:29
6	05:31 20:30	05:57 20:07	06:27 19:22	06:57 17:49-18:09/20 18:32	06:31 16:06-16:25/19 16:48	07:05 16:29
7	05:32 20:30	05:58 20:06	06:28 19:20	06:58 17:47-18:08/21 18:30	06:33 16:07-16:23/16 16:47	07:06 08:45-08:51/6 16:29
8	05:33 20:30	05:59 20:05	06:29 19:19	06:59 17:45-18:06/21 18:29	06:34 16:08-16:23/15 16:46	07:07 08:43-08:54/11 16:29
9	05:33 20:29	06:00 20:03	06:30 19:17	07:00 17:43-18:04/21 18:27	06:35 16:08-16:22/14 16:45	07:08 08:43-08:56/13 16:29
10	05:34 20:29	06:01 20:02	06:31 19:15	07:01 17:42-18:03/21 18:26	06:36 16:08-16:20/12 16:44	07:08 08:42-08:57/15 16:29
11	05:35 20:29	06:02 20:01	06:32 19:14	07:02 17:41-18:01/20 18:24	06:37 16:08-16:19/11 16:43	07:09 08:42-08:59/17 16:29
12	05:35 20:28	06:03 19:35-19:36/1 20:00	06:33 19:12	07:03 17:35-17:59/24 18:22	06:38 16:10-16:19/9 16:42	07:10 08:42-09:00/18 16:29
13	05:36 20:28	06:04 19:32-19:35/3 19:58	06:34 19:10	07:04 17:28-17:58/30 18:21	06:40 16:10-16:17/7 16:41	07:11 08:41-09:00/19 16:30
14	05:37 20:27	06:05 19:30-19:34/4 19:57	06:35 19:09	07:05 17:26-17:57/31 18:19	06:41 16:11-16:16/5 16:40	07:12 08:41-09:01/20 16:30
15	05:38 20:27	06:06 19:28-19:33/5 19:56	06:36 19:07	07:06 17:23-17:55/32 18:18	06:42 16:11-16:15/4 16:40	07:12 08:42-09:03/21 16:30
16	05:38 20:26	06:07 19:27-19:31/4 19:54	06:37 19:05	07:08 17:20-17:54/34 18:16	06:43 16:13-16:15/2 16:39	07:13 08:42-09:04/22 16:30
17	05:39 20:25	06:08 19:26-19:30/4 19:53	06:38 19:04	07:09 17:18-17:52/34 18:15	06:44 16:38 16:38	07:14 08:42-09:04/22 16:31
18	05:40 20:25	06:09 19:25-19:29/4 19:51	06:39 19:02	07:10 17:16-17:50/34 18:13	06:45 16:37 16:37	07:14 08:42-09:05/23 16:31
19	05:41 20:24	06:10 19:24-19:27/3 19:50	06:40 19:00	07:11 17:15-17:49/34 18:12	06:47 16:36 16:36	07:15 08:42-09:05/23 16:31
20	05:42 20:23	06:11 19:23-19:26/3 19:49	06:41 18:59	07:12 17:13-17:47/34 18:10	06:48 16:36 16:36	07:16 08:43-09:06/23 16:32
21	05:42 20:23	06:12 19:22-19:25/3 19:47	06:42 18:57	07:13 17:13-17:46/33 18:09	06:49 16:35 16:35	07:16 08:43-09:06/23 16:32
22	05:43 20:22	06:13 19:21-19:23/2 19:46	06:43 18:55	07:14 17:11-17:45/34 18:08	06:50 16:34 16:34	07:17 08:44-09:07/23 16:33
23	05:44 20:21	06:14 19:21-19:22/1 19:44	06:44 18:54	07:15 17:10-17:43/33 18:06	06:51 16:34 16:34	07:17 08:44-09:07/23 16:33
24	05:45 20:20	06:15 19:20-19:21/1 19:43	06:45 18:52	07:16 17:09-17:41/32 18:05	06:52 16:33 16:33	07:18 08:45-09:08/23 16:34
25	05:46 20:19	06:16 19:19-19:20/1 19:41	06:46 18:50	06:57 16:08-16:40/32 17:03	06:53 16:33 16:33	07:18 08:45-09:08/23 16:34
26	05:47 20:19	06:17 19:18-19:19/1 19:40	06:47 18:49	06:19 16:08-16:39/31 17:02	06:55 16:32 16:32	07:19 08:46-09:08/22 16:35
27	05:48 20:18	06:18 19:17-19:18/1 19:38	06:48 18:09-18:24/15 18:47	06:20 16:08-16:38/30 17:01	06:56 16:32 16:32	07:19 08:47-09:09/22 16:36
28	05:49 20:17	06:19 19:16-19:17/1 19:37	06:49 18:05-18:23/18 18:45	06:21 16:07-16:36/29 16:59	06:57 16:31 16:31	07:19 08:47-09:09/22 16:36
29	05:50 20:16	06:20 19:15-19:16/1 19:35	06:50 18:02-18:21/19 18:44	06:22 16:07-16:34/27 16:58	06:58 16:31 16:31	07:20 08:48-09:09/21 16:37
30	05:50 20:15	06:21 19:14-19:15/1 19:33	06:51 17:59-18:20/21 18:42	06:23 16:06-16:33/27 16:57	06:59 16:31 16:31	07:20 08:49-09:08/19 16:38
31	05:51 20:14	06:22 19:13-19:14/1 19:32		06:24 16:07-16:32/25 16:55		07:20 08:50-09:08/18 16:38
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	0	38	73	848	223	492

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 Albano - Worst case WTG: AL08 - 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	07:20 16:11-16:13/2 16:39	07:07 16:41-16:49/8 17:13	06:32 16:15-17:20/65 17:47	06:42 19:20	05:57 19:51	05:28 20:20
2	07:20 16:13-16:15/2 16:40	07:06 16:41-16:51/10 17:15	06:30 16:15-17:19/64 17:48	06:40 19:21	05:55 19:52	05:28 20:21
3	07:20 16:13-16:16/3 16:41	07:05 16:37-16:52/15 17:16	06:29 16:16-17:19/63 17:49	06:39 19:22	05:54 19:53	05:27 20:22
4	07:20 16:13-16:16/3 16:42	07:04 16:34-16:54/20 17:17	06:27 16:16-17:18/62 17:50	06:37 19:23	05:53 19:55	05:27 20:23
5	07:21 16:14-16:17/3 16:43	07:03 16:32-16:55/23 17:18	06:26 16:17-17:18/61 17:51	06:35 19:24	05:52 19:56	05:27 20:23
6	07:20 16:15-16:18/3 16:44	07:02 16:30-16:56/26 17:19	06:24 16:17-17:17/60 17:52	06:34 19:25	05:50 19:57	05:26 20:24
7	07:20 16:16-16:19/3 16:45	07:01 16:28-16:58/30 17:21	06:23 16:17-17:16/59 17:54	06:32 19:26	05:49 19:58	05:26 20:25
8	07:20 16:18-16:20/2 16:46	07:00 16:27-16:59/32 17:22	06:21 16:18-17:15/57 17:55	06:30 19:27	05:48 19:59	05:26 20:25
9	07:20 16:19-16:21/2 16:47	06:59 16:25-17:00/35 17:23	06:19 16:19-17:14/55 17:56	06:29 19:29	05:47 20:00	05:26 20:26
10	07:20 16:21-16:23/2 16:48	06:58 16:24-17:01/37 17:24	06:18 16:20-17:13/53 17:57	06:27 19:30	05:46 20:01	05:25 20:26
11	07:20 16:22-16:23/1 16:49	06:57 16:23-17:03/40 17:26	06:16 16:21-17:11/50 17:58	06:26 19:31	05:45 20:02	05:25 20:27
12	07:20 16:24-16:25/1 16:50	06:55 16:22-17:04/42 17:27	06:15 16:22-17:09/47 17:59	06:24 19:32	05:44 20:03	05:25 20:27
13	07:19 16:51 16:51	06:54 16:20-17:05/45 17:28	06:13 16:24-17:08/44 18:00	06:23 19:33	05:43 20:04	05:25 20:28
14	07:19 16:52 16:52	06:53 16:20-17:07/47 17:29	06:11 16:25-17:06/41 18:01	06:21 19:34	05:42 20:05	05:25 20:28
15	07:19 16:53 16:53	06:52 16:19-17:08/49 17:30	06:10 07:06-07:07/1 18:02 16:26-17:03/37	06:19 19:35	05:41 20:06	05:25 20:29
16	07:18 16:54 16:54	06:50 16:19-17:10/51 17:32	06:08 07:05-07:10/5 18:03 16:29-17:01/32	06:18 19:36	05:40 20:07	05:25 20:29
17	07:18 16:55 16:55	06:49 16:18-17:10/52 17:33	06:07 07:03-07:11/8 18:04 16:32-16:57/25	06:16 19:37	05:39 20:07	05:25 20:29
18	07:17 16:57 16:57	06:48 16:18-17:12/54 17:34	06:05 07:02-07:11/9 18:05 16:36-16:53/17	06:15 19:38	05:38 20:08	05:25 20:30
19	07:17 16:58 16:58	06:46 16:16-17:13/57 17:35	06:03 07:01-07:12/11 18:07	06:13 19:39	05:37 20:09	05:25 20:30
20	07:16 16:59 16:59	06:45 16:16-17:14/58 17:36	06:02 06:59-07:12/13 18:08	06:12 19:40	05:36 20:10	05:25 20:30
21	07:16 17:00 17:00	06:44 16:16-17:16/60 17:38	06:00 06:57-07:12/15 18:09	06:10 19:41	05:35 20:11	05:26 20:31
22	07:15 17:01 17:01	06:42 16:15-17:17/62 17:39	05:58 06:56-07:12/16 18:10	06:09 19:42	05:35 20:12	05:26 20:31
23	07:14 17:02 17:02	06:41 16:16-17:18/62 17:40	05:57 06:54-07:11/17 18:11	06:08 19:43	05:34 20:13	05:26 20:31
24	07:14 17:04 17:04	06:39 16:15-17:19/64 17:41	05:55 06:52-07:09/17 18:12	06:06 19:44	05:33 20:14	05:26 20:31
25	07:13 17:05 17:05	06:38 16:15-17:21/66 17:42	05:53 06:54-07:08/14 18:13	06:05 19:45	05:32 20:15	05:27 20:31
26	07:12 17:06 17:06	06:36 16:15-17:21/66 17:43	05:52 06:55-07:06/11 18:14	06:03 19:46	05:32 20:16	05:27 20:31
27	07:12 17:07 17:07	06:35 16:15-17:21/66 17:45	05:50 06:59-07:02/3 18:15	06:02 19:47	05:31 20:16	05:27 20:31
28	07:11 17:08 17:08	06:33 16:15-17:20/65 17:46	05:48 18:16	06:01 19:48	05:30 20:17	05:28 20:31
29	07:10 16:43-16:46/3 17:10		06:47 19:17	05:59 19:49	05:30 20:18	05:28 20:31
30	07:09 16:43-16:47/4 17:11		06:45 19:18	05:58 19:50	05:29 20:19	05:28 20:31
31	07:08 16:42-16:48/6 17:12		06:43 19:19		05:29 20:20	
Potential sun hours	299	298	370	398	447	451
Sum of minutes with flicker	40	1242	1032	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 Albano - Worst case WTG: AL08 - 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	05:29 20:31	05:52 20:13	06:23 19:30	06:52 17:02-17:48/46 18:40	06:25 15:54-16:31/37 16:54	07:00 16:04-16:05/1 16:30
2	05:29 20:31	05:53 20:12	06:24 19:29	06:53 17:00-17:49/49 18:39	06:27 15:55-16:29/34 16:53	07:01 16:03-16:05/2 16:30
3	05:30 20:31	05:54 20:11	06:25 19:27	06:54 16:58-17:50/52 18:37	06:28 15:56-16:28/32 16:52	07:02 16:02-16:05/3 16:30
4	05:30 20:31	05:55 20:09	06:26 19:25	06:55 16:57-17:51/54 18:35	06:29 15:58-16:27/29 16:51	07:03 16:02-16:04/2 16:30
5	05:31 20:31	05:56 20:08	06:26 19:24	06:56 16:55-17:51/56 18:34	06:30 16:00-16:26/26 16:50	07:04 16:01-16:04/3 16:30
6	05:32 20:30	05:57 20:07	06:27 19:22	06:57 16:54-17:52/58 18:32	06:31 16:02-16:25/23 16:48	07:05 16:01-16:04/3 16:29
7	05:32 20:30	05:58 20:06	06:28 19:20	06:58 16:53-17:52/59 18:30	06:33 16:04-16:23/19 16:47	07:06 16:01-16:04/3 16:29
8	05:33 20:30	05:59 20:05	06:29 19:19	06:59 16:52-17:53/61 18:29	06:34 16:08-16:23/15 16:46	07:07 16:01-16:04/3 16:29
9	05:33 20:29	06:00 20:03	06:30 19:17	07:00 16:51-17:53/62 18:27	06:35 16:12-16:22/10 16:45	07:08 16:01-16:04/3 16:29
10	05:34 20:29	06:01 20:02	06:31 19:16	07:01 16:50-17:53/63 18:26	06:36 16:12-16:20/8 16:44	07:08 16:02-16:04/2 16:29
11	05:35 20:29	06:02 20:01	06:32 19:14	07:02 16:49-17:53/64 18:24	06:37 16:13-16:19/6 16:43	07:09 16:02-16:04/2 16:29
12	05:35 20:28	06:03 20:00	06:33 19:12	07:03 16:48-17:53/65 18:23	06:38 16:15-16:19/4 16:42	07:10 16:02-16:05/3 16:29
13	05:36 20:28	06:04 19:58	06:34 19:10	07:04 16:48-17:53/65 18:21	06:40 16:15-16:18/3 16:41	07:11 16:02-16:04/2 16:30
14	05:37 20:27	06:05 19:57	06:35 19:09	07:05 16:48-17:54/66 18:19	06:41 16:40 16:40	07:12 16:02-16:04/2 16:30
15	05:38 20:27	06:06 19:56	06:36 19:07	07:06 16:48-17:53/65 18:18	06:42 16:40 16:40	07:12 16:03-16:05/2 16:30
16	05:38 20:26	06:07 19:54	06:37 19:05	07:08 16:47-17:53/66 18:16	06:43 16:39 16:39	07:13 16:03-16:04/1 16:30
17	05:39 20:25	06:08 19:53	06:38 07:44-07:54/10 19:04	07:09 16:47-17:52/65 18:15	06:44 16:38 16:38	07:14 16:03-16:05/2 16:31
18	05:40 20:25	06:09 19:51	06:39 07:41-07:55/14 19:02	07:10 16:46-17:50/64 18:13	06:45 16:37 16:37	07:14 16:04-16:06/2 16:31
19	05:41 20:24	06:10 19:50	06:40 07:40-07:56/16 19:00	07:11 16:46-17:49/63 18:12	06:47 16:36 16:36	07:15 16:04-16:05/1 16:31
20	05:42 20:23	06:11 19:49	06:41 07:40-07:57/17 18:59	07:12 16:46-17:47/61 18:10	06:48 16:36 16:36	07:16 16:05-16:06/1 16:32
21	05:42 20:23	06:12 19:47	06:42 07:41-07:57/16 18:57	07:13 16:47-17:46/59 18:09	06:49 16:35 16:35	07:16 16:05-16:06/1 16:32
22	05:43 20:22	06:13 19:46	06:43 07:42-07:57/15 18:55	07:14 16:47-17:45/58 18:08	06:50 16:34 16:34	07:17 16:06-16:07/1 16:33
23	05:44 20:21	06:14 19:44	06:44 07:43-07:57/14 18:54	07:15 16:47-17:43/56 18:06	06:51 16:34 16:34	07:17 16:06-16:07/1 16:33
24	05:45 20:20	06:15 19:43	06:45 07:44-07:56/12 18:52	07:16 16:47-17:41/54 18:05	06:52 16:33 16:33	07:18 16:07-16:08/1 16:34
25	05:46 20:19	06:16 19:41	06:46 07:45-07:55/10 18:50 17:21-17:34/13	06:17 15:48-16:40/52 17:03	06:53 16:33 16:33	07:18 16:07-16:09/2 16:34
26	05:47 20:19	06:17 19:40	06:47 07:46-07:54/8 18:49 17:16-17:39/23	06:19 15:49-16:39/50 17:02	06:55 16:32 16:32	07:19 16:07-16:09/2 16:35
27	05:48 20:18	06:18 19:38	06:48 07:46-07:52/6 18:47 17:12-17:42/30	06:20 15:49-16:38/49 17:01	06:56 16:32 16:32	07:19 16:09-16:10/1 16:36
28	05:49 20:17	06:19 19:37	06:49 07:47-07:50/3 18:45 17:09-17:44/35	06:21 15:50-16:36/46 16:59	06:57 16:31 16:31	07:19 16:09-16:11/2 16:36
29	05:50 20:16	06:20 19:35	06:50 17:06-17:46/40 18:44	06:22 15:50-16:34/44 16:58	06:58 16:31 16:31	07:19 16:09-16:11/2 16:37
30	05:51 20:15	06:21 19:33	06:51 17:04-17:47/43 18:42	06:23 15:51-16:33/42 16:57	06:59 16:31 16:31	07:20 16:10-16:12/2 16:38
31	05:51 20:14	06:22 19:32		06:24 15:53-16:32/39 16:55		07:20 16:10-16:12/2 16:38
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	0	0	325	1753	246	60

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 Albano - Worst case WTG: AL09 - 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	July	August	September	October	November	December
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:51	05:28 20:20	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	06:25 16:54	07:00 16:30
2	07:20 16:40	07:06 17:14	06:30 17:48	06:40 19:21	05:55 19:52	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:20 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:53	05:27 20:22	05:30 20:31	05:54 20:10	06:24 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:20 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:54	05:27 20:23	05:30 20:31	05:55 20:09	06:25 19:25	06:55 18:35	06:29 16:51	07:03 16:30
5	07:20 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:55	05:27 20:23	05:31 20:31	05:56 20:08	06:26 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	07:20 16:44	07:02 17:19	06:24 17:52	06:34 19:25	05:50 19:57	05:26 20:24	05:32 20:30	05:57 20:07	06:27 19:22	06:57 18:32	06:31 16:48	07:05 16:29
7	07:20 16:45	07:01 17:21	06:23 17:54	06:32 19:26	05:49 19:58	05:26 20:24	05:32 20:30	05:58 20:06	06:28 19:20	06:58 18:30	06:32 16:47	07:06 16:29
8	07:20 16:46	07:00 17:22	06:21 17:55	06:30 19:27	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:19 17:56	06:29 19:28	05:47 20:00	05:26 20:26	05:33 20:29	06:00 20:03	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:25 20:26	05:34 20:29	06:01 20:02	06:31 19:15	07:01 18:26	06:36 16:44	07:08 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:35 20:28	06:03 20:00	06:33 19:12	07:03 18:22	06:38 16:42	07:10 16:29
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:10	07:04 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:11 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:05 18:19	06:41 16:40	07:12 16:30
15	07:19 16:53	06:52 17:30	06:10 18:02	06:19 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:06 18:18	06:42 16:40	07:12 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:06	05:25 20:29	05:38 20:26	06:07 19:54	06:37 19:05	07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:04	06:16 19:37	05:39 20:07	05:25 20:29	05:39 20:25	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:17 16:57	06:48 17:34	06:05 18:05	06:15 19:38	05:38 20:08	05:25 20:30	05:40 20:25	06:09 19:51	06:39 19:02	07:10 18:13	06:45 16:37	07:14 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	05:37 20:09	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:00	07:11 18:12	06:47 16:36	07:15 16:31
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:30	05:42 20:23	06:11 19:49	06:41 18:59	07:12 18:10	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:10 19:41	05:35 20:11	05:26 20:31	05:42 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:07	06:50 16:34	07:17 16:33
23	07:14 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	07:16 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	05:27 20:31	05:46 20:19	06:16 19:41	06:46 18:50	07:17 17:03	06:53 16:33	07:18 16:34
26	07:12 17:06	06:36 17:43	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:31	05:47 20:19	06:17 19:40	06:47 18:49	07:18 17:02	06:54 16:32	07:18 16:35
27	07:12 17:07	06:35 17:44	05:50 18:15	06:02 19:47	05:31 20:16	05:27 20:31	05:48 20:18	06:18 19:38	06:48 18:47	07:19 17:01	06:56 16:32	07:19 16:36
28	07:11 17:08	06:33 17:46	05:48 18:16	06:01 19:48	05:30 20:17	05:28 20:31	05:49 20:17	06:19 19:36	06:49 18:45	07:20 16:59	06:57 16:31	07:19 16:36
29	07:10 17:10		06:47 19:17	05:59 19:49	05:30 20:18	05:28 20:31	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:19 16:37
30	07:09 17:11		06:45 19:18	05:58 19:50	05:29 20:19	05:28 20:31	05:51 20:15	06:21 19:33	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	07:08 17:12		06:43 19:19		05:29 20:20		05:51 20:14	06:22 19:32		06:24 16:55		07:20 16:38
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

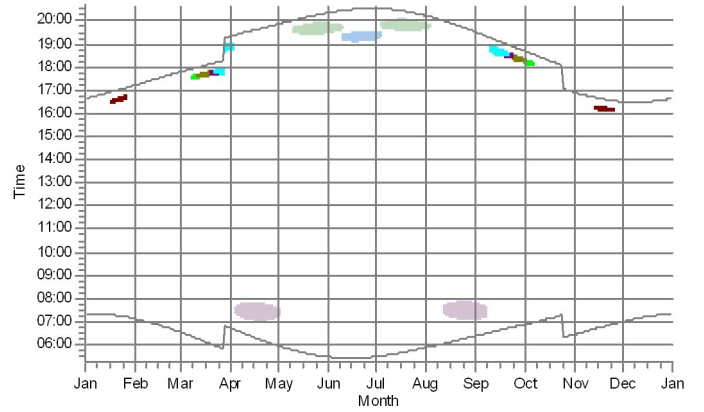
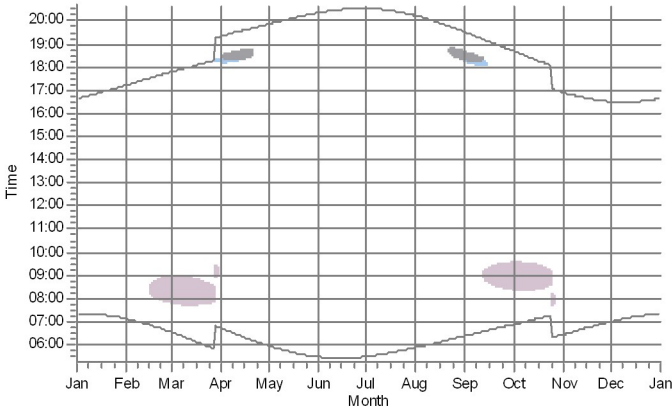
Table layout: For each day in each month the following matrix apply

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

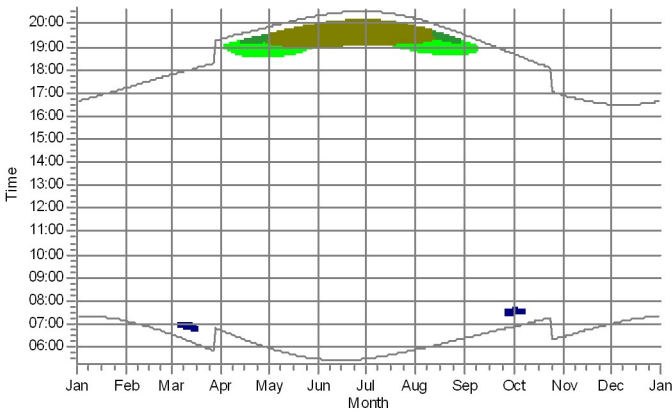
SHADOW - Calendar per WTG, graphical

Calculation: WF Albano - Worst case

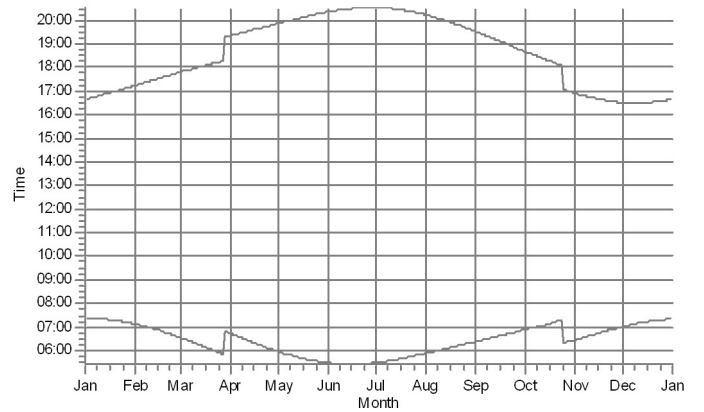
AL01: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22) AL02: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22)



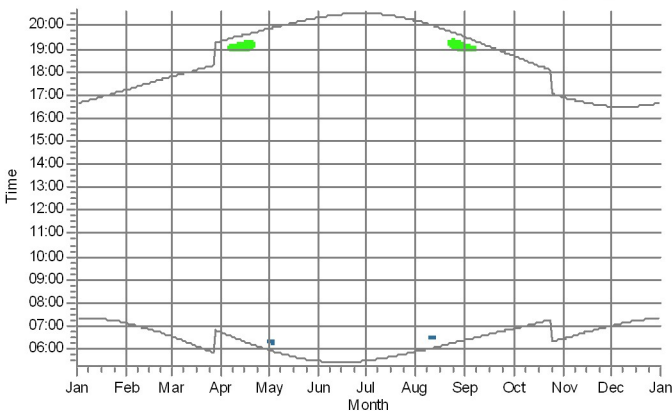
AL03: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22)



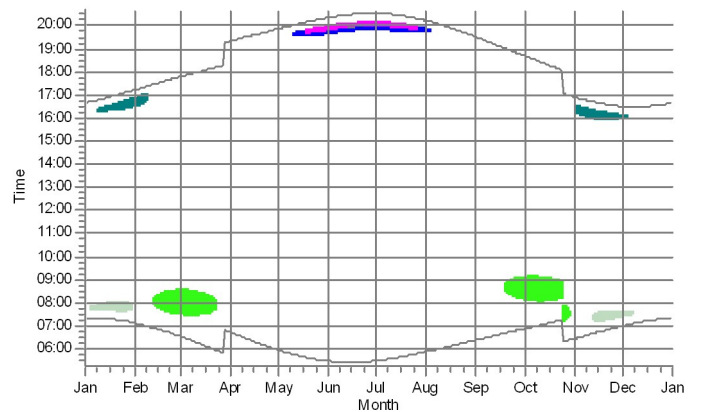
AL04: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22)





















AL05: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22)



AL06: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22)



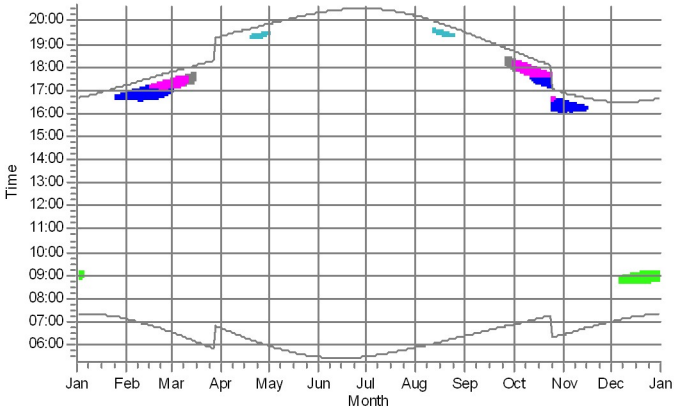
Shadow receptors

 R12: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (3)	 R30: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (9)	 R43: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (15)
 R17: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (4)	 R31: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (10)	 R44: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (16)
 R18: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (5)	 R33: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (11)	 R49: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (18)
 R19: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (6)	 R35: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (12)	 R78: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (22)
 R20: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (7)	 R36a: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (13)	 R88: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (25)
 R26: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (8)	 R41: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (14)	 R95: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (27)

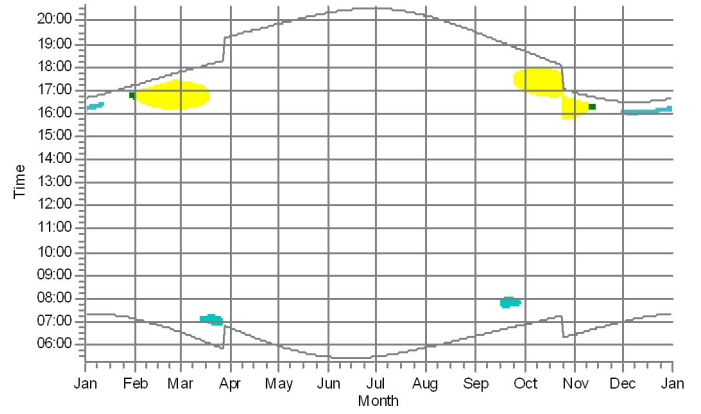
SHADOW - Calendar per WTG, graphical

Calculation: WF Albano - Worst case

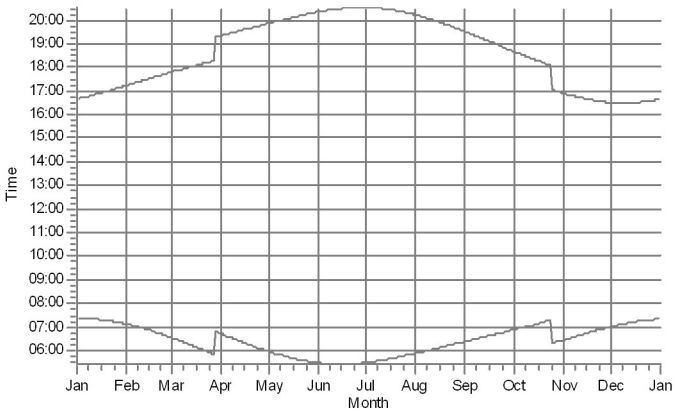
AL07: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22











AL08: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22



AL09: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22

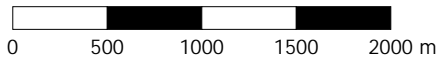
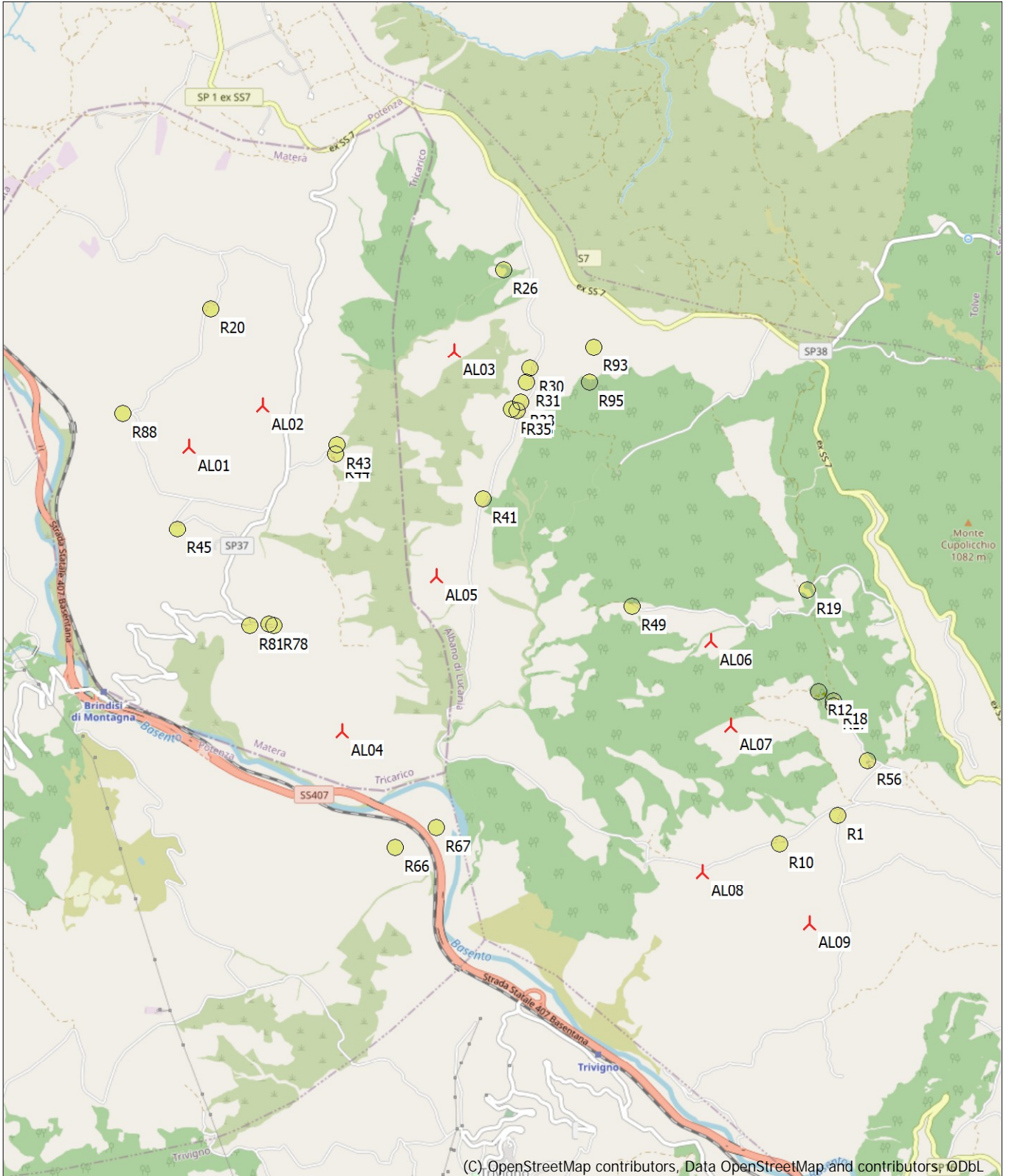


Shadow receptors

- | | | |
|--|---|---|
|  R1: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (1) |  R17: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (4) |  R56: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (19) |
|  R10: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (2) |  R18: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (5) |  R67: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (21) |
|  R12: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (3) |  R49: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (18) | |

SHADOW - Map

Calculation: WF Albano - Worst case



Map: EMD OpenStreetMap , Print scale 1:40.000, Map center Geo WGS84 East: 15,989059° E North: 40,618056° N

New WTG

Shadow receptor

Flicker map level: Elevation Grid Data Object: WF Albano_shadow flickering_EMDGrid_0.wpg (1)

9. ALLEGATO 2: SHADOW – MAIN RESULT – ELABORAZIONE MEDIANTE IL SOFTWARE WINDPRO 3.4 – EXPECTED VALUES

Project:

WF Albano_shadow flickering

Licensed user:

Ge.co.Dor srl
Via G. Garibaldi, 15
IT-74023 Grottaglie (TA)Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 15:20/4.0.531

SHADOW - Main Result

Calculation: WF Albano - 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
6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

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 Albano_shadow flickering_EMDGrid_0.wpg (1)

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]
AL01	15,963089° E	40,627745° N	668,1	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL02	15,969372° E	40,630381° N	681,0	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL03	15,985581° E	40,633922° N	683,3	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL04	15,976116° E	40,609346° N	596,9	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL05	15,984128° E	40,619394° N	586,6	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL06	16,007410° E	40,615214° N	705,0	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL07	16,009047° E	40,609764° N	731,0	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL08	16,006694° E	40,600312° N	749,3	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8
AL09	16,015756° E	40,596981° N	726,4	Siemens Gamesa SG 6...Yes	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	135,0	2.040	8,8

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]
R1	16,018147° E	40,603950° N	825,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R10	16,013265° E	40,602142° N	786,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R12	16,016502° E	40,611973° N	840,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R17	16,017800° E	40,611050° N	856,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R18	16,017800° E	40,611389° N	856,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R19	16,015594° E	40,618515° N	842,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R20	15,964989° E	40,636639° N	659,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R26	15,989817° E	40,639126° N	771,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R30	15,992025° E	40,632791° N	767,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R31	15,991698° E	40,631904° N	759,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R33	15,991255° E	40,630617° N	746,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R35	15,990959° E	40,630092° N	736,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R36a	15,990467° E	40,630132° N	732,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R41	15,988079° E	40,624369° N	683,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R43	15,975661° E	40,627852° N	651,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R44	15,975523° E	40,627280° N	656,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R45	15,962136° E	40,622458° N	711,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R49	16,000694° E	40,617471° N	649,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R56	16,020663° E	40,607453° N	881,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R66	15,980616° E	40,601916° N	537,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R67	15,984129° E	40,603212° N	498,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

Project:

WF Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it

Calculated:

18/03/2024 15:20/4.0.531

SHADOW - Main Result

Calculation: WF Albano - 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.	window		(ZVI) a.g.l.
						[m]	[°]		[m]
R78	15,970328° E	40,616246° N	722,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R79	15,969877° E	40,616293° N	726,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R81	15,968252° E	40,616195° N	715,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R88	15,957456° E	40,629878° N	590,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R93	15,997455° E	40,634178° N	850,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R95	15,997136° E	40,631855° N	817,3	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]

R1	4:56
R10	23:21
R12	13:25
R17	4:33
R18	4:47
R19	4:16
R20	0:55
R26	0:21
R30	19:42
R31	20:46
R33	0:36
R35	0:49
R36a	0:58
R41	7:33
R43	2:14
R44	2:13
R45	0:00
R49	24:43
R56	0:53
R66	0:00
R67	1:24
R78	0:01
R79	0:00
R81	0:00
R88	31:11
R93	0:00
R95	1:01

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

No.	Name	Expected [h/year]
AL01	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (2)	26:38
AL02	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (3)	14:44
AL03	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (4)	33:16
AL04	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (5)	0:00
AL05	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (6)	1:46
AL06	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (7)	31:37
AL07	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (8)	16:16
AL08	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (9)	25:35
AL09	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (10)	0:00

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

Project:

WF Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 15:20/4.0.531

SHADOW - Calendar

Calculation: WF Albano - real case Shadow receptor: R1 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (1)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

Table with 12 columns for months (January to December) and rows for each day of the year (1-31). Columns contain start and end times and (ALOB) values. Summary rows at the bottom show 'Potential sun hours' and 'Total, worst case' for each month and overall.

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 Albano - real case Shadow receptor: R10 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June			
1	07:20 16:39	07:07 17:13		06:32 17:47	65	16:15 (AL08) 17:20 (AL08)	06:42 19:20	05:57 19:51	05:28 20:20
2	07:20 16:40	07:06 17:14	10	16:41 (AL08) 17:48	64	16:15 (AL08) 17:19 (AL08)	06:40 19:21	05:55 19:52	05:28 20:21
3	07:20 16:41	07:05 17:16	15	16:37 (AL08) 17:49	63	16:16 (AL08) 17:19 (AL08)	06:39 19:22	05:54 19:53	05:27 20:22
4	07:20 16:42	07:04 17:17	20	16:34 (AL08) 17:50	62	16:16 (AL08) 17:18 (AL08)	06:37 19:23	05:53 19:54	05:27 20:23
5	07:20 16:43	07:03 17:18	23	16:32 (AL08) 17:51	61	16:17 (AL08) 17:18 (AL08)	06:35 19:24	05:52 19:56	05:27 20:23
6	07:20 16:44	07:02 17:19	26	16:55 (AL08) 17:52	60	16:17 (AL08) 17:17 (AL08)	06:34 19:25	05:50 19:57	05:26 20:24
7	07:20 16:45	07:01 17:21	30	16:28 (AL08) 17:54	59	16:17 (AL08) 17:16 (AL08)	06:32 19:26	05:49 19:58	05:26 20:25
8	07:20 16:46	07:00 17:22	32	16:58 (AL08) 17:55	57	16:18 (AL08) 17:15 (AL08)	06:30 19:27	05:48 19:59	05:26 20:25
9	07:20 16:47	06:59 17:23	35	16:59 (AL08) 17:56	55	16:19 (AL08) 17:14 (AL08)	06:29 19:28	05:47 20:00	05:26 20:26
10	07:20 16:48	06:58 17:24	37	17:00 (AL08) 17:57	53	16:20 (AL08) 17:13 (AL08)	06:27 19:30	05:46 20:01	05:25 20:26
11	07:20 16:49	06:57 17:26	40	17:01 (AL08) 17:58	50	16:21 (AL08) 17:11 (AL08)	06:26 19:31	05:45 20:02	05:25 20:27
12	07:20 16:50	06:55 17:27	42	17:03 (AL08) 17:59	47	16:22 (AL08) 17:09 (AL08)	06:24 19:32	05:44 20:03	05:25 20:27
13	07:19 16:51	06:54 17:28	45	16:24 (AL08) 18:00	44	16:22 (AL08) 17:08 (AL08)	06:23 19:33	05:43 20:04	05:25 20:28
14	07:19 16:52	06:53 17:29	47	17:05 (AL08) 18:01	41	16:25 (AL08) 17:06 (AL08)	06:21 19:34	05:42 20:05	05:25 20:28
15	07:19 16:53	06:52 17:30	49	17:07 (AL08) 18:02	37	16:26 (AL08) 17:03 (AL08)	06:19 19:35	05:41 20:06	05:25 20:29
16	07:18 16:54	06:50 17:32	51	17:08 (AL08) 18:03	32	16:29 (AL08) 17:01 (AL08)	06:18 19:36	05:40 20:07	05:25 20:29
17	07:18 16:55	06:49 17:33	52	16:19 (AL08) 18:04	25	16:32 (AL08) 16:57 (AL08)	06:16 19:37	05:39 20:07	05:25 20:29
18	07:17 16:57	06:48 17:34	54	17:10 (AL08) 18:05	17	16:36 (AL08) 16:53 (AL08)	06:15 19:38	05:38 20:08	05:25 20:30
19	07:17 16:58	06:46 17:35	57	17:12 (AL08) 18:07			06:13 19:39	05:37 20:09	05:25 20:30
20	07:16 16:59	06:45 17:36	58	17:13 (AL08) 18:08			06:12 19:40	05:36 20:10	05:25 20:30
21	07:16 17:00	06:44 17:38	60	16:16 (AL08) 18:09			06:10 19:41	05:35 20:11	05:26 20:31
22	07:15 17:01	06:42 17:39	62	16:15 (AL08) 18:10			06:09 19:42	05:35 20:12	05:26 20:31
23	07:14 17:02	06:41 17:40	62	16:15 (AL08) 18:11			06:08 19:43	05:34 20:13	05:26 20:31
24	07:14 17:04	06:39 17:41	64	16:15 (AL08) 18:12			06:06 19:44	05:33 20:14	05:26 20:31
25	07:13 17:05	06:38 17:42	66	16:15 (AL08) 18:13			06:05 19:45	05:32 20:15	05:27 20:31
26	07:12 17:06	06:36 17:43	66	16:15 (AL08) 18:14			06:03 19:46	05:32 20:16	05:27 20:31
27	07:12 17:07	06:35 17:44	66	16:15 (AL08) 18:15			06:02 19:47	05:31 20:16	05:27 20:31
28	07:11 17:08	06:33 17:46	65	16:21 (AL08) 18:16			06:01 19:48	05:30 20:17	05:28 20:31
29	07:10 17:10			06:47 19:17			05:59 19:49	05:30 20:18	05:28 20:31
30	07:09 17:11			06:45 19:18			05:58 19:50	05:29 20:19	05:28 20:31
31	07:08 17:12			06:43 19:19			05:29 20:20	05:29 20:20	05:29 20:31
Potential sun hours	299	298	370		398	447	451		
Total, worst case			1234		892				
Sun reduction			0,63		0,56				
Oper. time red.			0,86		0,86				
Wind dir. red.			0,63		0,63				
Total reduction			0,34		0,31				
Total, real			422		272				

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 Albano - real case Shadow receptor: R10 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	July	August	September	October	November	December		
1	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	17:02 (AL08) 18:40 46	06:25 16:54 37	15:54 (AL08) 16:31 (AL08)	07:00 16:30
2	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	17:00 (AL08) 17:49 (AL08) 49	06:27 16:53 34	15:55 (AL08) 16:29 (AL08)	07:01 16:30
3	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	16:58 (AL08) 17:50 (AL08) 52	06:28 16:52 32	15:56 (AL08) 16:28 (AL08)	07:02 16:30
4	05:30 20:31	05:55 20:09	06:25 19:25	06:55 18:35	16:57 (AL08) 17:51 (AL08) 54	06:29 16:51 29	15:58 (AL08) 16:27 (AL08)	07:03 16:30
5	05:31 20:31	05:56 20:08	06:26 19:24	06:56 18:34	16:55 (AL08) 17:51 (AL08) 56	06:30 16:50 26	16:00 (AL08) 16:26 (AL08)	07:04 16:30
6	05:32 20:30	05:57 20:07	06:27 19:22	06:57 18:32	16:54 (AL08) 17:52 (AL08) 58	06:31 16:48 23	16:02 (AL08) 16:25 (AL08)	07:05 16:29
7	05:32 20:30	05:58 20:06	06:28 19:20	06:58 18:30	16:53 (AL08) 17:52 (AL08) 59	06:32 16:47 19	16:04 (AL08) 16:23 (AL08)	07:06 16:29
8	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	16:52 (AL08) 17:53 (AL08) 61	06:34 16:46 15	16:08 (AL08) 16:23 (AL08)	07:07 16:29
9	05:33 20:29	06:00 20:03	06:30 19:17	07:00 18:27	16:51 (AL08) 17:53 (AL08) 62	06:35 16:45 9	16:13 (AL08) 16:22 (AL08)	07:08 16:29
10	05:34 20:29	06:01 20:02	06:31 19:15	07:01 18:26	16:50 (AL08) 17:53 (AL08) 63	06:36 16:44		07:08 16:29
11	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	16:49 (AL08) 17:53 (AL08) 64	06:37 16:43		07:09 16:29
12	05:35 20:28	06:03 20:00	06:33 19:12	07:03 18:22	16:48 (AL08) 17:53 (AL08) 65	06:38 16:42		07:10 16:29
13	05:36 20:28	06:04 19:58	06:34 19:10	07:04 18:21	16:48 (AL08) 17:53 (AL08) 65	06:40 16:41		07:11 16:30
14	05:37 20:27	06:05 19:57	06:35 19:09	07:05 18:19	16:48 (AL08) 17:54 (AL08) 66	06:41 16:40		07:12 16:30
15	05:38 20:27	06:06 19:56	06:36 19:07	07:06 18:18	16:48 (AL08) 17:53 (AL08) 65	06:42 16:40		07:12 16:30
16	05:38 20:26	06:07 19:54	06:37 19:05	07:08 18:16	16:47 (AL08) 17:53 (AL08) 66	06:43 16:39		07:13 16:30
17	05:39 20:25	06:08 19:53	06:38 19:04	07:09 18:15	16:47 (AL08) 17:52 (AL08) 65	06:44 16:38		07:14 16:31
18	05:40 20:25	06:09 19:51	06:39 19:02	07:10 18:13	16:46 (AL08) 17:50 (AL08) 64	06:45 16:37		07:14 16:31
19	05:41 20:24	06:10 19:50	06:40 19:00	07:11 18:12	16:46 (AL08) 17:49 (AL08) 63	06:47 16:36		07:15 16:31
20	05:42 20:23	06:11 19:49	06:41 18:59	07:12 18:10	16:46 (AL08) 17:47 (AL08) 61	06:48 16:36		07:16 16:32
21	05:42 20:23	06:12 19:47	06:42 18:57	07:13 18:09	16:47 (AL08) 17:46 (AL08) 59	06:49 16:35		07:16 16:32
22	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:08	16:47 (AL08) 17:45 (AL08) 58	06:50 16:34		07:17 16:33
23	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	16:47 (AL08) 17:43 (AL08) 56	06:51 16:34		07:17 16:33
24	05:45 20:20	06:15 19:43	06:45 18:52	07:16 18:05	16:47 (AL08) 17:41 (AL08) 54	06:52 16:33		07:18 16:34
25	05:46 20:19	06:16 19:41	06:46 18:50	17:21 (AL08) 17:34 (AL08) 13	06:17 17:03 52	15:48 (AL08) 16:40 (AL08)	06:53 16:33	07:18 16:34
26	05:47 20:19	06:17 19:40	06:47 18:49	17:16 (AL08) 17:39 (AL08) 23	06:19 17:02 50	15:49 (AL08) 16:39 (AL08)	06:54 16:32	07:18 16:35
27	05:48 20:18	06:18 19:38	06:48 18:47	17:12 (AL08) 17:42 (AL08) 30	06:20 17:01 49	15:49 (AL08) 16:38 (AL08)	06:56 16:32	07:19 16:36
28	05:49 20:17	06:19 19:36	06:49 18:45	17:09 (AL08) 17:44 (AL08) 35	06:21 16:59 46	15:50 (AL08) 16:36 (AL08)	06:57 16:31	07:19 16:36
29	05:50 20:16	06:20 19:35	06:50 18:44	17:06 (AL08) 17:46 (AL08) 40	06:22 16:58 44	15:50 (AL08) 16:34 (AL08)	06:58 16:31	07:19 16:37
30	05:51 20:15	06:21 19:33	06:51 18:42	17:04 (AL08) 17:47 (AL08) 43	06:23 16:57 42	15:51 (AL08) 16:33 (AL08)	06:59 16:31	07:20 16:38
31	05:51 20:14	06:22 19:32		06:24 16:55 39	15:53 (AL08) 16:32 (AL08)			07:20 16:38
Potential sun hours	458	427	375	346	299	289		
Total, worst case			184	1753		224		
Sun reduction			0,54	0,60		0,67		
Oper. time red.			0,86	0,86		0,86		
Wind dir. red.			0,63	0,63		0,63		
Total reduction			0,29	0,33		0,37		
Total, real			54	572		82		

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 Albano - real case Shadow receptor: R12 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	January	February	March	April	May	June
1	07:20 16:39	07:07 17:13	16:37 (AL07) 16:49 (AL07)	06:32 17:47	16:58 (AL07) 17:14 (AL07)	06:42 19:20
2	07:20 16:40	07:06 17:14	16:37 (AL07) 16:51 (AL07)	06:30 17:48	06:40 19:21	05:55 19:52
3	07:20 16:41	07:05 17:16	16:37 (AL07) 16:52 (AL07)	06:29 17:49	06:39 19:22	05:54 19:53
4	07:20 16:42	07:04 17:17	16:37 (AL07) 16:54 (AL07)	06:27 17:50	06:37 19:23	05:53 19:54
5	07:21 16:43	07:03 17:18	16:37 (AL07) 16:55 (AL07)	06:26 17:51	06:35 19:24	05:52 19:56
6	07:20 16:44	07:02 17:19	16:37 (AL07) 16:56 (AL07)	06:24 17:52	06:34 19:25	05:50 19:57
7	07:20 16:45	07:01 17:21	16:37 (AL07) 16:58 (AL07)	06:23 17:54	06:32 19:26	05:49 19:58
8	07:20 16:46	07:00 17:22	16:37 (AL07) 16:59 (AL07)	06:21 17:55	06:30 19:27	05:48 19:59
9	07:20 16:47	06:59 17:23	16:36 (AL07) 17:00 (AL07)	06:19 17:56	06:29 19:28	05:47 20:00
10	07:20 16:48	06:58 17:24	16:36 (AL07) 17:01 (AL07)	06:18 17:57	06:27 19:30	05:46 20:01
11	07:20 16:49	06:57 17:26	16:37 (AL07) 17:03 (AL07)	06:16 17:58	06:26 19:31	05:45 20:02
12	07:20 16:50	06:55 17:27	16:37 (AL07) 17:04 (AL07)	06:15 17:59	06:24 19:32	05:44 20:03
13	07:19 16:51	06:54 17:28	16:37 (AL07) 17:05 (AL07)	06:13 18:00	06:23 19:33	05:43 20:04
14	07:19 16:52	06:53 17:29	16:37 (AL07) 17:07 (AL07)	06:11 18:01	06:21 19:34	05:42 20:05
15	07:19 16:53	06:52 17:30	16:38 (AL07) 17:08 (AL07)	06:10 18:02	06:19 19:35	05:41 20:06
16	07:18 16:54	06:50 17:32	16:39 (AL07) 17:10 (AL07)	06:08 18:03	06:18 19:36	05:40 20:07
17	07:18 16:55	06:49 17:33	16:39 (AL07) 17:11 (AL07)	06:07 18:04	06:16 19:37	05:39 20:08
18	07:17 16:56	06:48 17:34	16:40 (AL07) 17:12 (AL07)	06:05 18:05	06:15 19:38	05:38 20:09
19	07:17 16:58	06:46 17:35	16:40 (AL07) 17:13 (AL07)	06:03 18:07	06:13 19:39	05:37 20:10
20	07:16 16:59	06:45 17:36	16:41 (AL07) 17:14 (AL07)	06:02 18:08	06:12 19:40	05:36 20:11
21	07:16 17:00	06:44 17:38	16:42 (AL07) 17:16 (AL07)	06:00 18:09	06:10 19:41	05:35 20:12
22	07:15 17:01	06:42 17:39	16:43 (AL07) 17:17 (AL07)	05:58 18:10	06:09 19:42	05:34 20:13
23	07:14 17:02	06:41 17:40	16:44 (AL07) 17:18 (AL07)	05:57 18:11	06:08 19:43	05:34 20:14
24	07:14 17:03	06:39 17:41	16:45 (AL07) 17:19 (AL07)	05:55 18:12	06:06 19:44	05:33 20:15
25	07:13 17:05	06:38 17:42	16:47 (AL07) 17:21 (AL07)	05:53 18:13	06:05 19:45	05:32 20:16
26	07:12 17:06	16:40 (AL07) 17:43	16:48 (AL07) 17:22 (AL07)	05:52 18:14	06:03 19:46	05:32 20:17
27	07:12 17:07	16:39 (AL07) 17:44	16:51 (AL07) 17:23 (AL07)	05:50 18:15	06:02 19:47	05:31 20:18
28	07:11 17:08	16:38 (AL07) 17:46	16:53 (AL07) 17:25 (AL07)	05:48 18:16	06:01 19:48	05:30 20:19
29	07:10 17:10	16:38 (AL07) 17:47	16:55 (AL07) 17:27 (AL07)	05:47 18:17	05:59 19:49	05:29 20:20
30	07:09 17:11	16:38 (AL07) 17:48	16:57 (AL07) 17:29 (AL07)	05:45 18:18	05:58 19:50	05:28 20:21
31	07:08 17:12	16:37 (AL07) 17:49	16:59 (AL07) 17:31 (AL07)	05:43 18:19	05:57 19:51	05:27 20:22
Potential sun hours	299	298	370	398	447	451
Total, worst case	39	747	16	214	440	440
Sun reduction	0,70	0,63	0,56	0,46	0,45	0,45
Oper. time red.	0,86	0,86	0,86	0,86	0,86	0,86
Wind dir. red.	0,63	0,63	0,63	0,63	0,63	0,63
Total reduction	0,38	0,34	0,31	0,25	0,24	0,24
Total, real	15	256	5	54	106	106

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

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

SHADOW - Calendar

Calculation: WF Albano - real case Shadow receptor: R12 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	July	August	September	October	November	December
1	05:29	19:51 (AL06) 05:52	19:46 (AL06) 06:23	06:52	06:25	16:06 (AL07) 07:00
	20:31 15	20:06 (AL06) 20:13	3 19:49 (AL06) 19:30	18:40	16:54 25	16:31 (AL07) 16:30
2	05:29	19:51 (AL06) 05:53	19:46 (AL06) 06:24	06:53	06:27	16:06 (AL07) 07:01
	20:31 15	20:06 (AL06) 20:12	2 19:48 (AL06) 19:29	18:39	16:53 23	16:29 (AL07) 16:30
3	05:30	19:51 (AL06) 05:54	19:46 (AL06) 06:24	06:54	06:28	16:06 (AL07) 07:02
	20:31 15	20:06 (AL06) 20:11	1 19:47 (AL06) 19:27	18:37	16:52 22	16:28 (AL07) 16:30
4	05:30	19:51 (AL06) 05:55	06:25	06:55	06:29	16:07 (AL07) 07:03
	20:31 15	20:06 (AL06) 20:09	19:25	18:35	16:51 20	16:27 (AL07) 16:30
5	05:31	19:50 (AL06) 05:56	06:26	06:56	06:30	16:07 (AL07) 07:04
	20:31 15	20:05 (AL06) 20:08	19:24	18:34	16:49 19	16:26 (AL07) 16:29
6	05:31	19:50 (AL06) 05:57	06:27	06:57	06:31	16:06 (AL07) 07:05
	20:30 15	20:05 (AL06) 20:07	19:22	18:32	16:48 19	16:25 (AL07) 16:29
7	05:32	19:50 (AL06) 05:58	06:28	06:58	06:32	16:07 (AL07) 07:06
	20:30 15	20:05 (AL06) 20:06	19:20	18:30	16:47 16	16:23 (AL07) 16:29
8	05:33	19:50 (AL06) 05:59	06:29	06:59	06:34	16:08 (AL07) 07:07
	20:30 15	20:05 (AL06) 20:05	19:19	18:29	16:46 15	16:23 (AL07) 16:29
9	05:33	19:50 (AL06) 06:00	06:30	07:00	06:35	16:08 (AL07) 07:08
	20:29 15	20:05 (AL06) 20:03	19:17	18:27	16:45 14	16:22 (AL07) 16:29
10	05:34	19:49 (AL06) 06:01	06:31	07:01	06:36	16:08 (AL07) 07:08
	20:29 15	20:04 (AL06) 20:02	19:15	18:26	16:44 12	16:20 (AL07) 16:29
11	05:35	19:49 (AL06) 06:02	06:32	07:02	06:37	16:08 (AL07) 07:09
	20:29 15	20:04 (AL06) 20:01	19:14	18:24	16:43 11	16:19 (AL07) 16:29
12	05:35	19:49 (AL06) 06:03	06:33	07:03	06:38	16:10 (AL07) 07:10
	20:28 15	20:04 (AL06) 20:00	19:12	18:22	7 17:42 (AL07) 16:42	9 16:19 (AL07) 16:29
13	05:36	19:48 (AL06) 06:04	06:34	07:04	17:28 (AL07) 06:40	16:10 (AL07) 07:11
	20:28 14	20:02 (AL06) 19:58	19:10	18:21	20 17:48 (AL07) 16:41	7 16:17 (AL07) 16:30
14	05:37	19:48 (AL06) 06:05	06:35	07:05	17:26 (AL07) 06:41	16:11 (AL07) 07:12
	20:27 14	20:02 (AL06) 19:57	19:09	18:19	26 17:52 (AL07) 16:40	5 16:16 (AL07) 16:30
15	05:38	19:48 (AL06) 06:06	06:36	07:06	17:23 (AL07) 06:42	16:11 (AL07) 07:12
	20:27 14	20:02 (AL06) 19:56	19:07	18:18	32 17:55 (AL07) 16:40	4 16:15 (AL07) 16:30
16	05:38	19:48 (AL06) 06:07	06:37	07:08	17:20 (AL07) 06:43	16:13 (AL07) 07:13
	20:26 14	20:02 (AL06) 19:54	19:05	18:16	34 17:54 (AL07) 16:39	2 16:15 (AL07) 16:30
17	05:39	19:47 (AL06) 06:08	06:38	07:09	17:18 (AL07) 06:44	07:14
	20:25 13	20:00 (AL06) 19:53	19:04	18:15	34 17:52 (AL07) 16:38	16:31
18	05:40	19:47 (AL06) 06:09	06:39	07:10	17:16 (AL07) 06:45	07:14
	20:25 13	20:00 (AL06) 19:51	19:02	18:13	34 17:50 (AL07) 16:37	16:31
19	05:41	19:47 (AL06) 06:10	06:40	07:11	17:15 (AL07) 06:47	07:15
	20:24 13	20:00 (AL06) 19:50	19:00	18:12	34 17:49 (AL07) 16:36	16:31
20	05:42	19:47 (AL06) 06:11	06:41	07:12	17:13 (AL07) 06:48	07:16
	20:23 12	19:59 (AL06) 19:49	18:59	18:10	34 17:47 (AL07) 16:36	16:32
21	05:42	19:47 (AL06) 06:12	06:42	07:13	17:13 (AL07) 06:49	07:16
	20:23 12	19:59 (AL06) 19:47	18:57	18:09	33 17:46 (AL07) 16:35	16:32
22	05:43	19:46 (AL06) 06:13	06:43	07:14	17:11 (AL07) 06:50	07:17
	20:22 11	19:57 (AL06) 19:46	18:55	18:07	34 17:45 (AL07) 16:34	16:33
23	05:44	19:46 (AL06) 06:14	06:44	07:15	17:10 (AL07) 06:51	07:17
	20:21 11	19:57 (AL06) 19:44	18:54	18:06	33 17:43 (AL07) 16:34	16:33
24	05:45	19:46 (AL06) 06:15	06:45	07:16	17:09 (AL07) 06:52	07:18
	20:20 10	19:56 (AL06) 19:43	18:52	18:05	32 17:41 (AL07) 16:33	16:34
25	05:46	19:46 (AL06) 06:16	06:46	06:17	16:08 (AL07) 06:53	07:18
	20:19 9	19:55 (AL06) 19:41	18:50	17:03	32 16:40 (AL07) 16:33	16:34
26	05:47	19:46 (AL06) 06:17	06:47	06:19	16:08 (AL07) 06:54	07:19
	20:19 9	19:55 (AL06) 19:40	18:49	17:02	31 16:39 (AL07) 16:32	16:35
27	05:48	19:46 (AL06) 06:18	06:48	06:20	16:08 (AL07) 06:56	07:19
	20:18 8	19:54 (AL06) 19:38	18:47	17:01	30 16:38 (AL07) 16:32	16:35
28	05:49	19:46 (AL06) 06:19	06:49	06:21	16:07 (AL07) 06:57	07:19
	20:17 7	19:53 (AL06) 19:36	18:45	16:59	29 16:36 (AL07) 16:31	16:36
29	05:50	19:46 (AL06) 06:20	06:50	06:22	16:07 (AL07) 06:58	07:19
	20:16 6	19:52 (AL06) 19:35	18:44	16:58	27 16:34 (AL07) 16:31	16:37
30	05:50	19:45 (AL06) 06:21	06:51	06:23	16:06 (AL07) 06:59	07:20
	20:15 6	19:51 (AL06) 19:33	18:42	16:57	27 16:33 (AL07) 16:31	16:38
31	05:51	19:45 (AL06) 06:22	06:52	06:24	16:07 (AL07) 07:20	07:20
	20:14 5	19:50 (AL06) 19:32	18:41	16:55	25 16:32 (AL07) 16:38	16:38
Potential sun hours	458	427	375	346	299	289
Total, worst case	381	6	588	223		
Sun reduction	0,45	0,49	0,60	0,67		
Oper. time red.	0,86	0,86	0,86	0,86		
Wind dir. red.	0,63	0,63	0,63	0,63		
Total reduction	0,25	0,26	0,33	0,37		
Total, real	94	2	192	82		

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 Albano - real case Shadow receptor: R17 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	January	February	March	April	May	June			
1	07:20	07:07	06:32	17:12 (AL07)	06:42	05:57	05:28	19:52 (AL06)	
	16:39	17:13	17:47	14 17:26 (AL07)	19:20	19:51	20:20	3 19:55 (AL06)	
2	07:20	07:06	06:30	17:11 (AL07)	06:40	05:55	05:28	19:53 (AL06)	
	16:40	17:14	17:48	15 17:26 (AL07)	19:21	19:52	20:21	3 19:56 (AL06)	
3	07:20	07:05	06:29	17:12 (AL07)	06:39	05:54	05:27	19:54 (AL06)	
	16:41	17:16	17:49	16 17:28 (AL07)	19:22	19:53	20:22	3 19:57 (AL06)	
4	07:20	07:04	06:27	17:12 (AL07)	06:37	05:53	05:27	19:53 (AL06)	
	16:42	17:17	17:50	17 17:29 (AL07)	19:23	19:54	20:23	4 19:57 (AL06)	
5	07:20	07:03	06:26	17:13 (AL07)	06:35	05:52	05:27	19:54 (AL06)	
	16:43	17:18	17:51	18 17:31 (AL07)	19:24	19:56	20:23	4 19:58 (AL06)	
6	07:20	07:02	06:24	17:13 (AL07)	06:34	05:50	05:26	19:55 (AL06)	
	16:44	17:19	17:52	18 17:31 (AL07)	19:25	19:57	20:24	4 19:59 (AL06)	
7	07:20	07:01	06:23	17:13 (AL07)	06:32	05:49	05:26	19:56 (AL06)	
	16:45	17:21	17:53	19 17:32 (AL07)	19:26	19:58	20:25	4 20:00 (AL06)	
8	07:20	07:00	06:21	17:14 (AL07)	06:30	05:48	05:26	19:55 (AL06)	
	16:46	17:22	17:55	20 17:34 (AL07)	19:27	19:59	20:25	5 20:00 (AL06)	
9	07:20	06:59	06:19	17:14 (AL07)	06:29	05:47	05:26	19:56 (AL06)	
	16:47	17:23	17:56	21 17:35 (AL07)	19:28	20:00	20:26	4 20:00 (AL06)	
10	07:20	06:58	06:18	17:14 (AL07)	06:27	05:46	05:25	19:56 (AL06)	
	16:48	17:24	17:57	21 17:35 (AL07)	19:30	20:01	20:26	5 20:01 (AL06)	
11	07:20	06:57	06:16	17:16 (AL07)	06:26	05:45	05:25	19:57 (AL06)	
	16:49	17:26	17:58	21 17:37 (AL07)	19:31	20:02	20:27	5 20:02 (AL06)	
12	07:20	06:55	06:15	17:17 (AL07)	06:24	05:44	05:25	19:57 (AL06)	
	16:50	17:27	17:59	21 17:38 (AL07)	19:32	20:03	20:27	5 20:02 (AL06)	
13	07:19	06:54	06:13	17:19 (AL07)	06:23	05:43	05:25	19:58 (AL06)	
	16:51	17:28	18:00	21 17:40 (AL07)	19:33	20:04	20:28	5 20:03 (AL06)	
14	07:19	06:53	06:11	17:20 (AL07)	06:21	05:42	05:25	19:58 (AL06)	
	16:52	17:29	18:01	20 17:40 (AL07)	19:34	20:05	20:28	5 20:03 (AL06)	
15	07:19	06:52	06:10	17:22 (AL07)	06:19	05:41	05:25	19:59 (AL06)	
	16:53	17:30	18:02	19 17:41 (AL07)	19:35	20:06	20:29	4 20:03 (AL06)	
16	07:18	06:50	06:08	17:26 (AL07)	06:18	05:40	05:25	19:59 (AL06)	
	16:54	17:32	18:03	17 17:43 (AL07)	19:36	20:07	20:29	5 20:04 (AL06)	
17	07:18	06:49	06:07	17:19 (AL07)	06:16	05:39	05:25	19:59 (AL06)	
	16:55	17:33	18:04		19:37	20:07	20:29	5 20:04 (AL06)	
18	07:17	06:48	06:05	17:17 (AL07)	06:15	05:38	05:25	20:00 (AL06)	
	16:56	17:34	18:05		19:38	20:08	20:30	4 20:04 (AL06)	
19	07:17	06:46	06:03	17:18 (AL07)	06:13	05:37	05:25	20:00 (AL06)	
	16:58	17:35	18:07		19:39	20:09	20:30	4 20:04 (AL06)	
20	07:16	06:45	06:02	17:17 (AL07)	06:12	05:36	05:25	20:01 (AL06)	
	16:59	17:36	18:08		19:40	20:10	20:30	5 20:06 (AL06)	
21	07:16	06:44	17:15 (AL07)	06:00	06:10	05:35	05:25	20:01 (AL06)	
	17:00	17:38	1 17:16 (AL07)	18:09	19:41	20:11	20:31	5 20:06 (AL06)	
22	07:15	06:42	17:14 (AL07)	05:58	06:09	05:34	05:26	20:01 (AL06)	
	17:01	17:39	3 17:17 (AL07)	18:10	19:42	20:12	20:31	5 20:06 (AL06)	
23	07:14	06:41	17:14 (AL07)	05:57	06:08	05:34	05:26	20:01 (AL06)	
	17:02	17:40	4 17:18 (AL07)	18:11	19:43	20:13	20:31	4 20:05 (AL06)	
24	07:14	06:39	17:13 (AL07)	05:55	06:06	05:33	05:26	20:01 (AL06)	
	17:03	17:41	6 17:19 (AL07)	18:12	19:44	20:14	20:31	4 20:05 (AL06)	
25	07:13	06:38	17:13 (AL07)	05:53	06:05	05:32	05:26	20:01 (AL06)	
	17:05	17:42	8 17:21 (AL07)	18:13	19:45	20:15	20:31	5 20:06 (AL06)	
26	07:12	06:36	17:12 (AL07)	05:52	06:03	05:32	19:50 (AL06)	05:27	20:01 (AL06)
	17:06	17:43	10 17:22 (AL07)	18:14	19:46	20:16	1 19:51 (AL06)	20:31	5 20:06 (AL06)
27	07:12	06:35	17:12 (AL07)	05:50	06:02	05:31	19:51 (AL06)	05:27	20:01 (AL06)
	17:07	17:44	11 17:23 (AL07)	18:15	19:47	20:16	1 19:52 (AL06)	20:31	5 20:06 (AL06)
28	07:11	06:33	17:12 (AL07)	05:48	06:01	05:30	19:51 (AL06)	05:28	20:02 (AL06)
	17:08	17:46	12 17:24 (AL07)	18:16	19:48	20:17	1 19:52 (AL06)	20:31	4 20:06 (AL06)
29	07:10			06:47	05:59	05:30	19:51 (AL06)	05:28	20:01 (AL06)
	17:10			19:17	19:49	20:18	3 19:54 (AL06)	20:31	5 20:06 (AL06)
30	07:09			06:45	05:58	05:29	19:51 (AL06)	05:28	20:02 (AL06)
	17:11			19:18	19:50	20:19	3 19:54 (AL06)	20:31	4 20:06 (AL06)
31	07:08			06:43		05:29	19:52 (AL06)		
	17:12			19:19		20:20	3 19:55 (AL06)		
Potential sun hours	299	298	370	398	447		451		
Total, worst case		55	298			12		132	
Sun reduction		0,63	0,56			0,46		0,45	
Oper. time red.		0,86	0,86			0,86		0,86	
Wind dir. red.		0,63	0,63			0,63		0,63	
Total reduction		0,34	0,30			0,25		0,24	
Total, real		19	91			3		32	

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 Albano - real case Shadow receptor: R17 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	July	August	September	October	November	December	
1	05:29 20:31	20:01 (AL06) 20:06 (AL06)	05:52 20:13	06:23 19:30	06:52 18:40	17:57 (AL07) 16:54	07:00 16:30
2	05:29 20:31	20:02 (AL06) 20:06 (AL06)	05:53 20:12	06:24 19:29	06:53 18:39	17:55 (AL07) 16:53	07:01 16:30
3	05:30 20:31	20:01 (AL06) 20:06 (AL06)	05:54 20:11	06:24 19:27	06:54 18:37	17:54 (AL07) 16:52	07:02 16:30
4	05:30 20:31	20:01 (AL06) 20:06 (AL06)	05:55 20:09	06:25 19:25	06:55 18:35	17:52 (AL07) 16:51	07:03 16:30
5	05:31 20:31	20:01 (AL06) 20:05 (AL06)	05:56 20:08	06:26 19:24	06:56 18:34	17:51 (AL07) 16:49	07:04 16:29
6	05:31 20:30	20:01 (AL06) 20:05 (AL06)	05:57 20:07	06:27 19:22	06:57 18:32	17:50 (AL07) 16:48	07:05 16:29
7	05:32 20:30	20:00 (AL06) 20:05 (AL06)	05:58 20:06	06:28 19:20	06:58 18:30	17:48 (AL07) 16:47	07:06 16:29
8	05:33 20:30	20:01 (AL06) 20:05 (AL06)	05:59 20:05	06:29 19:19	06:59 18:29	17:48 (AL07) 16:46	07:07 16:29
9	05:33 20:29	20:01 (AL06) 20:05 (AL06)	06:00 20:03	06:30 19:17	07:00 18:27	17:47 (AL07) 16:45	07:08 16:29
10	05:34 20:29	20:00 (AL06) 20:04 (AL06)	06:01 20:02	06:31 19:15	07:01 18:26	17:46 (AL07) 16:44	07:08 16:29
11	05:35 20:29	20:00 (AL06) 20:04 (AL06)	06:02 20:01	06:32 19:14	07:02 18:24	17:45 (AL07) 16:43	07:09 16:29
12	05:35 20:28	20:01 (AL06) 20:04 (AL06)	06:03 20:00	06:33 19:12	07:03 18:22	17:45 (AL07) 16:42	07:10 16:29
13	05:36 20:28	20:00 (AL06) 20:02 (AL06)	06:04 19:58	06:34 19:10	07:04 18:21	17:44 (AL07) 16:41	07:11 16:30
14	05:37 20:27	20:00 (AL06) 20:02 (AL06)	06:05 19:57	06:35 19:09	07:05 18:19	17:45 (AL07) 16:40	07:12 16:30
15	05:38 20:27	20:00 (AL06) 20:02 (AL06)	06:06 19:56	06:36 19:07	07:06 18:18	17:45 (AL07) 16:40	07:12 16:30
16	05:38 20:26	20:00 (AL06) 20:02 (AL06)	06:07 19:54	06:37 19:05	07:08 18:16	17:45 (AL07) 16:39	07:13 16:30
17	05:39 20:25	19:59 (AL06) 20:00 (AL06)	06:08 19:53	06:38 19:04	07:09 18:15	17:45 (AL07) 16:38	07:14 16:31
18	05:40 20:25		06:09 19:51	06:39 19:02	07:10 18:13	17:45 (AL07) 16:37	07:14 16:31
19	05:41 20:24		06:10 19:50	06:40 19:00	07:11 18:12	17:45 (AL07) 16:36	07:15 16:31
20	05:42 20:23		06:11 19:49	06:41 18:59	07:12 18:10	17:45 (AL07) 16:36	07:16 16:32
21	05:42 20:23		06:12 19:47	06:42 18:57	07:13 18:09	17:47 (AL07) 16:35	07:16 16:32
22	05:43 20:22		06:13 19:46	06:43 18:55	07:14 18:07	16:50 16:34	07:17 16:33
23	05:44 20:21		06:14 19:44	06:44 18:54	07:15 18:06	16:51 16:34	07:17 16:33
24	05:45 20:20		06:15 19:43	06:45 18:52	07:16 18:05	16:52 16:33	07:18 16:34
25	05:46 20:19		06:16 19:41	06:46 18:50	06:17 17:03	16:53 16:33	07:18 16:34
26	05:47 20:19		06:17 19:40	06:47 18:49	06:19 17:02	16:54 16:32	07:19 16:35
27	05:48 20:18		06:18 19:38	06:48 18:47	18:09 (AL07) 18:24 (AL07)	06:20 17:01	07:19 16:35
28	05:49 20:17		06:19 19:36	06:49 18:45	18:05 (AL07) 18:23 (AL07)	06:21 16:59	07:19 16:36
29	05:50 20:16		06:20 19:35	06:50 18:44	18:02 (AL07) 18:21 (AL07)	06:22 16:58	07:19 16:37
30	05:50 20:15		06:21 19:33	06:51 18:42	17:59 (AL07) 18:20 (AL07)	06:23 16:57	07:20 16:38
31	05:51 20:14		06:22 19:32		06:24 16:55		07:20 16:38
Potential sun hours	458	427	375	346	299	289	
Total, worst case	60		73		288		
Sun reduction	0,45		0,54		0,60		
Oper. time red.	0,86		0,86		0,86		
Wind dir. red.	0,63		0,63		0,63		
Total reduction	0,25		0,29		0,32		
Total, real	15		21		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 Albano - real case Shadow receptor: R18 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June	
1	07:20 16:39	07:07 17:13	06:32 17:47	17:07 (AL07) 19:20	06:42 19:51	05:28 20:20	19:50 (AL06) 5 19:55 (AL06)
2	07:20 16:40	07:06 17:14	06:30 17:48	17:07 (AL07) 19:21	06:40 19:52	05:28 20:21	19:51 (AL06) 5 19:56 (AL06)
3	07:20 16:41	07:05 17:16	06:29 17:49	17:08 (AL07) 19:22	06:39 19:53	05:27 20:22	19:52 (AL06) 5 19:57 (AL06)
4	07:20 16:42	07:04 17:17	06:27 17:50	17:08 (AL07) 19:23	06:37 19:54	05:27 20:23	19:52 (AL06) 5 19:57 (AL06)
5	07:21 16:43	07:03 17:18	06:26 17:51	17:10 (AL07) 19:24	06:35 19:56	05:27 20:23	19:53 (AL06) 5 19:58 (AL06)
6	07:20 16:44	07:02 17:19	06:24 17:52	17:10 (AL07) 19:25	06:34 19:57	05:26 20:24	19:54 (AL06) 5 19:59 (AL06)
7	07:20 16:45	07:01 17:21	06:23 17:53	17:11 (AL07) 19:26	06:32 19:58	05:26 20:25	19:55 (AL06) 5 20:00 (AL06)
8	07:20 16:46	07:00 17:22	06:21 17:55	17:13 (AL07) 19:27	06:30 19:59	05:26 20:25	19:55 (AL06) 5 20:00 (AL06)
9	07:20 16:47	06:59 17:23	06:19 17:56	17:15 (AL07) 19:28	06:29 20:00	05:26 20:26	19:56 (AL06) 4 20:00 (AL06)
10	07:20 16:48	06:58 17:24	06:18 17:57	17:17 (AL07) 19:30	06:27 19:30	05:25 20:26	19:57 (AL06) 4 20:01 (AL06)
11	07:20 16:49	06:57 17:26	06:16 17:58	17:22 (AL07) 19:31	06:26 20:02	05:25 20:27	19:58 (AL06) 4 20:02 (AL06)
12	07:20 16:50	06:55 17:27	06:15 17:59	17:35 (AL07) 19:32	06:24 20:03	05:25 20:27	19:59 (AL06) 3 20:02 (AL06)
13	07:19 16:51	06:54 17:28	06:13 18:00	17:35 (AL07) 19:33	06:23 20:04	05:25 20:28	20:00 (AL06) 3 20:03 (AL06)
14	07:19 16:52	06:53 17:29	06:11 18:01	17:35 (AL07) 19:34	06:21 20:05	05:25 20:28	20:01 (AL06) 2 20:03 (AL06)
15	07:19 16:53	06:52 17:30	06:10 18:02	17:35 (AL07) 19:35	06:19 20:06	05:25 20:29	20:01 (AL06) 2 20:03 (AL06)
16	07:18 16:54	06:50 17:32	17:08 (AL07) 18:03	17:10 (AL07) 19:36	06:18 20:07	05:25 20:29	20:02 (AL06) 2 20:04 (AL06)
17	07:18 16:55	06:49 17:33	17:07 (AL07) 18:04	17:10 (AL07) 19:37	06:16 20:07	05:25 20:29	20:03 (AL06) 1 20:04 (AL06)
18	07:17 16:56	06:48 17:34	17:07 (AL07) 18:05	17:12 (AL07) 19:38	06:15 20:08	05:25 20:30	20:03 (AL06) 1 20:04 (AL06)
19	07:17 16:58	06:46 17:35	17:06 (AL07) 18:07	17:13 (AL07) 19:39	06:13 20:09	05:25 20:30	19:44 (AL06) 1 20:05 (AL06)
20	07:16 16:59	06:45 17:36	17:06 (AL07) 18:08	17:14 (AL07) 19:40	06:12 20:10	05:25 20:30	19:44 (AL06) 2 20:06 (AL06)
21	07:16 17:00	06:44 17:38	17:06 (AL07) 18:09	17:16 (AL07) 19:41	06:10 20:11	05:25 20:31	19:45 (AL06) 2 20:06 (AL06)
22	07:15 17:01	06:42 17:39	17:05 (AL07) 18:10	17:17 (AL07) 19:42	06:09 20:12	05:26 20:31	19:45 (AL06) 3 20:06 (AL06)
23	07:14 17:02	06:41 17:40	17:05 (AL07) 18:11	17:18 (AL07) 19:43	06:08 20:13	05:26 20:31	19:45 (AL06) 3 20:06 (AL06)
24	07:14 17:03	06:39 17:41	17:05 (AL07) 18:12	17:18 (AL07) 19:44	06:06 20:14	05:26 20:31	19:46 (AL06) 4 20:05 (AL06)
25	07:13 17:05	06:38 17:42	17:05 (AL07) 18:13	17:19 (AL07) 19:45	06:05 20:15	05:26 20:31	19:46 (AL06) 4 20:06 (AL06)
26	07:12 17:06	06:36 17:43	17:05 (AL07) 18:14	17:21 (AL07) 19:46	06:03 20:16	05:27 20:31	19:46 (AL06) 5 20:06 (AL06)
27	07:12 17:07	06:35 17:44	17:06 (AL07) 18:15	17:22 (AL07) 19:47	06:02 20:16	05:27 20:31	19:47 (AL06) 5 20:06 (AL06)
28	07:11 17:08	06:33 17:46	17:06 (AL07) 18:16	17:23 (AL07) 19:48	06:01 20:17	05:28 20:31	19:48 (AL06) 4 20:06 (AL06)
29	07:10 17:10		06:47 19:17	17:24 (AL07) 19:49	05:59 20:18	05:28 20:31	19:49 (AL06) 5 20:06 (AL06)
30	07:09 17:11		06:45 19:18		05:58 20:19	05:28 20:31	19:50 (AL06) 5 20:06 (AL06)
31	07:08 17:12		06:43 19:19		05:29 20:20	05:28 19:55 (AL06)	20:06 (AL06) 5 20:06 (AL06)
Potential sun hours	299	298	370	398	447	451	
Total, worst case		142	214		48	83	
Sun reduction		0,63	0,56		0,46	0,45	
Oper. time red.		0,86	0,86		0,86	0,86	
Wind dir. red.		0,62	0,62		0,63	0,63	
Total reduction		0,34	0,30		0,25	0,24	
Total, real		48	64		12	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 Albano - real case Shadow receptor: R18 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

		July	August	September	October	November	December
1	05:29	20:03 (AL06)	05:52	06:23	06:52	06:25	07:00
	20:31	3	20:06 (AL06)	20:13	19:30	18:40	16:54
2	05:29	20:03 (AL06)	05:53	06:24	06:53	18:04 (AL07)	06:27
	20:31	3	20:06 (AL06)	20:12	19:29	18:39	16:53
3	05:30	20:02 (AL06)	05:54	06:24	06:54	17:57 (AL07)	06:28
	20:31	4	20:06 (AL06)	20:11	19:27	18:37	16:52
4	05:30	20:02 (AL06)	05:55	06:25	06:55	17:54 (AL07)	06:29
	20:31	4	20:06 (AL06)	20:09	19:25	18:35	16:51
5	05:31	20:01 (AL06)	05:56	06:26	06:56	17:51 (AL07)	06:30
	20:31	4	20:05 (AL06)	20:08	19:24	18:34	16:49
6	05:31	20:01 (AL06)	05:57	06:27	06:57	17:49 (AL07)	06:31
	20:30	4	20:05 (AL06)	20:07	19:22	18:32	16:48
7	05:32	20:00 (AL06)	05:58	06:28	06:58	17:47 (AL07)	06:32
	20:30	5	20:05 (AL06)	20:06	19:20	18:30	16:47
8	05:33	20:00 (AL06)	05:59	06:29	06:59	17:45 (AL07)	06:34
	20:30	5	20:05 (AL06)	20:05	19:19	18:29	16:46
9	05:33	20:00 (AL06)	06:00	06:30	07:00	17:43 (AL07)	06:35
	20:29	5	20:05 (AL06)	20:03	19:17	18:27	16:45
10	05:34	19:59 (AL06)	06:01	06:31	07:01	17:42 (AL07)	06:36
	20:29	5	20:04 (AL06)	20:02	19:15	18:26	16:44
11	05:35	19:59 (AL06)	06:02	06:32	07:02	17:41 (AL07)	06:37
	20:29	5	20:04 (AL06)	20:01	19:14	18:24	16:43
12	05:35	19:58 (AL06)	06:03	06:33	07:03	17:40 (AL07)	06:38
	20:28	6	20:04 (AL06)	20:00	19:12	18:22	16:42
13	05:36	19:57 (AL06)	06:04	06:34	07:04	17:39 (AL07)	06:40
	20:28	5	20:02 (AL06)	19:58	19:10	18:21	16:41
14	05:37	19:57 (AL06)	06:05	06:35	07:05	17:39 (AL07)	06:41
	20:27	5	20:02 (AL06)	19:57	19:09	18:19	16:40
15	05:38	19:57 (AL06)	06:06	06:36	07:06	17:38 (AL07)	06:42
	20:27	5	20:02 (AL06)	19:56	19:07	18:18	16:40
16	05:38	19:57 (AL06)	06:07	06:37	07:08	17:37 (AL07)	06:43
	20:26	5	20:02 (AL06)	19:54	19:05	18:16	16:39
17	05:39	19:56 (AL06)	06:08	06:38	07:09	17:37 (AL07)	06:44
	20:25	4	20:00 (AL06)	19:53	19:04	18:15	16:38
18	05:40	19:56 (AL06)	06:09	06:39	07:10	17:36 (AL07)	06:45
	20:25	4	20:00 (AL06)	19:51	19:02	18:13	16:37
19	05:41	19:56 (AL06)	06:10	06:40	07:11	17:36 (AL07)	06:47
	20:24	4	20:00 (AL06)	19:50	19:00	18:12	16:36
20	05:42	19:56 (AL06)	06:11	06:41	07:12	17:36 (AL07)	06:48
	20:23	3	19:59 (AL06)	19:49	18:59	18:10	16:36
21	05:42	19:55 (AL06)	06:12	06:42	07:13	17:36 (AL07)	06:49
	20:23	4	19:59 (AL06)	19:47	18:57	18:09	16:35
22	05:43	19:54 (AL06)	06:13	06:43	07:14	17:36 (AL07)	06:50
	20:22	3	19:57 (AL06)	19:46	18:55	18:07	16:34
23	05:44	19:54 (AL06)	06:14	06:44	07:15	17:36 (AL07)	06:51
	20:21	3	19:57 (AL06)	19:44	18:54	18:06	16:34
24	05:45	19:54 (AL06)	06:15	06:45	07:16	17:36 (AL07)	06:52
	20:20	2	19:56 (AL06)	19:43	18:52	18:05	16:33
25	05:46	19:54 (AL06)	06:16	06:46	06:17	16:36 (AL07)	06:53
	20:19	1	19:55 (AL06)	19:41	18:50	17:03	16:33
26	05:47	19:54 (AL06)	06:17	06:47	06:19	16:38 (AL07)	06:54
	20:19	1	19:55 (AL06)	19:40	18:49	17:02	16:32
27	05:48		06:18	06:48	06:20		06:56
	20:18		19:38	18:47	17:01		16:32
28	05:49		06:19	06:49	06:21		06:57
	20:17		19:36	18:45	16:59		16:31
29	05:50		06:20	06:50	06:22		06:58
	20:16		19:35	18:44	16:58		16:31
30	05:50		06:21	06:51	06:23		06:59
	20:15		19:33	18:42	16:57		16:31
31	05:51		06:22		06:24		07:20
	20:14		19:32		16:55		16:38
Potential sun hours	458		427	375	346	299	289
Total, worst case	102				367		
Sun reduction	0,45				0,60		
Oper. time red.	0,86				0,86		
Wind dir. red.	0,63				0,62		
Total reduction	0,25				0,32		
Total, real	25				118		

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 Albano - real case Shadow receptor: R19 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (6) Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:20 16:39	07:07 17:13	16:33 (AL06) 16:49 (AL06)	06:32 17:47	06:42 19:20	05:57 19:51	05:28 20:20	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	06:25 16:54	07:00 16:30	16:02 (AL06) 16:05 (AL06)
2	07:20 16:40	07:06 17:14	16:34 (AL06) 16:51 (AL06)	06:30 17:48	06:40 19:21	05:55 19:52	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	16:23 (AL06) 16:25 (AL06)	07:01 16:30
3	07:20 16:41	07:05 17:14	16:35 (AL06) 16:52 (AL06)	06:29 17:49	06:39 19:22	05:54 19:53	05:27 20:22	05:30 20:31	05:54 20:11	06:24 19:27	06:54 18:37	06:28 16:52	16:15 (AL06) 16:28 (AL06)	07:02 16:30
4	07:21 16:42	07:04 17:17	16:37 (AL06) 16:53 (AL06)	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:09	06:25 19:25	06:55 18:35	06:29 16:51	16:13 (AL06) 16:27 (AL06)	07:03 16:30
5	07:21 16:43	07:03 17:18	16:39 (AL06) 16:55 (AL06)	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:26 19:24	06:56 18:34	06:30 16:49	16:10 (AL06) 16:26 (AL06)	07:04 16:29
6	07:21 16:44	07:02 17:19	16:41 (AL06) 16:56 (AL06)	06:24 17:52	06:34 19:25	05:50 19:57	05:26 20:24	05:31 20:30	05:57 20:07	06:27 19:22	06:57 18:32	06:31 16:48	16:08 (AL06) 16:25 (AL06)	07:05 16:29
7	07:20 16:45	07:01 17:21	16:44 (AL06) 16:58 (AL06)	06:23 17:53	06:32 19:26	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:28 19:20	06:58 18:30	06:33 16:47	16:07 (AL06) 16:23 (AL06)	07:06 16:29
8	07:20 16:46	07:00 17:22	16:47 (AL06) 16:59 (AL06)	06:21 17:55	06:30 19:27	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	16:06 (AL06) 16:23 (AL06)	07:07 16:29
9	07:20 16:47	16:20 (AL06) 16:21 (AL06)	06:59 07:23	06:19 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:33 20:29	06:00 20:03	06:30 19:17	07:00 18:27	06:35 16:45	16:05 (AL06) 16:21 (AL06)	07:08 16:29
10	07:20 16:48	16:23 (AL06) 16:23 (AL06)	06:58 07:24	06:18 17:57	06:27 19:30	05:46 20:01	05:25 20:26	05:34 20:29	06:01 20:02	06:31 19:15	07:01 18:26	06:36 16:44	16:03 (AL06) 16:20 (AL06)	07:08 16:29
11	07:20 16:49	16:23 (AL06) 16:23 (AL06)	06:57 07:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	16:02 (AL06) 16:19 (AL06)	07:09 16:29
12	07:20 16:50	16:23 (AL06) 16:25 (AL06)	06:55 07:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:36 20:28	06:03 20:00	06:33 19:12	07:03 18:22	06:38 16:42	16:02 (AL06) 16:19 (AL06)	07:10 16:29
13	07:19 16:51	16:22 (AL06) 16:26 (AL06)	06:54 07:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:10	07:04 18:21	06:40 16:41	16:02 (AL06) 16:17 (AL06)	07:11 16:30
14	07:19 16:52	16:22 (AL06) 16:27 (AL06)	06:53 07:29	06:11 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:05 18:19	06:41 16:40	16:01 (AL06) 16:16 (AL06)	07:12 16:30
15	07:19 16:53	16:22 (AL06) 16:28 (AL06)	06:52 07:30	06:10 18:02	06:19 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:06 18:18	06:42 16:40	16:00 (AL06) 16:15 (AL06)	07:12 16:30
16	07:18 16:54	16:22 (AL06) 16:29 (AL06)	06:50 07:32	06:08 18:03	06:18 19:36	05:40 20:07	05:25 20:29	05:38 20:26	06:07 19:54	06:37 19:05	07:08 18:16	06:43 16:39	16:01 (AL06) 16:15 (AL06)	07:13 16:30
17	07:18 16:55	16:23 (AL06) 16:31 (AL06)	06:49 07:33	06:07 18:04	06:16 19:37	05:39 20:08	05:25 20:29	05:39 20:25	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	16:00 (AL06) 16:14 (AL06)	07:14 16:31
18	07:17 16:56	16:23 (AL06) 16:31 (AL06)	06:48 07:34	06:05 18:05	06:15 19:38	05:38 20:08	05:25 20:30	05:40 20:25	06:09 19:51	06:39 19:02	07:10 18:13	06:45 16:37	16:00 (AL06) 16:13 (AL06)	07:14 16:31
19	07:17 16:58	16:24 (AL06) 16:34 (AL06)	06:46 07:35	06:03 18:07	06:13 19:39	05:37 20:09	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:00	07:11 18:12	06:47 16:36	16:00 (AL06) 16:12 (AL06)	07:15 16:31
20	07:16 16:59	16:24 (AL06) 16:34 (AL06)	06:45 07:36	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:30	05:42 20:23	06:11 19:49	06:41 18:59	07:12 18:10	06:48 16:36	16:00 (AL06) 16:12 (AL06)	07:16 16:32
21	07:16 17:00	16:24 (AL06) 16:35 (AL06)	06:44 07:38	06:00 18:09	06:10 19:41	05:35 20:11	05:25 20:31	05:42 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	16:00 (AL06) 16:11 (AL06)	07:16 16:32
22	07:15 17:01	16:25 (AL06) 16:37 (AL06)	06:42 07:39	05:58 18:10	06:09 19:42	05:34 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:07	06:50 16:34	16:00 (AL06) 16:10 (AL06)	07:17 16:33
23	07:14 17:02	16:26 (AL06) 16:38 (AL06)	06:41 07:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	16:00 (AL06) 16:09 (AL06)	07:17 16:33
24	07:14 17:03	16:26 (AL06) 16:39 (AL06)	06:39 07:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	07:16 18:05	06:52 16:33	16:00 (AL06) 16:08 (AL06)	07:18 16:34
25	07:13 17:05	16:26 (AL06) 16:40 (AL06)	06:38 07:42	05:53 18:13	06:05 19:45	05:32 20:15	05:26 20:31	05:46 20:19	06:16 19:41	06:46 18:50	07:17 17:03	06:53 16:33	16:01 (AL06) 16:09 (AL06)	07:18 16:34
26	07:12 17:06	16:28 (AL06) 16:42 (AL06)	06:36 07:43	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:31	05:47 20:19	06:17 19:40	06:47 18:49	07:18 17:02	06:55 16:32	16:01 (AL06) 16:08 (AL06)	07:19 16:35
27	07:12 17:07	16:28 (AL06) 16:43 (AL06)	06:35 07:44	05:50 18:15	06:02 19:47	05:31 20:16	05:27 20:31	05:48 20:18	06:18 19:38	06:48 18:47	07:19 17:01	06:56 16:32	16:01 (AL06) 16:07 (AL06)	07:19 16:35
28	07:11 17:08	16:29 (AL06) 16:44 (AL06)	06:33 07:46	05:48 18:16	06:01 19:48	05:30 20:17	05:27 20:31	05:49 20:17	06:19 19:37	06:49 18:45	07:20 16:59	06:57 16:31	16:02 (AL06) 16:07 (AL06)	07:19 16:36
29	07:10 17:10	16:30 (AL06) 16:46 (AL06)	07:41 07:46	06:47 18:17	05:59 19:49	05:30 20:18	05:28 20:31	05:50 20:16	06:20 19:35	06:50 18:44	07:21 16:58	06:58 16:31	16:02 (AL06) 16:06 (AL06)	07:20 16:37
30	07:09 17:11	16:31 (AL06) 16:47 (AL06)	07:42 07:47	06:45 18:18	05:58 19:50	05:29 20:19	05:28 20:31	05:50 20:15	06:21 19:33	06:51 18:42	07:22 16:57	06:59 16:31	16:02 (AL06) 16:06 (AL06)	07:20 16:38
31	07:08 17:12	16:32 (AL06) 16:48 (AL06)	07:43 07:48	06:43 18:19	05:29 19:51	05:29 20:20	05:29 20:31	05:51 20:14	06:22 19:32	06:24 18:42	07:23 16:55	06:59 16:31	16:02 (AL06) 16:06 (AL06)	07:20 16:38
Potential sun hours	299	298		370	398	447	451	458	427	375	346	299		289
Total, worst case	222	123									344			7
Sun reduction	0.70	0.63									0.67			0.72
Oper. time red.	0.86	0.86									0.86			0.86
Wind dir. red.	0.64	0.64									0.64			0.64
Total reduction	0.38	0.35									0.37			0.39
Total, real	85	43									127			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)

SHADOW - Calendar

Calculation: WF Albano - real case Shadow receptor: R20 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (7)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

Table with columns for months (January to December) and rows for daily sunrise and sunset times (hh:mm) and operational time. 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

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

Project:

WF Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 15:20/4.0.531

SHADOW - Calendar

Calculation: WF Albano - real case Shadow receptor: R26 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:39 16:42	07:07 17:13 17:17	06:32 17:47 17:50	06:42 19:20 19:21	05:57 19:52 19:53	05:28 20:21 20:21	05:29 20:31 20:31	05:52 20:13 20:12	06:23 19:30 19:29	06:52 18:40 18:39	06:26 16:54 16:53	07:00 16:30 16:30
2	07:21 16:40 16:43	07:06 17:15 17:19	06:31 17:48 17:51	06:40 19:21 19:22	05:55 19:53 19:54	05:28 20:21 20:22	05:29 20:31 20:31	05:53 20:13 20:11	06:24 19:30 19:27	06:53 18:40 18:37	06:27 16:53 16:52	07:01 16:30 16:30
3	07:21 16:41 16:42	07:05 17:16 17:17	06:29 17:49 17:50	06:39 19:22 19:23	05:54 19:54 19:55	05:27 20:22 20:23	05:30 20:31 20:31	05:54 20:13 20:10	06:25 19:27 19:25	06:54 18:37 18:35	06:28 16:52 16:51	07:02 16:30 16:30
4	07:21 16:42 16:43	07:04 17:17 17:18	06:27 17:50 17:51	06:37 19:23 19:24	05:53 19:55 19:56	05:27 20:23 20:23	05:30 20:31 20:31	05:55 20:10 05:56	06:26 19:24 19:24	06:55 18:34 18:34	06:29 16:51 16:50	07:03 16:30 16:29
5	07:21 16:43 16:44	07:03 17:18 17:19	06:26 17:51 17:52	06:35 19:24 19:26	05:52 19:56 19:57	05:27 20:23 20:24	05:31 20:31 20:31	05:56 20:08 05:57	06:27 19:24 19:22	06:56 18:34 18:32	06:30 16:50 16:48	07:04 16:29 16:29
6	07:21 16:44 16:45	07:02 17:19 17:21	06:24 17:52 17:54	06:34 19:26 19:27	05:50 19:57 19:58	05:26 20:24 20:25	05:31 20:31 20:30	05:57 20:07 05:58	06:27 19:22 06:28	06:57 18:32 06:58	06:31 16:48 06:33	07:05 16:29 07:06
7	07:21 16:45 16:46	07:01 17:21 17:22	06:23 17:54 17:55	06:32 19:27 19:28	05:49 19:58 19:59	05:26 20:25 20:25	05:32 20:30 20:30	05:58 20:06 05:59	06:28 19:21 06:29	06:58 18:31 06:59	06:33 16:47 16:46	07:06 16:29 16:29
8	07:21 16:46 16:47	07:00 17:22 17:23	06:21 17:55 17:56	06:31 19:28 19:29	05:48 19:59 20:00	05:26 20:25 20:26	05:33 20:30 20:30	05:59 20:05 20:04	06:29 19:19 19:17	06:59 18:29 18:27	06:34 16:46 16:45	07:07 16:29 16:29
9	07:20 16:47 16:48	06:59 17:23 17:24	06:20 17:56 17:57	06:29 19:29 19:30	05:47 20:00 20:01	05:26 20:26 20:26	05:33 20:30 20:29	06:00 20:04 20:02	06:30 19:17 19:16	07:00 18:27 18:26	06:35 16:45 16:44	07:08 16:29 16:29
10	07:20 16:48 16:49	06:58 17:24 17:26	06:18 17:57 17:58	06:27 19:30 19:31	05:46 20:01 20:02	05:25 20:26 20:27	05:34 20:29 20:29	06:01 20:02 20:01	06:31 19:16 19:14	07:01 18:26 18:24	06:36 16:44 16:43	07:09 16:29 16:29
11	07:20 16:49 16:50	06:57 17:26 17:27	06:16 17:58 17:59	06:26 19:31 19:32	05:45 20:02 20:03	05:25 20:27 20:28	05:35 20:29 20:28	06:02 20:01 20:00	06:32 19:14 19:12	07:02 18:24 18:23	06:37 16:43 16:42	07:09 16:29 16:29
12	07:20 16:50 16:51	06:55 17:27 17:28	06:15 17:59 18:00	06:24 19:32 19:33	05:44 20:03 20:04	05:25 20:28 20:28	05:35 20:29 20:28	06:03 20:00 19:58	06:33 19:12 19:11	07:03 18:21 18:21	06:39 16:42 16:41	07:10 16:29 16:30
13	07:19 16:51 16:52	06:54 17:28 17:29	06:13 18:00 18:01	06:23 19:33 19:34	05:43 20:04 20:05	05:25 20:28 20:28	05:36 20:28 20:27	06:04 19:57 19:57	06:34 19:11 19:09	07:04 18:21 18:19	06:40 16:41 16:40	07:11 16:30 16:30
14	07:19 16:52 16:53	06:53 17:29 17:30	06:12 18:01 18:02	06:21 19:34 19:35	05:42 20:05 20:06	05:25 20:28 20:29	05:37 20:27 20:27	06:05 20:04 06:06	06:35 19:09 19:07	07:06 18:19 18:18	06:41 16:40 16:40	07:12 16:30 16:30
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16	07:18 16:54 16:55	06:50 17:32 17:33	06:08 18:03 18:04	06:18 19:36 19:37	05:40 20:07 20:08	05:25 20:29 20:30	05:38 20:26 20:26	06:07 19:54 19:53	06:37 19:06 19:04	07:08 18:16 18:15	06:43 16:39 16:38	07:13 16:30 16:31
17	07:18 16:55 16:56	06:49 17:33 17:34	06:07 18:04 18:05	06:16 19:37 19:38	05:39 20:08 20:09	05:25 20:30 20:30	05:39 20:26 20:25	06:08 19:53 19:52	06:38 19:04 19:02	07:09 18:15 18:13	06:44 16:38 16:37	07:14 16:31 16:31
18	07:18 16:56 16:57	06:54 17:34 17:35	06:13 18:05 18:06	06:23 19:38 19:39	05:43 20:09 20:10	05:25 20:30 20:30	05:40 20:25 20:24	06:09 19:52 19:50	06:39 19:02 19:00	07:10 18:13 18:12	06:46 16:37 16:36	07:15 16:31 16:31
19	07:17 16:58 16:59	06:51 17:35 17:36	06:10 18:07 18:08	06:20 19:39 19:40	05:41 20:10 20:11	05:25 20:30 20:31	05:41 20:24 20:24	06:10 19:50 19:49	06:40 19:00 18:59	07:11 18:12 18:10	06:47 16:36 16:36	07:15 16:31 16:32
20	07:16 16:59 17:00	06:50 17:36 17:37	06:09 18:08 18:09	06:19 19:40 19:41	05:40 20:11 20:12	05:25 20:31 20:32	05:42 20:24 20:23	06:12 19:49 19:47	06:42 18:59 18:57	07:13 18:10 18:09	06:49 16:36 16:35	07:16 16:32 16:32
21	07:16 17:00 17:01	06:50 17:37 17:38	06:08 18:09 18:10	06:18 19:41 19:42	05:39 20:12 20:13	05:25 20:32 20:32	05:43 20:23 20:22	06:13 19:47 19:46	06:43 18:57 18:55	07:14 18:09 18:08	06:50 16:35 16:34	07:17 16:32 16:33
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23	07:15 17:02 17:03	06:50 17:39 17:40	06:07 18:11 18:12	06:17 19:43 19:44	05:38 20:14 20:15	05:25 20:34 20:34	05:45 20:21 20:20	06:15 19:43 19:41	06:45 18:52 18:50	07:16 18:05 18:03	06:52 16:33 16:33	07:18 16:34 16:34
24	07:14 17:04 17:05	06:49 17:40 17:41	06:06 18:12 18:13	06:16 19:44 19:45	05:37 20:15 20:16	05:25 20:35 20:35	05:46 20:20 20:19	06:16 19:41 19:40	06:46 18:51 18:49	07:17 18:04 18:02	06:53 16:33 16:32	07:19 16:34 16:35
25	07:13 17:05 17:06	06:48 17:41 17:42	06:05 18:13 18:14	06:15 19:45 19:46	05:36 20:16 20:17	05:25 20:36 20:36	05:47 20:19 20:18	06:17 19:40 19:38	06:47 18:49 18:47	07:18 18:03 18:01	06:54 16:33 16:32	07:20 16:35 16:36
26	07:13 17:06 17:07	06:47 17:42 17:43	06:04 18:14 18:15	06:14 19:46 19:47	05:35 20:17 20:18	05:25 20:37 20:37	05:48 20:18 20:17	06:18 19:39 19:37	06:48 18:48 18:45	07:19 18:02 18:00	06:55 16:32 16:31	07:21 16:36 16:37
27	07:12 17:07 17:08	06:46 17:43 17:44	06:03 18:15 18:16	06:13 19:47 19:48	05:34 20:18 20:19	05:25 20:38 20:38	05:49 20:17 20:16	06:19 19:38 19:35	06:49 18:47 18:44	07:20 18:01 17:59	06:56 16:31 16:30	07:22 16:37 16:37
28	07:11 17:08 17:09	06:45 17:44 17:45	06:02 18:16 18:17	06:12 19:48 19:49	05:33 20:19 20:20	05:25 20:39 20:39	05:51 20:16 20:15	06:21 19:36 19:33	06:51 18:44 18:42	06:59 18:00 17:57	06:59 16:31 16:30	07:23 16:38 16:38
29	07:10 17:10 17:11	06:44 17:45 17:46	06:01 18:17 18:18	06:11 19:49 19:50	05:32 20:20 20:21	05:25 20:40 20:40	05:52 20:15 20:14	06:22 19:34 19:32	06:24 18:43 18:41	06:58 17:56 17:54	06:59 16:30 16:29	07:24 16:39 16:39
30	07:09 17:11 17:12	06:43 17:46 17:47	06:00 18:18 18:19	06:10 19:50 19:51	05:31 20:21 20:22	05:25 20:41 20:41	05:53 20:14 20:13	06:23 19:33 19:31	06:25 18:42 18:40	06:57 17:55 17:53	06:59 16:29 16:28	07:25 16:40 16:40
31	07:08 17:12 17:13	06:42 17:47 17:48	05:59 18:19 18:20	06:09 19:51 19:52	05:30 20:22 20:23	05:25 20:42 20:42	05:54 20:13 20:12	06:24 19:32 19:30	06:26 18:41 18:39	06:56 17:54 17:52	06:59 16:28 16:27	07:26 16:41 16:41
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
Total, worst case	27										29	
Sun reduction	0,70										0,67	
Oper. time red.	0,86										0,86	
Wind dir. red.	0,64										0,64	
Total reduction	0,38										0,37	
Total, real	10										11	

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 Albano - real case Shadow receptor: R30 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	January	February	March	April	May	June
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	18:37 (AL03) 20:21
2	07:21 16:40	07:06 17:15	06:30 17:48	06:40 19:21	05:55 19:53	18:37 (AL03) 20:21
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	18:37 (AL03) 20:22
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	18:37 (AL03) 20:23
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	18:38 (AL03) 20:23
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:25	05:50 19:57	18:38 (AL03) 20:24
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	18:39 (AL03) 20:25
8	07:20 16:46	07:00 17:22	06:21 17:55	17:32 (AL02) 19:28	06:31 19:29	18:50 (AL03) 20:25
9	07:20 16:47	06:59 17:23	06:20 17:56	17:32 (AL02) 19:29	06:29 19:30	18:48 (AL03) 20:26
10	07:20 16:48	06:58 17:24	06:18 17:57	17:33 (AL02) 19:30	06:27 19:31	18:47 (AL03) 20:26
11	07:20 16:49	06:57 17:26	06:16 17:58	17:33 (AL02) 19:31	06:26 19:32	18:45 (AL03) 20:27
12	07:20 16:50	06:55 17:27	06:15 17:59	17:33 (AL02) 19:32	06:24 19:33	18:45 (AL03) 20:27
13	07:19 16:51	06:54 17:28	06:13 18:00	17:36 (AL02) 19:33	06:23 19:34	18:43 (AL03) 20:28
14	07:19 16:52	06:53 17:29	06:12 18:01	17:40 (AL02) 19:34	06:21 19:35	18:43 (AL03) 20:28
15	07:19 16:53	06:52 17:30	06:10 18:02	06:20 19:35	06:20 19:36	18:44 (AL03) 20:29
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	06:18 19:37	18:45 (AL03) 20:29
17	07:18 16:55	06:49 17:33	06:07 18:04	06:16 19:37	06:16 19:38	18:46 (AL03) 20:30
18	07:17 16:57	06:48 17:34	06:05 18:06	06:15 19:38	06:15 19:39	18:47 (AL03) 20:30
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	06:13 19:40	18:47 (AL03) 20:30
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	06:12 19:41	18:49 (AL03) 20:30
21	07:16 17:00	06:44 17:38	06:00 18:09	06:10 19:41	06:10 19:42	18:50 (AL03) 20:31
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	06:09 19:43	18:51 (AL03) 20:31
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	06:08 19:44	18:52 (AL03) 20:31
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	06:06 19:45	18:54 (AL03) 20:31
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	06:05 19:46	18:55 (AL03) 20:31
26	07:12 17:06	06:36 17:43	05:52 18:14	06:03 19:46	06:03 19:47	18:57 (AL03) 20:31
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	06:02 19:48	18:59 (AL03) 20:32
28	07:11 17:08	06:34 17:46	05:48 18:16	06:01 19:48	06:01 19:49	19:01 (AL03) 20:32
29	07:10 17:10	06:47 19:17	06:47 19:17	05:59 19:49	05:59 19:50	19:04 (AL03) 20:32
30	07:09 17:11	06:45 19:18	06:45 19:18	05:58 19:50	05:58 19:51	19:07 (AL03) 20:32
31	07:08 17:12	06:44 19:19	06:44 19:19	05:57 20:20	05:57 20:21	19:17 (AL03) 20:32
Potential sun hours	299	298	370	398	447	451
Total, worst case			21	882		1361
Sun reduction			0,56	0,50		0,46
Oper. time red.			0,86	0,86		0,86
Wind dir. red.			0,63	0,63		0,63
Total reduction			0,31	0,27		0,25
Total, real			6	241		341

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 Albano - real case Shadow receptor: R30 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	July	August	September	October	November	December
1	05:29 20:31	05:52 20:13	18:51 (AL03) 06:23	18:44 (AL03) 06:52	18:14 (AL02) 06:26	07:00 16:30
2	05:29 20:31	05:53 20:12	18:51 (AL03) 06:24	18:45 (AL03) 06:53	18:12 (AL02) 06:27	07:01 16:30
3	05:30 20:31	05:54 20:11	18:50 (AL03) 06:25	18:46 (AL03) 06:54	18:10 (AL02) 06:28	07:02 16:30
4	05:30 20:31	05:55 20:10	18:49 (AL03) 06:26	18:47 (AL03) 06:55	18:09 (AL02) 06:29	07:03 16:30
5	05:31 20:31	05:56 20:08	18:49 (AL03) 06:27	18:48 (AL03) 06:56	18:09 (AL02) 06:30	07:04 16:29
6	05:31 20:31	05:57 20:07	18:48 (AL03) 06:27	18:50 (AL03) 06:57	18:08 (AL02) 06:31	07:05 16:29
7	05:32 20:30	05:58 20:06	18:48 (AL03) 06:28	18:51 (AL03) 06:58	18:09 (AL02) 06:33	07:06 16:29
8	05:33 20:30	05:59 20:05	18:47 (AL03) 06:29	18:53 (AL03) 06:59	18:09 (AL02) 06:34	07:07 16:29
9	05:33 20:30	06:00 20:04	18:47 (AL03) 06:30	18:57 (AL03) 07:00	18:09 (AL02) 06:35	07:08 16:29
10	05:34 20:29	06:01 20:02	18:46 (AL03) 06:31	19:00 (AL03) 07:01	18:09 (AL02) 06:36	07:09 16:29
11	05:35 20:29	06:02 20:01	18:46 (AL03) 06:32	19:02 (AL03) 07:02	18:09 (AL02) 06:37	07:09 16:29
12	05:35 20:28	06:03 20:00	18:45 (AL03) 06:33	19:04 (AL03) 07:03	18:09 (AL02) 06:39	07:10 16:29
13	05:36 20:28	19:17 (AL03) 06:04	18:44 (AL03) 06:34	19:06 (AL03) 07:04	18:09 (AL02) 06:40	07:11 16:30
14	05:37 20:27	19:22 (AL03) 06:05	18:44 (AL03) 06:35	19:08 (AL03) 07:05	18:09 (AL02) 06:41	07:12 16:30
15	05:38 20:27	19:27 (AL03) 06:06	18:43 (AL03) 06:36	19:10 (AL03) 07:07	18:09 (AL02) 06:42	07:13 16:30
16	05:38 20:26	19:30 (AL03) 06:07	18:43 (AL03) 06:37	19:12 (AL03) 07:08	18:09 (AL02) 06:43	07:13 16:30
17	05:39 20:26	19:33 (AL03) 06:08	18:43 (AL03) 06:38	19:14 (AL03) 07:09	18:09 (AL02) 06:44	07:14 16:31
18	05:40 20:25	19:34 (AL03) 06:09	18:43 (AL03) 06:39	19:16 (AL03) 07:10	18:09 (AL02) 06:46	07:15 16:31
19	05:41 20:24	19:36 (AL03) 06:10	18:42 (AL03) 06:40	19:18 (AL03) 07:11	18:09 (AL02) 06:47	07:15 16:31
20	05:42 20:24	19:38 (AL03) 06:11	18:42 (AL03) 06:41	19:20 (AL03) 07:12	18:09 (AL02) 06:48	07:16 16:32
21	05:42 20:23	19:39 (AL03) 06:12	18:42 (AL03) 06:42	19:22 (AL03) 07:13	18:09 (AL02) 06:49	07:16 16:32
22	05:43 20:22	19:41 (AL03) 06:13	18:42 (AL03) 06:43	19:24 (AL03) 07:14	18:09 (AL02) 06:50	07:17 16:33
23	05:44 20:21	19:42 (AL03) 06:14	18:42 (AL03) 06:44	19:26 (AL03) 07:15	18:09 (AL02) 06:51	07:17 16:33
24	05:45 20:20	19:44 (AL03) 06:15	18:42 (AL03) 06:45	19:28 (AL03) 07:16	18:09 (AL02) 06:52	07:18 16:34
25	05:46 20:20	19:44 (AL03) 06:16	18:43 (AL03) 06:46	19:30 (AL03) 07:18	18:09 (AL02) 06:54	07:18 16:34
26	05:47 20:19	19:45 (AL03) 06:17	18:43 (AL03) 06:47	19:32 (AL03) 07:19	18:09 (AL02) 06:55	07:19 16:35
27	05:48 20:18	19:46 (AL03) 06:18	18:43 (AL03) 06:48	19:34 (AL03) 07:20	18:09 (AL02) 06:56	07:19 16:36
28	05:49 20:17	19:47 (AL03) 06:19	18:43 (AL03) 06:49	19:36 (AL03) 07:21	18:09 (AL02) 06:57	07:19 16:36
29	05:50 20:16	19:48 (AL03) 06:20	18:43 (AL03) 06:50	19:38 (AL03) 07:22	18:09 (AL02) 06:58	07:20 16:37
30	05:51 20:15	19:49 (AL03) 06:21	18:43 (AL03) 06:51	19:40 (AL03) 07:23	18:16 (AL02) 06:59	07:20 16:38
31	05:51 20:14	19:50 (AL03) 06:22	18:44 (AL03) 06:52	19:42 (AL03) 07:24	18:20 (AL02) 07:00	07:20 16:38
Potential sun hours	458	427	375	346	299	289
Total, worst case	727	1427	120	20		
Sun reduction	0,45	0,49	0,54	0,60		
Oper. time red.	0,86	0,86	0,86	0,86		
Wind dir. red.	0,63	0,63	0,63	0,63		
Total reduction	0,25	0,26	0,29	0,33		
Total, real	178	375	35	7		

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

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

SHADOW - Calendar

Calculation: WF Albano - real case Shadow receptor: R31 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	19:13 (AL03) 20:21
2	07:21 16:40	07:06 17:15	06:30 17:48	06:40 19:21	16 05:55	19:29 (AL03) 20:21
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	18 05:54	19:12 (AL03) 20:21
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	21 05:53	19:09 (AL03) 20:22
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	23 05:52	19:30 (AL03) 20:22
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:25	26 05:50	19:08 (AL03) 20:23
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	27 05:49	19:07 (AL03) 20:24
8	07:20 16:46	07:00 17:22	06:21 17:55	06:31 19:28	29 05:48	19:06 (AL03) 20:25
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	31 05:47	19:05 (AL03) 20:25
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	32 05:46	19:04 (AL03) 20:26
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	34 05:45	19:03 (AL03) 20:26
12	07:20 16:50	06:55 17:27	06:15 17:59	17:37 (AL02) 19:32	36 05:44	19:39 (AL03) 20:27
13	07:19 16:51	06:54 17:28	06:13 18:00	17:37 (AL02) 19:33	37 05:43	19:03 (AL03) 20:27
14	07:19 16:52	06:53 17:29	06:12 18:01	17:38 (AL02) 19:34	39 05:42	19:40 (AL03) 20:28
15	07:19 16:53	06:52 17:30	06:10 18:02	17:40 (AL02) 19:35	39 05:41	19:02 (AL03) 20:28
16	07:18 16:54	06:50 17:32	06:08 18:03	17:41 (AL02) 19:36	41 05:40	19:41 (AL03) 20:29
17	07:18 16:55	06:49 17:33	06:07 18:04	17:37 (AL02) 19:37	42 05:39	19:01 (AL03) 20:29
18	07:17 16:57	06:48 17:34	06:05 18:06	17:43 (AL02) 19:38	43 05:38	19:44 (AL03) 20:30
19	07:17 16:58	06:46 17:35	06:03 18:07	17:38 (AL02) 19:39	45 05:37	19:00 (AL03) 20:30
20	07:16 16:59	06:45 17:36	06:02 18:08	17:44 (AL02) 19:40	45 05:36	19:45 (AL03) 20:31
21	07:16 17:00	06:44 17:38	06:00 18:09	17:41 (AL02) 19:41	46 05:35	19:01 (AL03) 20:31
22	07:15 17:01	06:42 17:39	05:58 18:10	17:46 (AL02) 19:42	47 05:34	19:47 (AL03) 20:31
23	07:15 17:02	06:41 17:40	05:57 18:11	17:44 (AL02) 19:43	48 05:33	19:00 (AL03) 20:31
24	07:14 17:04	06:39 17:41	05:55 18:12	17:44 (AL02) 19:44	49 05:32	19:49 (AL03) 20:31
25	07:13 17:05	06:38 17:42	05:53 18:13	17:44 (AL02) 19:45	50 05:31	19:00 (AL03) 20:31
26	07:12 17:06	06:36 17:43	05:52 18:14	17:46 (AL02) 19:46	50 05:30	19:50 (AL03) 20:31
27	07:12 17:07	06:35 17:45	05:50 18:15	17:46 (AL02) 19:47	51 05:29	19:00 (AL03) 20:31
28	07:11 17:08	06:34 17:46	05:48 18:16	17:46 (AL02) 19:48	52 05:28	19:21 (AL03) 20:32
29	07:10 17:10	06:33 17:47	05:46 18:17	17:46 (AL02) 19:49	53 05:27	19:48 (AL03) 20:32
30	07:09 17:11	06:32 17:48	05:45 18:18	17:46 (AL02) 19:50	53 05:26	19:16 (AL03) 20:32
31	07:08 17:12	06:31 17:49	05:44 18:19	17:46 (AL02) 19:51	54 05:25	19:26 (AL03) 20:32
Potential sun hours	299	298	370	398	447	451
Total, worst case			35	36	1231	1750
Sun reduction			0,56	0,50	0,46	0,45
Oper. time red.			0,86	0,86	0,86	0,86
Wind dir. red.			0,64	0,63	0,63	0,63
Total reduction			0,31	0,27	0,25	0,24
Total, real			11	10	310	423

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 Albano - real case Shadow receptor: R31 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	July	August	September	October	November	December						
1	05:29	19:07 (AL03)	05:52	19:13 (AL03)	06:23	06:52	18:17 (AL02)	06:26	07:00			
	20:31	59	20:06 (AL03)	20:13	36	19:49 (AL03)	19:30	18:40	1	18:18 (AL02)	16:54	16:30
2	05:29	19:08 (AL03)	05:53	19:13 (AL03)	06:24	06:53	06:27	06:27	07:01			
	20:31	58	20:06 (AL03)	20:12	35	19:48 (AL03)	19:29	18:39	16:53	16:30		
3	05:30	19:08 (AL03)	05:54	19:14 (AL03)	06:25	06:54	06:28	07:02				
	20:31	58	20:06 (AL03)	20:11	33	19:47 (AL03)	19:27	18:37	16:52	16:30		
4	05:30	19:08 (AL03)	05:55	19:14 (AL03)	06:26	06:55	06:29	07:03				
	20:31	58	20:06 (AL03)	20:10	32	19:46 (AL03)	19:25	18:35	16:51	16:30		
5	05:31	19:08 (AL03)	05:56	19:15 (AL03)	06:27	06:56	06:30	07:04				
	20:31	57	20:05 (AL03)	20:08	30	19:45 (AL03)	19:24	18:34	16:50	16:29		
6	05:31	19:08 (AL03)	05:57	19:16 (AL03)	06:27	06:57	06:31	07:05				
	20:31	58	20:06 (AL03)	20:07	28	19:44 (AL03)	19:22	18:32	16:48	16:29		
7	05:32	19:09 (AL03)	05:58	19:17 (AL03)	06:28	06:58	06:33	07:06				
	20:30	57	20:06 (AL03)	20:06	26	19:43 (AL03)	19:21	18:31	16:47	16:29		
8	05:33	19:08 (AL03)	05:59	19:17 (AL03)	06:29	06:59	06:34	07:07				
	20:30	57	20:05 (AL03)	20:05	25	19:42 (AL03)	19:19	18:29	16:46	16:29		
9	05:33	19:09 (AL03)	06:00	19:18 (AL03)	06:30	07:00	06:35	07:08				
	20:30	56	20:05 (AL03)	20:04	23	19:41 (AL03)	19:17	18:27	16:45	16:29		
10	05:34	19:08 (AL03)	06:01	19:19 (AL03)	06:31	07:01	06:36	07:09				
	20:29	56	20:04 (AL03)	20:02	21	19:40 (AL03)	19:16	18:26	16:44	16:29		
11	05:35	19:09 (AL03)	06:02	19:21 (AL03)	06:32	07:02	06:37	07:09				
	20:29	55	20:04 (AL03)	20:01	18	19:39 (AL03)	19:14	18:24	16:43	16:29		
12	05:35	19:09 (AL03)	06:03	19:22 (AL03)	06:33	07:03	06:39	07:10				
	20:28	55	20:04 (AL03)	20:00	15	19:37 (AL03)	19:12	18:23	16:42	16:29		
13	05:36	19:09 (AL03)	06:04	19:22 (AL03)	06:34	07:04	06:40	07:11				
	20:28	55	20:04 (AL03)	19:58	13	19:35 (AL03)	19:11	18:21	16:41	16:30		
14	05:37	19:09 (AL03)	06:05	19:24 (AL03)	06:35	07:05	06:41	07:12				
	20:27	53	20:02 (AL03)	19:57	10	19:34 (AL03)	19:09	18:19	16:40	16:30		
15	05:38	19:09 (AL03)	06:06	19:26 (AL03)	06:36	07:07	06:42	07:13				
	20:27	53	20:02 (AL03)	19:56	7	19:33 (AL03)	19:07	18:18	16:40	16:30		
16	05:38	19:10 (AL03)	06:07	19:28 (AL03)	06:37	07:08	06:43	07:13				
	20:26	52	20:02 (AL03)	19:54	3	19:31 (AL03)	19:06	18:16	16:39	16:30		
17	05:39	19:09 (AL03)	06:08	19:29 (AL03)	06:38	07:09	06:44	07:14				
	20:26	52	20:01 (AL03)	19:53		19:04	18:15	16:38	16:31			
18	05:40	19:09 (AL03)	06:09	19:30 (AL03)	06:39	07:10	06:46	07:15				
	20:25	51	20:00 (AL03)	19:52		19:02	18:13	16:37	16:31			
19	05:41	19:10 (AL03)	06:10	19:31 (AL03)	06:40	07:11	06:47	07:15				
	20:24	50	20:00 (AL03)	19:50		19:00	18:12	16:36	16:31			
20	05:42	19:10 (AL03)	06:11	19:32 (AL03)	06:41	07:12	06:48	07:16				
	20:24	49	19:59 (AL03)	19:49		18:59	18:10	16:36	16:32			
21	05:42	19:10 (AL03)	06:12	19:33 (AL03)	06:42	07:13	06:49	07:16				
	20:23	49	19:59 (AL03)	19:47		18:57	18:09	16:35	16:32			
22	05:43	19:11 (AL03)	06:13	19:34 (AL03)	06:43	07:14	06:50	07:17				
	20:22	47	19:58 (AL03)	19:46		18:55	18:08	16:34	16:33			
23	05:44	19:10 (AL03)	06:14	19:35 (AL03)	06:44	07:15	06:51	07:17				
	20:21	47	19:57 (AL03)	19:44		18:54	18:06	16:34	16:33			
24	05:45	19:10 (AL03)	06:15	19:36 (AL03)	06:45	5	18:25 (AL02)	07:16	06:52	07:18		
	20:20	46	19:56 (AL03)	19:43		18:52	18:05	16:33	16:34			
25	05:46	19:11 (AL03)	06:16	19:37 (AL03)	06:46	6	18:22 (AL02)	06:18	06:54	07:18		
	20:20	44	19:55 (AL03)	19:41		18:50	6	18:28 (AL02)	17:03	16:33	16:34	
26	05:47	19:11 (AL03)	06:17	19:38 (AL03)	06:47	7	18:20 (AL02)	06:19	06:55	07:19		
	20:19	44	19:55 (AL03)	19:40		18:49	6	18:26 (AL02)	17:02	16:32	16:35	
27	05:48	19:11 (AL03)	06:18	19:39 (AL03)	06:48	8	18:19 (AL02)	06:20	06:56	07:19		
	20:18	43	19:54 (AL03)	19:38		18:47	6	18:25 (AL02)	17:01	16:32	16:36	
28	05:49	19:12 (AL03)	06:19	19:40 (AL03)	06:49	9	18:18 (AL02)	06:21	06:57	07:19		
	20:17	41	19:53 (AL03)	19:37		18:45	5	18:23 (AL02)	16:59	16:31	16:36	
29	05:50	19:12 (AL03)	06:20	19:41 (AL03)	06:50	10	18:17 (AL02)	06:22	06:58	07:20		
	20:16	41	19:53 (AL03)	19:35		18:44	4	18:21 (AL02)	16:58	16:31	16:37	
30	05:51	19:13 (AL03)	06:21	19:42 (AL03)	06:51	11	18:17 (AL02)	06:23	06:59	07:20		
	20:15	39	19:52 (AL03)	19:33		18:42	3	18:20 (AL02)	16:57	16:31	16:38	
31	05:51	19:12 (AL03)	06:22	19:43 (AL03)	06:52	12	18:16 (AL02)	06:24	07:00	07:20		
	20:14	38	19:50 (AL03)	19:32		18:41		16:55	16:38	16:38		
Potential sun hours	458		427		375		346		299		289	
Total, worst case	1578		355		35		1					
Sun reduction	0,45		0,49		0,54		0,60					
Oper. time red.	0,86		0,86		0,86		0,86					
Wind dir. red.	0,63		0,63		0,64		0,64					
Total reduction	0,25		0,26		0,29		0,33					
Total, real	388		94		10		0					

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 Albano - real case Shadow receptor: R35 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (12)
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	18:49 (AL02) 19:52	05:57 20:21	05:28 20:31	05:29 20:13	05:52 19:30	06:23 18:40	06:26 16:54	07:00 16:30
2	07:20 16:40	07:06 17:15	06:30 17:48	06:40 19:21	18:52 (AL02) 19:53	05:55 20:21	05:28 20:31	05:29 20:12	05:53 19:29	06:24 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	18:59 (AL02) 19:53	05:54 20:22	05:27 20:31	05:30 20:11	05:54 19:27	06:25 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:25	06:27 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:28 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:25	05:50 19:57	05:26 20:24	05:32 20:31	05:57 20:07	06:27 19:22	06:28 18:32	06:31 16:48	07:05 16:29
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:28 19:21	06:29 18:31	06:33 16:47	07:06 16:29
8	07:20 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:30 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:33 20:30	06:00 20:04	06:30 19:17	06:30 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:25 20:26	05:34 20:29	06:01 20:02	06:31 19:16	18:46 (AL02) 18:51 (AL02)	07:01 18:26	16:45 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	18:42 (AL02) 18:52 (AL02)	07:02 18:24	06:37 16:43
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:35 20:28	06:03 20:00	06:33 19:12	18:40 (AL02) 18:51 (AL02)	07:03 18:23	06:39 16:42
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11	18:38 (AL02) 18:48 (AL02)	07:04 18:21	06:40 16:41
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	18:36 (AL02) 18:46 (AL02)	07:05 18:19	06:41 16:40
15	07:19 16:53	06:52 17:30	06:10 18:02	06:20 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	18:35 (AL02) 18:45 (AL02)	07:07 18:18	06:42 16:40
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	05:25 20:29	05:38 20:26	06:07 19:54	06:36 19:06	18:35 (AL02) 18:43 (AL02)	07:08 18:16	06:43 16:39
17	07:18 16:55	06:49 17:33	06:07 18:04	06:16 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	18:34 (AL02) 18:41 (AL02)	07:09 18:15	06:44 16:38
18	07:17 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	18:34 (AL02) 18:40 (AL02)	07:10 18:13	06:46 16:37
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	05:37 20:10	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:00	18:34 (AL02) 18:38 (AL02)	07:11 18:12	06:47 16:36
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:30	05:42 20:24	06:11 19:49	06:41 18:59	18:35 (AL02) 18:37 (AL02)	07:12 18:10	06:48 16:36
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	05:26 20:31	05:42 20:23	06:12 19:47	06:42 18:57	06:41 18:09	07:13 16:35	06:49 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	06:43 18:08	07:14 16:34	06:50 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	06:44 18:06	07:15 16:34	06:51 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	06:45 18:05	07:16 16:33	06:52 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	05:27 20:31	05:46 20:20	06:16 19:41	06:46 18:50	06:46 18:06	07:17 16:33	06:54 16:34
26	07:12 17:06	06:36 17:43	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:31	05:47 20:19	06:17 19:40	06:47 18:49	06:47 18:06	07:18 16:32	06:55 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	05:27 20:32	05:48 20:18	06:18 19:38	06:48 18:47	06:48 18:06	07:19 16:32	06:56 16:36
28	07:11 17:08	06:34 17:46	05:48 18:16	06:01 19:48	05:30 20:17	05:28 20:32	05:49 20:17	06:19 19:37	06:49 18:45	06:49 18:07	07:20 16:31	06:57 16:36
29	07:10 17:10	06:47 17:47	06:47 18:17	05:59 19:49	05:30 20:18	05:28 20:32	05:50 20:16	06:20 19:35	06:50 18:44	06:50 18:07	07:21 16:30	06:58 16:37
30	07:09 17:11	06:45 17:48	06:45 18:18	05:58 19:50	05:29 20:19	05:28 20:32	05:51 20:15	06:21 19:33	06:51 18:42	06:51 18:08	07:22 16:29	06:59 16:38
31	07:08 17:12	06:44 17:49	06:44 18:19	05:58 19:51	05:29 20:20	05:29 20:32	05:51 20:14	06:22 19:32	06:52 18:43	06:52 18:09	07:23 16:28	07:00 16:38
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
Total, worst case			65	17					83			
Sun reduction			0,56	0,50					0,54			
Oper. time red.			0,86	0,86					0,86			
Wind dir. red.			0,64	0,64					0,64			
Total reduction			0,31	0,28					0,30			
Total, real			20	5					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 Albano - real case Shadow receptor: R36a - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (13)
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:20	07:07	06:32	06:42	18:47 (AL02)	05:57	05:28	05:29	05:52	06:23	06:52	06:26	07:00	
	16:39	17:13	17:47	19:20	12	18:59 (AL02)	19:52	20:21	20:31	20:13	19:30	18:40	16:54	16:30
2	07:21	07:06	06:30	06:40	18:50 (AL02)	05:55	05:28	05:29	05:53	06:24	06:53	06:27	07:01	
	16:40	17:15	17:48	19:21	9	18:59 (AL02)	19:53	20:21	20:31	20:12	19:29	18:39	16:53	16:30
3	07:21	07:05	06:29	06:39	05:54	05:27	05:30	05:54	06:25	06:54	06:28	07:02		
	16:41	17:16	17:49	19:22	19:54	20:22	20:31	20:11	19:27	18:37	16:52	16:30		
4	07:21	07:04	06:27	06:37	05:53	05:27	05:30	05:55	06:26	06:55	06:29	07:03		
	16:42	17:17	17:50	19:23	19:55	20:23	20:31	20:10	19:25	18:35	16:51	16:30		
5	07:21	07:03	06:26	06:35	05:52	05:27	05:31	05:56	06:27	06:56	06:30	07:04		
	16:43	17:18	17:51	19:24	19:56	20:23	20:31	20:08	19:24	18:34	16:50	16:30		
6	07:21	07:02	06:24	06:34	05:50	05:26	05:32	05:57	06:27	06:57	06:31	07:05		
	16:44	17:19	17:52	19:25	19:57	20:24	20:31	20:07	19:22	18:32	16:48	16:29		
7	07:21	07:01	06:23	06:32	05:49	05:26	05:32	05:58	06:28	06:58	06:33	07:06		
	16:45	17:21	17:54	19:27	19:58	20:25	20:30	20:06	19:21	18:31	16:47	16:29		
8	07:20	07:00	06:21	06:31	05:48	05:26	05:33	05:59	06:29	06:59	06:34	07:07		
	16:46	17:22	17:55	19:28	19:59	20:25	20:30	20:05	19:19	18:29	16:46	16:29		
9	07:20	06:59	06:20	06:29	05:47	05:26	05:33	06:00	06:30	07:00	06:35	07:08		
	16:47	17:23	17:56	19:29	20:00	20:26	20:30	20:04	19:17	18:27	16:45	16:29		
10	07:20	06:58	06:18	06:27	05:46	05:25	05:34	06:01	06:31	18:44 (AL02)	07:01	06:36	07:09	
	16:48	17:24	17:57	19:30	20:01	20:26	20:29	20:02	19:16	7	18:51 (AL02)	18:26	16:44	16:29
11	07:20	06:57	06:16	06:26	05:45	05:25	05:35	06:02	06:32	18:41 (AL02)	07:02	06:37	07:09	
	16:49	17:26	17:58	19:31	20:02	20:27	20:29	20:01	19:14	11	18:52 (AL02)	18:24	16:43	16:29
12	07:20	06:55	06:15	06:24	05:44	05:25	05:35	06:03	06:33	18:39 (AL02)	07:03	06:39	07:10	
	16:50	17:27	17:59	19:32	20:03	20:27	20:28	20:00	19:12	12	18:51 (AL02)	18:23	16:42	16:29
13	07:19	06:54	06:13	06:23	05:43	05:25	05:36	06:04	06:34	18:36 (AL02)	07:04	06:40	07:11	
	16:51	17:28	18:00	19:33	20:04	20:28	20:28	19:58	19:11	12	18:48 (AL02)	18:21	16:41	16:30
14	07:19	06:53	06:12	06:21	05:42	05:25	05:37	06:05	06:35	18:35 (AL02)	07:05	06:41	07:12	
	16:52	17:29	18:01	19:34	20:05	20:28	20:27	19:57	19:09	11	18:46 (AL02)	18:19	16:40	16:30
15	07:19	06:52	06:10	06:20	05:41	05:25	05:38	06:06	06:36	18:34 (AL02)	07:07	06:42	07:13	
	16:53	17:30	18:02	19:35	20:06	20:29	20:27	19:56	19:07	11	18:45 (AL02)	18:18	16:40	16:30
16	07:18	06:50	06:08	06:18	05:40	05:25	05:38	06:07	06:37	18:34 (AL02)	07:08	06:43	07:13	
	16:54	17:32	18:03	19:36	20:07	20:29	20:26	19:54	19:06	9	18:43 (AL02)	18:16	16:39	16:30
17	07:18	06:49	06:07	06:16	05:39	05:25	05:39	06:08	06:38	18:33 (AL02)	07:09	06:44	07:14	
	16:55	17:33	18:04	19:37	20:08	20:30	20:26	19:53	19:04	8	18:41 (AL02)	18:15	16:38	16:31
18	07:17	06:48	06:05	06:15	05:38	05:25	05:40	06:09	06:39	18:33 (AL02)	07:10	06:46	07:15	
	16:57	17:34	18:06	19:38	20:09	20:30	20:25	19:52	19:02	7	18:40 (AL02)	18:13	16:37	16:31
19	07:17	06:46	06:03	06:13	05:37	05:25	05:41	06:10	06:40	18:33 (AL02)	07:11	06:47	07:15	
	16:58	17:35	18:07	19:39	20:10	20:30	20:24	19:50	19:00	5	18:38 (AL02)	18:12	16:36	16:31
20	07:16	06:45	06:02	06:12	05:36	05:25	05:42	06:11	06:41	18:34 (AL02)	07:12	06:48	07:16	
	16:59	17:36	18:08	19:40	20:10	20:30	20:24	19:49	18:59	3	18:37 (AL02)	18:10	16:36	16:32
21	07:16	06:44	06:00	06:11	05:35	05:26	05:42	06:12	06:42	18:34 (AL02)	07:13	06:49	07:16	
	17:00	17:38	18:09	19:41	20:11	20:31	20:23	19:47	18:57	1	18:35 (AL02)	18:09	16:35	16:32
22	07:15	06:42	05:58	06:09	05:35	05:26	05:43	06:13	06:43		07:14	06:50	07:17	
	17:01	17:39	18:10	19:42	20:12	20:31	20:22	19:46	18:55		18:08	16:34	16:33	
23	07:15	06:41	05:57	17:47 (AL02)	06:08	05:34	05:26	05:44	06:14	06:44	07:15	06:51	07:17	
	17:02	17:40	18:11	3	17:50 (AL02)	20:13	20:31	20:21	19:44	18:54	18:06	16:34	16:33	
24	07:14	06:39	05:55	17:46 (AL02)	06:06	05:33	05:26	05:45	06:15	06:45	07:16	06:52	07:18	
	17:04	17:41	18:12	5	17:51 (AL02)	20:14	20:31	20:20	19:43	18:52	18:05	16:33	16:34	
25	07:13	06:38	05:53	17:46 (AL02)	06:05	05:32	05:27	05:46	06:16	06:46	06:18	06:54	07:18	
	17:05	17:42	18:13	6	17:52 (AL02)	20:15	20:31	20:20	19:41	18:50	17:03	16:33	16:34	
26	07:12	06:36	05:52	17:45 (AL02)	06:03	05:32	05:27	05:47	06:17	06:47	06:19	06:55	07:19	
	17:06	17:43	18:14	8	17:53 (AL02)	20:16	20:31	20:19	19:40	18:49	17:02	16:32	16:35	
27	07:12	06:35	05:50	17:44 (AL02)	06:02	05:31	05:27	05:48	06:18	06:48	06:20	06:56	07:19	
	17:07	17:45	18:15	10	17:54 (AL02)	20:17	20:32	20:18	19:38	18:47	17:01	16:32	16:36	
28	07:11	06:34	05:48	17:45 (AL02)	06:01	05:30	05:28	05:49	06:19	06:49	06:21	06:57	07:19	
	17:08	17:46	18:16	10	17:55 (AL02)	20:17	20:32	20:17	19:37	18:45	16:59	16:31	16:36	
29	07:10		06:47	18:45 (AL02)	05:59	05:30	05:28	05:50	06:20	06:50	06:22	06:58	07:20	
	17:10		19:17	11	18:56 (AL02)	20:18	20:32	20:16	19:35	18:44	16:58	16:31	16:37	
30	07:09		06:45	18:46 (AL02)	05:58	05:29	05:28	05:51	06:21	06:51	06:23	06:59	07:20	
	17:11		19:18	12	18:58 (AL02)	20:19	20:32	20:15	19:33	18:42	16:57	16:31	16:38	
31	07:08		06:44	18:46 (AL02)	05:57	05:29		05:51	06:22		06:24		07:20	
	17:12		19:19	12	18:58 (AL02)	20:20		20:14	19:32		16:56		16:38	
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289		
Total, worst case			77	21					97					
Sun reduction			0,56	0,50					0,54					
Oper. time red.			0,86	0,86					0,86					
Wind dir. red.			0,64	0,64					0,64					
Total reduction			0,31	0,28					0,30					
Total, real			24	6					29					

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

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

Calculation: WF Albano - real case Shadow receptor: R41 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June	
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	18 19:50 (AL02)
2	07:20 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 20:21	16 19:49 (AL02)
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:27 20:22	15 19:49 (AL02)
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	14 19:49 (AL02)
5	07:21 16:43	07:46 (AL06) 07:47 (AL06)	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	13 19:48 (AL02)
6	07:21 16:44	07:45 (AL06) 07:48 (AL06)	07:02 17:19	06:24 17:52	06:34 19:25	05:50 19:57	11 19:47 (AL02)
7	07:21 16:45	07:45 (AL06) 07:49 (AL06)	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	9 19:47 (AL02)
8	07:20 16:46	07:45 (AL06) 07:50 (AL06)	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	7 19:46 (AL02)
9	07:20 16:47	07:45 (AL06) 07:52 (AL06)	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	2 19:43 (AL02)
10	07:20 16:48	07:46 (AL06) 07:53 (AL06)	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	4 19:38 (AL02)
11	07:20 16:49	07:45 (AL06) 07:53 (AL06)	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	7 19:39 (AL02)
12	07:20 16:50	07:45 (AL06) 07:54 (AL06)	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	9 19:40 (AL02)
13	07:19 16:51	07:46 (AL06) 07:55 (AL06)	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	11 19:41 (AL02)
14	07:19 16:52	07:45 (AL06) 07:55 (AL06)	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	11 19:41 (AL02)
15	07:19 16:53	07:45 (AL06) 07:57 (AL06)	06:52 17:30	06:10 18:02	06:20 19:35	05:41 20:06	13 19:42 (AL02)
16	07:18 16:54	07:43 (AL06) 07:57 (AL06)	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	15 19:43 (AL02)
17	07:18 16:55	07:43 (AL06) 07:58 (AL06)	06:49 17:33	06:07 18:04	06:16 19:37	05:39 20:08	16 19:44 (AL02)
18	07:17 16:57	07:43 (AL06) 07:58 (AL06)	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	18 19:45 (AL02)
19	07:17 16:58	07:43 (AL06) 07:59 (AL06)	06:46 17:35	06:03 18:07	06:13 19:39	05:37 20:10	18 19:45 (AL02)
20	07:16 16:59	07:42 (AL06) 07:58 (AL06)	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	19 19:47 (AL02)
21	07:16 17:00	07:41 (AL06) 07:58 (AL06)	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	19 19:47 (AL02)
22	07:15 17:01	07:42 (AL06) 07:59 (AL06)	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	20 19:48 (AL02)
23	07:15 17:02	07:41 (AL06) 07:59 (AL06)	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	22 19:49 (AL02)
24	07:14 17:04	07:39 (AL06) 07:58 (AL06)	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	22 19:50 (AL02)
25	07:13 17:05	07:40 (AL06) 07:59 (AL06)	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	22 19:50 (AL02)
26	07:12 17:06	07:41 (AL06) 07:58 (AL06)	06:36 17:43	05:52 18:14	06:03 19:46	05:32 20:16	23 19:52 (AL02)
27	07:12 17:07	07:42 (AL06) 07:57 (AL06)	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	22 19:51 (AL02)
28	07:11 17:08	07:44 (AL06) 07:56 (AL06)	06:34 17:46	05:48 18:16	06:01 19:48	05:30 20:17	22 19:51 (AL02)
29	07:10 17:10	07:46 (AL06) 07:54 (AL06)		06:47 19:17	05:59 19:49	05:30 20:18	21 19:51 (AL02)
30	07:09 17:11		06:45 19:18	05:58 19:50	05:29 20:19	05:28 20:19	20 19:50 (AL02)
31	07:08 17:12		06:44 19:19		05:29 20:20	05:28 19:50 (AL02)	19 19:50 (AL02)
Potential sun hours	299	298	370	398	447	451	
Total, worst case	293				373		105
Sun reduction	0,70				0,46		0,45
Oper. time red.	0,86				0,86		0,86
Wind dir. red.	0,63				0,63		0,63
Total reduction	0,38				0,25		0,24
Total, real	110				94		25

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

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

Calculation: WF Albano - real case Shadow receptor: R41 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	July	August	September	October	November	December		
1	05:29	05:52	19:41 (AL02)	06:23	06:52	06:26	07:00	07:27 (AL06)
	20:31	20:13	8 19:49 (AL02)	19:30	18:40	16:54	16:30	8 07:35 (AL06)
2	05:29	05:53	19:43 (AL02)	06:24	06:53	06:27	07:01	07:28 (AL06)
	20:31	20:12	5 19:48 (AL02)	19:29	18:39	16:53	16:30	7 07:35 (AL06)
3	05:30	05:54	19:45 (AL02)	06:25	06:54	06:28	07:02	07:29 (AL06)
	20:31	20:11	2 19:47 (AL02)	19:27	18:37	16:52	16:30	6 07:35 (AL06)
4	05:30	19:45 (AL02) 05:55	06:26	06:55	06:29	06:29	07:03	07:30 (AL06)
	20:31	5 19:50 (AL02) 20:10	19:25	18:35	16:51	16:30	5 07:35 (AL06)	
5	05:31	19:43 (AL02) 05:56	06:27	06:56	06:30	07:04	07:30 (AL06)	
	20:31	8 19:51 (AL02) 20:08	19:24	18:34	16:50	16:30	4 07:34 (AL06)	
6	05:32	19:43 (AL02) 05:57	06:27	06:57	06:31	07:05	07:31 (AL06)	
	20:31	10 19:53 (AL02) 20:07	19:22	18:32	16:48	16:29	3 07:34 (AL06)	
7	05:32	19:43 (AL02) 05:58	06:28	06:58	06:33	07:06	07:32 (AL06)	
	20:30	11 19:54 (AL02) 20:06	19:21	18:31	16:47	16:29	1 07:33 (AL06)	
8	05:33	19:41 (AL02) 05:59	06:29	06:59	06:34	07:07		
	20:30	14 19:55 (AL02) 20:05	19:19	18:29	16:46	16:29		
9	05:33	19:41 (AL02) 06:00	06:30	07:00	06:35	07:08		
	20:30	15 19:56 (AL02) 20:04	19:17	18:27	16:45	16:29		
10	05:34	19:40 (AL02) 06:01	06:31	07:01	06:36	07:09		
	20:29	16 19:56 (AL02) 20:02	19:16	18:26	16:44	16:29		
11	05:35	19:40 (AL02) 06:02	06:32	07:02	06:37	07:09		
	20:29	17 19:57 (AL02) 20:01	19:14	18:24	16:43	16:29		
12	05:35	19:40 (AL02) 06:03	06:33	07:03	06:39	07:10		
	20:28	18 19:58 (AL02) 20:00	19:12	18:23	16:42	16:29		
13	05:36	19:40 (AL02) 06:04	06:34	07:04	06:40	07:11		
	20:28	19 19:59 (AL02) 19:58	19:11	18:21	16:41	8 07:26 (AL06)	16:30	
14	05:37	19:39 (AL02) 06:05	06:35	07:06	06:41	07:16 (AL06)	07:12	
	20:27	20 19:59 (AL02) 19:57	19:09	18:19	16:41	12 07:28 (AL06)	16:30	
15	05:38	19:39 (AL02) 06:06	06:36	07:07	06:42	07:15 (AL06)	07:13	
	20:27	21 20:00 (AL02) 19:56	19:07	18:18	16:40	15 07:30 (AL06)	16:30	
16	05:38	19:39 (AL02) 06:07	06:37	07:08	06:43	07:14 (AL06)	07:13	
	20:26	21 20:00 (AL02) 19:54	19:06	18:16	16:39	17 07:31 (AL06)	16:30	
17	05:39	19:39 (AL02) 06:08	06:38	07:09	06:44	07:13 (AL06)	07:14	
	20:26	22 20:01 (AL02) 19:53	19:04	18:15	16:38	19 07:32 (AL06)	16:31	
18	05:40	19:38 (AL02) 06:09	06:39	07:10	06:46	07:13 (AL06)	07:15	
	20:25	22 20:00 (AL02) 19:52	19:02	18:13	16:37	19 07:32 (AL06)	16:31	
19	05:41	19:38 (AL02) 06:10	06:40	07:11	06:47	07:16 (AL06)	07:15	
	20:24	22 20:00 (AL02) 19:50	19:00	18:12	16:37	18 07:34 (AL06)	16:31	
20	05:42	19:38 (AL02) 06:11	06:41	07:12	06:48	07:17 (AL06)	07:16	
	20:24	21 19:59 (AL02) 19:49	18:59	18:10	16:36	17 07:34 (AL06)	16:32	
21	05:43	19:38 (AL02) 06:12	06:42	07:13	06:49	07:17 (AL06)	07:16	
	20:23	21 19:59 (AL02) 19:47	18:57	18:09	16:35	17 07:34 (AL06)	16:32	
22	05:43	19:38 (AL02) 06:13	06:43	07:14	06:50	07:18 (AL06)	07:17	
	20:22	20 19:58 (AL02) 19:46	18:55	18:08	16:34	16 07:34 (AL06)	16:33	
23	05:44	19:37 (AL02) 06:14	06:44	07:15	06:51	07:19 (AL06)	07:17	
	20:21	20 19:57 (AL02) 19:44	18:54	18:06	16:34	16 07:35 (AL06)	16:33	
24	05:45	19:38 (AL02) 06:15	06:45	07:16	06:52	07:21 (AL06)	07:18	
	20:20	18 19:56 (AL02) 19:43	18:52	18:05	16:33	15 07:36 (AL06)	16:34	
25	05:46	19:38 (AL02) 06:16	06:46	06:18	06:54	07:21 (AL06)	07:18	
	20:20	17 19:55 (AL02) 19:41	18:50	17:03	16:33	15 07:36 (AL06)	16:34	
26	05:47	19:38 (AL02) 06:17	06:47	06:19	06:55	07:22 (AL06)	07:19	
	20:19	17 19:55 (AL02) 19:40	18:49	17:02	16:32	14 07:36 (AL06)	16:35	
27	05:48	19:39 (AL02) 06:18	06:48	06:20	06:56	07:24 (AL06)	07:19	
	20:18	15 19:54 (AL02) 19:38	18:47	17:01	16:32	12 07:36 (AL06)	16:36	
28	05:49	19:39 (AL02) 06:19	06:49	06:21	06:57	07:25 (AL06)	07:19	
	20:17	14 19:53 (AL02) 19:37	18:45	16:59	16:31	10 07:35 (AL06)	16:36	
29	05:50	19:40 (AL02) 06:20	06:50	06:22	06:58	07:26 (AL06)	07:20	
	20:16	12 19:52 (AL02) 19:35	18:44	16:58	16:31	9 07:35 (AL06)	16:37	
30	05:51	19:40 (AL02) 06:21	06:51	06:23	06:59	07:26 (AL06)	07:20	
	20:15	12 19:52 (AL02) 19:33	18:42	16:57	16:31	9 07:35 (AL06)	16:38	
31	05:51	19:40 (AL02) 06:22		06:24			07:20	
	20:14	10 19:50 (AL02) 19:32		16:56			16:38	
Potential sun hours	458	427	375	346	299	289		
Total, worst case	458	15			258		34	
Sun reduction	0,45	0,49			0,67		0,72	
Oper. time red.	0,86	0,86			0,86		0,86	
Wind dir. red.	0,63	0,63			0,63		0,63	
Total reduction	0,25	0,26			0,36		0,39	
Total, real	113	4			94		13	

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

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

WF Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 15:20/4.0.531

SHADOW - Calendar

Calculation: WF Albano - real case Shadow receptor: R43 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (15)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	18:16 (AL01) 05:57	05:28 20:21
2	07:21 16:40	07:06 17:15	06:31 17:48	06:40 19:21	18:16 (AL01) 05:55	05:28 20:21
3	07:21 16:41	07:06 17:16	06:29 17:49	06:39 19:22	18:15 (AL01) 05:54	05:27 20:22
4	07:21 16:42	07:05 17:17	06:27 17:50	06:37 19:23	18:15 (AL01) 05:53	05:27 20:23
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:25	18:16 (AL01) 05:52	05:27 20:23
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	18:16 (AL01) 05:51	05:26 20:24
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	18:17 (AL01) 05:49	05:26 20:25
8	07:21 16:46	07:00 17:22	06:21 17:55	06:31 19:28	18:17 (AL01) 05:48	05:26 20:25
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	18:17 (AL01) 05:47	05:26 20:26
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	18:19 (AL01) 05:46	05:25 20:26
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	18:20 (AL01) 05:45	05:25 20:27
12	07:20 16:50	06:56 17:27	06:15 17:59	06:24 19:32	18:22 (AL01) 05:44	05:25 20:28
13	07:20 16:51	06:54 17:28	06:13 18:00	06:23 19:33	18:25 (AL01) 05:43	05:25 20:28
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	18:29 (AL01) 05:42	05:25 20:28
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	20:05 05:41	05:25 20:28
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	20:06 05:40	05:25 20:29
17	07:18 16:55	06:49 17:33	06:07 18:05	06:17 19:37	20:07 05:39	05:25 20:30
18	07:18 16:57	06:48 17:34	06:05 18:06	06:15 19:38	20:08 05:38	05:25 20:30
19	07:17 16:58	06:46 17:35	06:03 18:07	06:14 19:39	20:09 05:37	05:25 20:30
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	20:10 05:36	05:25 20:31
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	20:11 05:35	05:26 20:31
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	20:12 05:34	05:26 20:31
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	20:13 05:33	05:26 20:31
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	20:14 05:32	05:26 20:31
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	20:15 05:31	05:27 20:31
26	07:13 17:06	06:37 17:43	05:52 18:14	06:03 19:46	20:16 05:30	05:27 20:32
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	20:17 05:29	05:27 20:32
28	07:11 17:08	06:34 17:46	05:49 18:16	06:01 19:48	20:18 05:28	05:28 20:32
29	07:10 17:10	06:47 19:17	06:47 19:17	18:17 (AL01) 05:59	05:30 20:18	05:28 20:32
30	07:09 17:11	06:45 19:18	06:45 19:18	18:18 (AL01) 05:58	05:29 20:19	05:28 20:32
31	07:08 17:12	06:44 19:19	06:44 19:19	18:19 (AL01) 05:51	05:29 20:20	05:29 20:32
Potential sun hours	299	298	370	398	447	451
Total, worst case			7	92		296
Sun reduction			0,56	0,50		0,45
Oper. time red.			0,86	0,86		0,86
Wind dir. red.			0,64	0,64		0,63
Total reduction			0,31	0,28		0,24
Total, real			2	26		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 Albano - real case Shadow receptor: R43 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	July	August	September	October	November	December		
1	05:29	19:16 (AL02)	05:52	06:23	18:19 (AL01)	06:52	06:26	07:00
	20:31	11 19:27 (AL02)	20:13	19:30	8 18:27 (AL01)	18:40	16:54	16:30
2	05:29	19:19 (AL02)	05:53	06:24	18:17 (AL01)	06:53	06:27	07:01
	20:31	8 19:27 (AL02)	20:12	19:29	8 18:25 (AL01)	18:39	16:53	16:30
3	05:30	19:21 (AL02)	05:54	06:25	18:15 (AL01)	06:54	06:28	07:02
	20:31	5 19:26 (AL02)	20:11	19:27	9 18:24 (AL01)	18:37	16:52	16:30
4	05:30		05:55	06:26	18:14 (AL01)	06:55	06:29	07:03
	20:31		20:10	19:26	9 18:23 (AL01)	18:35	16:51	16:30
5	05:31		05:56	06:27	18:13 (AL01)	06:56	06:30	07:04
	20:31		20:08	19:24	8 18:21 (AL01)	18:34	16:50	16:30
6	05:32		05:57	06:28	18:12 (AL01)	06:57	06:32	07:05
	20:31		20:07	19:22	8 18:20 (AL01)	18:32	16:49	16:29
7	05:32		05:58	06:29	18:11 (AL01)	06:58	06:33	07:06
	20:30		20:06	19:21	8 18:19 (AL01)	18:31	16:47	16:29
8	05:33		05:59	06:29	18:10 (AL01)	06:59	06:34	07:07
	20:30		20:05	19:19	7 18:17 (AL01)	18:29	16:46	16:29
9	05:33		06:00	06:30	18:10 (AL01)	07:00	06:35	07:08
	20:30		20:04	19:17	6 18:16 (AL01)	18:27	16:45	16:29
10	05:34		06:01	06:31	18:09 (AL01)	07:01	06:36	07:09
	20:29		20:02	19:16	6 18:15 (AL01)	18:26	16:44	16:29
11	05:35		06:02	06:32	18:09 (AL01)	07:02	06:37	07:09
	20:29		20:01	19:14	4 18:13 (AL01)	18:24	16:43	16:29
12	05:35		06:03	06:33	18:08 (AL01)	07:03	06:39	07:10
	20:28		20:00	19:12	4 18:12 (AL01)	18:23	16:42	16:30
13	05:36		06:04	06:34	18:08 (AL01)	07:04	06:40	07:11
	20:28		19:58	19:11	3 18:11 (AL01)	18:21	16:41	16:30
14	05:37		06:05	06:35	18:07 (AL01)	07:06	06:41	07:12
	20:27		19:57	19:09	1 18:08 (AL01)	18:20	16:41	16:30
15	05:38		06:06	06:36		07:07	06:42	07:13
	20:27		19:56	19:07		18:18	16:40	16:30
16	05:38		06:07	06:37		07:08	06:43	07:13
	20:26		19:54	19:06		18:16	16:39	16:30
17	05:39		06:08	06:38		07:09	06:44	07:14
	20:26		19:53	19:04		18:15	16:38	16:31
18	05:40		06:09	06:39		07:10	06:46	07:15
	20:25		19:52	19:02		18:13	16:37	16:31
19	05:41		06:10	06:40		07:11	06:47	07:15
	20:24		19:50	19:01		18:12	16:37	16:31
20	05:42		06:11	06:41		07:12	06:48	07:16
	20:24		19:49	18:59		18:10	16:36	16:32
21	05:43		06:12	06:42		07:13	06:49	07:16
	20:23		19:47	18:57		18:09	16:35	16:32
22	05:43		06:13	06:43		07:14	06:50	07:17
	20:22		19:46	18:55		18:08	16:35	16:33
23	05:44		06:14	06:44		07:15	06:51	07:17
	20:21		19:44	18:54		18:06	16:34	16:33
24	05:45		06:15	06:45		07:17	06:52	07:18
	20:21		19:43	18:52		18:05	16:33	16:34
25	05:46		06:16	06:46		06:18	06:54	07:18
	20:20		19:41	18:50		17:03	16:33	16:34
26	05:47		06:17	06:47		06:19	06:55	07:19
	20:19		19:40	18:49		17:02	16:32	16:35
27	05:48		06:18	06:48		06:20	06:56	07:19
	20:18		19:38	18:47		17:01	16:32	16:36
28	05:49		06:19	06:49		06:21	06:57	07:19
	20:17		19:37	18:45		16:59	16:31	16:36
29	05:50		06:20	06:50		06:22	06:58	07:20
	20:16		19:35	18:44		16:58	16:31	16:37
30	05:51		06:21	18:25 (AL01)	06:51	06:23	06:59	07:20
	20:15		19:34	4 18:29 (AL01)	18:42	16:57	16:31	16:38
31	05:52		06:22	18:21 (AL01)		06:25		07:20
	20:14		19:32	7 18:28 (AL01)		16:56		16:38
Potential sun hours	458		427	375		346	299	289
Total, worst case	24		11	89				
Sun reduction	0,45		0,49	0,54				
Oper. time red.	0,86		0,86	0,86				
Wind dir. red.	0,63		0,64	0,64				
Total reduction	0,25		0,27	0,30				
Total, real	6		3	26				

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 Albano - real case Shadow receptor: R44 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (16)
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:20	07:07	06:32	06:42	05:57	05:28	05:29	05:52	06:23	18:21 (AL01)	06:52	06:26	07:00	
	16:40	17:13	17:47	19:20	19:52	20:21	20:31	20:13	19:30	15	18:36 (AL01)	18:40	16:54	16:30
2	07:21	07:06	06:31	06:40	18:27 (AL01)	05:55	05:28	05:29	05:53	06:24	18:21 (AL01)	06:53	06:27	07:01
	16:40	17:15	17:48	19:21	3	18:30 (AL01)	19:53	20:21	20:31	14	18:35 (AL01)	18:39	16:53	16:30
3	07:21	07:06	06:29	06:39	18:26 (AL01)	05:54	05:27	05:30	05:54	06:25	18:20 (AL01)	06:54	06:28	07:02
	16:41	17:16	17:49	19:22	4	18:30 (AL01)	19:54	20:22	20:31	14	18:34 (AL01)	18:37	16:52	16:30
4	07:21	07:05	06:27	06:37	18:25 (AL01)	05:53	05:27	05:30	05:55	06:26	18:20 (AL01)	06:55	06:29	07:03
	16:42	17:17	17:50	19:23	6	18:31 (AL01)	19:55	20:23	20:31	12	18:32 (AL01)	18:35	16:51	16:30
5	07:21	07:03	06:26	06:35	18:24 (AL01)	05:52	05:27	05:31	05:56	06:27	18:20 (AL01)	06:56	06:30	07:04
	16:43	17:18	17:51	19:25	9	18:33 (AL01)	19:56	20:23	20:31	11	18:31 (AL01)	18:34	16:50	16:30
6	07:21	07:02	06:24	06:34	18:23 (AL01)	05:51	05:26	05:32	05:57	06:28	18:20 (AL01)	06:57	06:32	07:05
	16:44	17:20	17:53	19:26	10	18:33 (AL01)	19:57	20:24	20:31	10	18:30 (AL01)	18:32	16:49	16:29
7	07:21	07:01	06:23	06:32	18:24 (AL01)	05:49	05:26	05:32	05:58	06:29	18:20 (AL01)	06:58	06:33	07:06
	16:45	17:21	17:54	19:27	11	18:35 (AL01)	19:58	20:25	20:30	8	18:28 (AL01)	18:31	16:47	16:29
8	07:21	07:00	06:21	06:31	18:23 (AL01)	05:48	05:26	05:33	05:59	06:29	18:20 (AL01)	06:59	06:34	07:07
	16:46	17:22	17:55	19:28	12	18:35 (AL01)	19:59	20:25	20:30	6	18:26 (AL01)	18:29	16:46	16:29
9	07:20	06:59	06:20	06:29	18:22 (AL01)	05:47	05:26	05:33	06:00	06:30	18:20 (AL01)	07:00	06:35	07:08
	16:47	17:23	17:56	19:29	14	18:36 (AL01)	20:00	20:26	20:30	5	18:25 (AL01)	18:27	16:45	16:29
10	07:20	06:58	06:18	06:27	18:23 (AL01)	05:46	05:26	05:34	06:01	06:31	18:20 (AL01)	07:01	06:36	07:09
	16:48	17:24	17:57	19:30	14	18:37 (AL01)	20:01	20:26	20:29	3	18:23 (AL01)	18:26	16:44	16:29
11	07:20	06:57	06:16	06:26	18:22 (AL01)	05:45	05:25	05:35	06:02	06:32	18:21 (AL01)	07:02	06:37	07:09
	16:49	17:26	17:58	19:31	16	18:38 (AL01)	20:02	20:27	20:29	1	18:22 (AL01)	18:24	16:43	16:29
12	07:20	06:56	06:15	06:24	18:23 (AL01)	05:44	05:25	05:35	06:03	06:33	07:03	06:39	07:10	
	16:50	17:27	17:59	19:32	16	18:39 (AL01)	20:03	20:28	20:28	19:12	18:20 (AL01)	18:23	16:42	16:30
13	07:20	06:54	06:13	06:23	18:23 (AL01)	05:43	05:25	05:36	06:04	06:34	07:04	06:40	07:11	
	16:51	17:28	18:00	19:33	16	18:39 (AL01)	20:04	20:28	20:28	19:11	18:21	16:41	16:30	
14	07:19	06:53	06:12	06:21	18:24 (AL01)	05:42	05:25	05:37	06:05	06:35	07:06	06:41	07:12	
	16:52	17:29	18:01	19:34	16	18:40 (AL01)	20:05	20:28	20:27	19:09	18:20	16:41	16:30	
15	07:19	06:52	06:10	06:20	18:24 (AL01)	05:41	05:25	05:38	06:06	06:36	07:07	06:42	07:13	
	16:53	17:31	18:02	19:35	17	18:41 (AL01)	20:06	20:29	20:27	19:07	18:18	16:40	16:30	
16	07:18	06:50	06:08	06:18	18:25 (AL01)	05:40	05:25	05:38	06:07	06:37	07:08	06:43	07:13	
	16:54	17:32	18:03	19:36	17	18:42 (AL01)	20:07	20:29	20:26	19:06	18:16	16:39	16:30	
17	07:18	06:49	06:07	06:17	18:26 (AL01)	05:39	05:25	05:39	06:08	06:38	07:09	06:44	07:14	
	16:55	17:33	18:05	19:37	16	18:42 (AL01)	20:08	20:30	20:26	19:04	18:15	16:38	16:31	
18	07:18	06:48	06:05	06:15	18:28 (AL01)	05:38	05:25	05:40	06:09	06:39	07:10	06:46	07:15	
	16:57	17:34	18:06	19:38	15	18:43 (AL01)	20:09	20:30	20:25	19:02	18:13	16:37	16:31	
19	07:17	06:46	06:03	06:14	18:29 (AL01)	05:37	05:25	05:41	06:10	06:40	07:11	06:47	07:15	
	16:58	17:35	18:07	19:39	14	18:43 (AL01)	20:10	20:30	20:24	19:01	18:12	16:37	16:31	
20	07:16	06:45	06:02	06:12	18:32 (AL01)	05:36	05:25	05:42	06:11	06:41	07:12	06:48	07:16	
	16:59	17:36	18:08	19:40	13	18:45 (AL01)	20:11	20:31	20:24	18:59	18:10	16:36	16:32	
21	07:16	06:44	06:00	06:11	20:11	05:35	05:26	05:43	06:12	06:42	07:13	06:49	07:16	
	17:00	17:38	18:09	19:41	20:11	20:31	20:23	19:47	18:57	18:57	18:09	16:35	16:32	
22	07:15	06:42	05:58	06:09	05:35	05:26	05:43	06:13	06:43	06:43	07:14	06:50	07:17	
	17:01	17:39	18:10	19:42	20:12	20:31	20:22	19:46	3	18:44 (AL01)	18:55	16:35	16:33	
23	07:15	06:41	05:57	06:08	05:34	05:26	05:44	06:14	06:44	06:44	07:15	06:51	07:17	
	17:02	17:40	18:11	19:43	20:13	20:31	20:21	19:44	12	18:48 (AL01)	18:54	18:06	16:34	16:33
24	07:14	06:39	05:55	06:06	05:33	05:26	05:45	06:15	06:45	06:45	07:17	06:52	07:18	
	17:04	17:41	18:12	19:44	20:14	20:31	20:20	19:43	14	18:47 (AL01)	18:52	18:05	16:33	16:34
25	07:13	06:38	05:53	06:05	05:32	05:27	05:46	06:16	06:46	06:46	07:18	06:54	07:18	
	17:05	17:42	18:13	19:45	20:15	20:31	20:20	19:41	15	18:46 (AL01)	18:50	17:03	16:33	16:34
26	07:13	06:37	05:52	06:03	05:32	05:27	05:47	06:17	06:47	06:47	07:19	06:55	07:19	
	17:06	17:43	18:14	19:46	20:16	20:32	20:19	19:40	16	18:45 (AL01)	18:49	17:02	16:32	16:35
27	07:12	06:35	05:50	06:02	05:31	05:27	05:48	06:18	06:48	06:48	07:20	06:56	07:19	
	17:07	17:45	18:15	19:47	20:17	20:32	20:18	19:38	17	18:44 (AL01)	18:47	17:01	16:32	16:36
28	07:11	06:34	05:49	06:01	05:30	05:28	05:49	06:19	06:49	06:49	07:21	06:57	07:19	
	17:08	17:46	18:16	19:48	20:17	20:32	20:17	19:37	16	18:42 (AL01)	18:45	16:59	16:31	16:36
29	07:10	06:47	05:59	06:03	05:30	05:28	05:50	06:20	06:50	06:50	07:22	06:58	07:20	
	17:10	19:17	19:50	20:18	20:18	20:32	20:16	19:35	16	18:41 (AL01)	18:44	16:58	16:31	16:37
30	07:09	06:45	05:58	06:03	05:29	05:28	05:51	06:21	06:51	06:51	07:23	06:59	07:20	
	17:11	19:18	19:51	20:19	20:19	20:32	20:15	19:34	16	18:39 (AL01)	18:42	16:57	16:31	16:38
31	07:08	06:44	06:03	06:08	05:29	05:28	05:52	06:22	06:52	06:52	07:24	06:59	07:20	
	17:12	19:19	19:52	20:20	20:20	20:33	20:14	19:32	16	18:38 (AL01)	18:41	16:56	16:32	16:38
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289		
Total, worst case				239				141						
Sun reduction				0,50				0,49		0,54				
Oper. time red.				0,86				0,86		0,86				
Wind dir. red.				0,64				0,64		0,64				
Total reduction				0,28				0,27		0,30				
Total, real				67				38		29				

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 Albano - real case Shadow receptor: R45 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (17)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:32	05:53 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:31
2	07:21 16:40	07:07 17:15	06:31 17:48	06:40 19:21	05:56 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:06 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:05 17:17	06:28 17:50	06:37 19:24	05:53 19:55	05:27 20:23	05:31 20:31	05:55 20:10	06:26 19:26	06:55 18:36	06:29 16:51	07:03 16:30
5	07:21 16:43	07:04 17:18	06:26 17:51	06:35 19:25	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	05:51 19:57	05:27 20:24	05:32 20:31	05:57 20:07	06:28 19:22	06:57 18:32	06:32 16:49	07:05 16:30
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:29 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	07:21 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:30 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:34 20:30	06:00 20:04	06:31 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:25	06:18 17:57	06:27 19:30	05:46 20:01	05:26 20:27	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:10 16:29
12	07:20 16:50	06:56 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:28	05:36 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:30
13	07:20 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:59	06:34 19:11	07:05 18:21	06:40 16:42	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:06 18:20	06:41 16:41	07:12 16:30
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	07:18 16:54	06:51 17:32	06:08 18:04	06:18 19:36	05:40 20:07	05:25 20:29	05:39 20:26	06:07 19:54	06:37 19:06	07:08 18:17	06:43 16:39	07:13 16:30
17	07:18 16:56	06:49 17:33	06:07 18:05	06:17 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:18 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	07:10 18:14	06:46 16:37	07:15 16:31
19	07:17 16:58	06:47 17:35	06:03 18:07	06:14 19:39	05:37 20:10	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:01	07:11 18:12	06:47 16:37	07:15 16:31
20	07:17 16:59	06:45 17:37	06:02 18:08	06:12 19:40	05:36 20:11	05:26 20:31	05:42 20:24	06:11 19:49	06:41 18:59	07:12 18:11	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	05:26 20:31	05:43 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:56	07:14 18:08	06:50 16:35	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:40 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:21	06:15 19:43	06:45 18:52	07:17 18:05	06:53 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:54 18:13	06:05 19:45	05:32 20:15	05:27 20:31	05:46 20:20	06:16 19:41	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
26	07:13 17:06	06:37 17:44	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:32	05:47 20:19	06:17 19:40	06:47 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	05:27 20:32	05:48 20:18	06:18 19:38	06:48 18:47	06:20 17:01	06:56 16:32	07:19 16:36
28	07:11 17:09	06:34 17:46	05:49 18:16	06:01 19:49	05:31 20:18	05:28 20:32	05:49 20:17	06:19 19:37	06:49 18:45	06:21 16:59	06:57 16:32	07:19 16:36
29	07:10 17:10		06:47 19:17	05:59 19:50	05:30 20:18	05:28 20:32	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	07:09 17:11		06:45 19:18	05:58 19:51	05:29 20:19	05:29 20:32	05:51 20:15	06:21 19:34	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	07:08 17:12		06:44 19:19	05:29 20:20	05:29 20:20	05:29 20:20	05:52 20:14	06:22 19:32	06:25 16:56			07:20 16:39
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
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 Albano - real case Shadow receptor: R49 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June			
1	07:20 16:39	08:52 (AL07) 09:09 (AL07)	07:07 17:13	06:32 17:47	07:32 (AL06) 08:31 (AL06)	06:42 19:20	05:57 19:51	05:28 20:20	
2	07:20 16:40	08:53 (AL07) 09:08 (AL07)	07:06 17:15	06:30 17:48	07:32 (AL06) 08:31 (AL06)	06:40 19:21	05:55 19:53	05:28 20:21	
3	07:21 16:41	08:54 (AL07) 09:08 (AL07)	07:05 17:16	06:29 17:49	07:32 (AL06) 08:31 (AL06)	06:39 19:22	05:54 19:54	05:27 20:22	
4	07:21 16:42	08:56 (AL07) 09:07 (AL07)	07:04 17:17	06:27 17:50	07:31 (AL06) 08:31 (AL06)	06:37 19:23	05:53 19:55	05:27 20:23	
5	07:21 16:43	08:59 (AL07) 09:05 (AL07)	07:03 17:18	06:26 17:51	07:31 (AL06) 08:31 (AL06)	06:35 19:24	05:52 19:56	05:27 20:23	
6	07:21 16:44	07:02 17:19	07:02 17:19	06:24 17:52	07:31 (AL06) 08:30 (AL06)	06:34 19:25	19:01 (AL05) 19:57	05:50 19:57	05:26 20:24
7	07:21 16:45	07:01 17:21	07:01 17:21	06:23 17:54	07:30 (AL06) 08:29 (AL06)	06:32 19:26	18:59 (AL05) 19:05 (AL05)	05:49 19:58	05:26 20:25
8	07:20 16:46	07:00 17:22	07:00 17:22	06:21 17:55	07:31 (AL06) 08:29 (AL06)	06:30 19:28	18:59 (AL05) 19:06 (AL05)	05:48 19:59	05:26 20:25
9	07:20 16:47	06:59 17:23	06:59 17:23	06:20 17:56	07:30 (AL06) 08:28 (AL06)	06:29 19:29	18:58 (AL05) 19:07 (AL05)	05:47 20:00	05:26 20:26
10	07:20 16:48	06:58 17:24	06:58 17:24	06:18 17:57	07:31 (AL06) 08:28 (AL06)	06:27 19:30	18:58 (AL05) 19:08 (AL05)	05:46 20:01	05:25 20:26
11	07:20 16:49	06:57 17:26	06:57 17:26	06:16 17:58	07:31 (AL06) 08:27 (AL06)	06:26 19:31	18:57 (AL05) 19:09 (AL05)	05:45 20:02	05:25 20:27
12	07:20 16:50	06:55 17:27	06:55 17:27	06:15 17:59	07:31 (AL06) 08:25 (AL06)	06:24 19:32	18:57 (AL05) 19:11 (AL05)	05:44 20:03	05:25 20:27
13	07:19 16:51	06:54 17:28	07:59 (AL06) 08:09 (AL06)	06:13 18:00	07:32 (AL06) 08:25 (AL06)	06:23 19:33	18:57 (AL05) 19:11 (AL05)	05:43 20:04	05:25 20:28
14	07:19 16:52	06:53 17:29	07:53 (AL06) 08:14 (AL06)	06:11 18:01	07:32 (AL06) 08:23 (AL06)	06:21 19:34	18:56 (AL05) 19:12 (AL05)	05:42 20:05	05:25 20:28
15	07:19 16:53	06:52 17:30	07:50 (AL06) 08:17 (AL06)	06:10 18:02	07:32 (AL06) 08:22 (AL06)	06:19 19:35	18:57 (AL05) 19:13 (AL05)	05:41 20:06	05:25 20:29
16	07:18 16:54	06:50 17:32	07:48 (AL06) 08:20 (AL06)	06:08 18:03	07:33 (AL06) 08:21 (AL06)	06:18 19:36	18:57 (AL05) 19:14 (AL05)	05:40 20:07	05:25 20:29
17	07:18 16:55	06:49 17:33	07:45 (AL06) 08:21 (AL06)	06:07 18:04	07:34 (AL06) 08:19 (AL06)	06:16 19:37	18:58 (AL05) 19:15 (AL05)	05:39 20:08	05:25 20:29
18	07:17 16:57	06:48 17:34	07:43 (AL06) 08:23 (AL06)	06:05 18:06	07:34 (AL06) 08:16 (AL06)	06:15 19:38	18:59 (AL05) 19:15 (AL05)	05:38 20:09	05:25 20:30
19	07:17 16:58	06:46 17:35	07:42 (AL06) 08:25 (AL06)	06:03 18:07	07:36 (AL06) 08:15 (AL06)	06:13 19:39	19:00 (AL05) 19:17 (AL05)	05:37 20:09	05:25 20:30
20	07:16 16:59	06:45 17:36	07:40 (AL06) 08:26 (AL06)	06:02 18:08	07:37 (AL06) 08:12 (AL06)	06:12 19:40	19:03 (AL05) 19:15 (AL05)	05:36 20:10	05:25 20:30
21	07:16 17:00	06:44 17:38	07:39 (AL06) 08:27 (AL06)	06:00 18:09	07:39 (AL06) 08:09 (AL06)	06:10 19:41	19:06 (AL05) 19:10 (AL05)	05:35 20:11	05:26 20:31
22	07:15 17:01	06:42 17:39	07:38 (AL06) 08:28 (AL06)	05:58 18:10	07:42 (AL06) 08:07 (AL06)	06:09 19:42	05:35 20:12	05:26 20:31	05:26 20:31
23	07:15 17:02	06:41 17:40	07:37 (AL06) 08:29 (AL06)	05:57 18:11	07:45 (AL06) 08:02 (AL06)	06:08 19:43	05:34 20:13	05:26 20:31	05:26 20:31
24	07:14 17:04	06:39 17:41	07:35 (AL06) 08:29 (AL06)	05:55 18:12	07:35 (AL06) 08:03 (AL06)	06:06 19:44	05:33 20:14	05:26 20:31	05:26 20:31
25	07:13 17:05	06:38 17:42	07:35 (AL06) 08:30 (AL06)	05:53 18:13	07:35 (AL06) 08:03 (AL06)	06:05 19:45	05:32 20:15	05:27 20:31	05:27 20:31
26	07:12 17:06	06:36 17:43	07:34 (AL06) 08:30 (AL06)	05:52 18:14	07:34 (AL06) 08:03 (AL06)	06:03 19:46	05:32 20:16	05:27 20:31	05:27 20:31
27	07:12 17:07	06:35 17:45	07:34 (AL06) 08:31 (AL06)	05:50 18:15	07:34 (AL06) 08:03 (AL06)	06:02 19:47	05:31 20:17	05:27 20:31	05:27 20:31
28	07:11 17:08	06:33 17:46	07:33 (AL06) 08:31 (AL06)	05:48 18:16	07:33 (AL06) 08:03 (AL06)	06:01 19:48	05:30 20:17	05:28 20:31	05:28 20:31
29	07:10 17:10			06:47 19:17		05:59 19:49	05:30 20:18	05:28 20:31	05:28 20:31
30	07:09 17:11			06:45 19:18		05:58 19:50	05:29 20:19	05:28 20:31	05:28 20:31
31	07:08 17:12			06:43 19:19			05:29 20:20	05:29 20:31	05:29 20:31
Potential sun hours	299	298	370		398		447	451	
Total, worst case	63	685		1133		190			
Sun reduction	0,70	0,63		0,56		0,50			
Oper. time red.	0,86	0,86		0,86		0,86			
Wind dir. red.	0,61	0,63		0,63		0,64			
Total reduction	0,37	0,34		0,31		0,28			
Total, real	23	234		346		53			

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

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

Calculation: WF Albano - real case Shadow receptor: R49 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	July	August	September	October	November	December					
1	05:29 20:31	05:52 20:13	06:23 19:30	18:56 (AL05) 19:08 (AL05)	06:52 18:40	08:10 (AL06) 09:05 (AL06)	06:26 16:54	07:00 16:30			
2	05:29 20:31	05:53 20:12	06:24 19:29	18:56 (AL05) 19:06 (AL05)	06:53 18:39	08:10 (AL06) 09:05 (AL06)	06:27 16:53	07:01 16:30			
3	05:30 20:31	05:54 20:11	06:25 19:27	18:56 (AL05) 19:05 (AL05)	06:54 18:37	08:09 (AL06) 09:05 (AL06)	06:28 16:52	07:02 16:30			
4	05:30 20:31	05:55 20:09	06:26 19:25	18:56 (AL05) 19:03 (AL05)	06:55 18:35	08:08 (AL06) 09:06 (AL06)	06:29 16:51	07:03 16:30			
5	05:31 20:31	05:56 20:08	06:26 19:24	18:56 (AL05) 19:02 (AL05)	06:56 18:34	08:07 (AL06) 09:06 (AL06)	06:30 16:50	07:04 16:30			
6	05:32 20:30	05:57 20:07	06:27 19:22	18:57 (AL05) 19:00 (AL05)	06:57 18:32	08:07 (AL06) 09:06 (AL06)	06:31 16:48	07:05 16:29			
7	05:32 20:30	05:58 20:06	06:28 19:21	18:58 (AL05) 18:59 (AL05)	06:58 18:30	08:06 (AL06) 09:06 (AL06)	06:33 16:47	07:06 16:29	08:45 (AL07)		
8	05:33 20:30	05:59 20:05	06:29 19:19	18:59 (AL05)	06:59 18:29	08:06 (AL06) 09:06 (AL06)	06:34 16:46	07:07 16:29	6 08:51 (AL07)		
9	05:33 20:30	06:00 20:04	06:30 19:17		07:00 18:27	08:06 (AL06) 09:05 (AL06)	06:35 16:45	07:08 16:29	11 08:43 (AL07)		
10	05:34 20:29	06:01 20:02	06:31 19:16		07:01 18:26	08:05 (AL06) 09:05 (AL06)	06:36 16:44	07:08 16:29	13 08:42 (AL07)		
11	05:35 20:29	06:02 20:01	06:32 19:14		07:02 18:24	08:05 (AL06) 09:05 (AL06)	06:37 16:43	07:09 16:29	15 08:42 (AL07)		
12	05:35 20:28	06:03 20:00	06:33 19:12		07:03 18:23	08:05 (AL06) 09:04 (AL06)	06:38 16:42	07:10 16:29	17 08:59 (AL07)		
13	05:36 20:28	06:04 19:58	06:34 19:11		07:04 18:21	08:06 (AL06) 09:05 (AL06)	06:40 16:41	07:11 16:30	18 08:41 (AL07)		
14	05:37 20:27	06:05 19:57	06:35 19:09		07:05 18:19	08:06 (AL06) 09:04 (AL06)	06:41 16:40	07:12 16:30	19 08:41 (AL07)		
15	05:38 20:27	06:06 19:56	06:36 19:07		07:07 18:18	08:06 (AL06) 09:03 (AL06)	06:42 16:40	07:12 16:30	20 08:42 (AL07)		
16	05:38 20:26	06:07 19:54	06:37 19:05		07:08 18:16	08:07 (AL06) 09:02 (AL06)	06:43 16:39	07:13 16:30	21 09:03 (AL07)		
17	05:39 20:26	06:08 19:53	06:38 19:04		07:09 18:15	08:07 (AL06) 09:01 (AL06)	06:44 16:38	07:14 16:31	22 08:42 (AL07)		
18	05:40 20:25	06:09 19:51	06:39 19:02		07:10 18:13	08:07 (AL06) 09:00 (AL06)	06:45 16:37	07:15 16:31	23 09:04 (AL07)		
19	05:41 20:24	06:10 19:50	06:40 19:00		07:11 18:12	08:08 (AL06) 08:59 (AL06)	06:47 16:36	07:15 16:31	23 08:42 (AL07)		
20	05:42 20:24	06:11 19:49	06:41 18:59	08:32 (AL06)	07:12 18:10	08:08 (AL06) 08:58 (AL06)	06:48 16:36	07:16 16:32	23 09:05 (AL07)		
21	05:42 20:23	06:12 19:47	06:42 18:57	08:28 (AL06)	07:13 18:09	08:10 (AL06) 08:58 (AL06)	06:49 16:35	07:16 16:32	23 08:43 (AL07)		
22	05:43 20:22	06:13 19:46	06:43 18:55	19:10 (AL05)	07:14 18:08	08:11 (AL06) 08:56 (AL06)	06:50 16:34	07:17 16:33	23 09:06 (AL07)		
23	05:44 20:21	06:14 19:44	06:44 18:54	19:06 (AL05)	07:15 18:06	08:12 (AL06) 08:54 (AL06)	06:51 16:34	07:17 16:33	23 08:44 (AL07)		
24	05:45 20:20	06:15 19:43	06:45 18:52	19:19 (AL05)	07:16 18:05	08:14 (AL06) 08:53 (AL06)	06:52 16:33	07:18 16:34	23 09:07 (AL07)		
25	05:46 20:20	06:16 19:41	06:46 18:50	19:04 (AL05)	07:17 17:03	08:18 (AL06) 07:50 (AL06)	06:53 16:33	07:18 16:34	23 08:45 (AL07)		
26	05:47 20:19	06:17 19:40	06:47 18:49	19:19 (AL05)	07:18 17:02	08:17 (AL06) 07:49 (AL06)	06:55 16:32	07:19 16:35	23 09:08 (AL07)		
27	05:48 20:18	06:18 19:38	06:48 18:47	19:01 (AL05)	07:19 17:01	08:18 (AL06) 07:20 (AL06)	06:56 16:32	07:19 16:36	22 08:47 (AL07)		
28	05:49 20:17	06:19 19:37	06:49 18:45	19:16 (AL05)	07:20 16:59	08:15 (AL06) 07:42 (AL06)	06:57 16:31	07:19 16:36	22 08:47 (AL07)		
29	05:50 20:16	06:20 19:35	06:50 18:44	18:59 (AL05)	07:21 16:58	08:14 (AL06) 07:30 (AL06)	06:58 16:31	07:20 16:37	22 08:48 (AL07)		
30	05:51 20:15	06:21 19:33	06:51 18:42	19:12 (AL05)	07:22 16:57	08:13 (AL06) 09:04 (AL06)	06:59 16:31	07:20 16:38	21 08:49 (AL07)		
31	05:51 20:14	06:22 19:32	06:52 19:09 (AL05)	15 19:11 (AL05)	07:23 16:55	08:11 (AL06)	07:20 16:31	07:20 16:38	19 08:50 (AL07)		
Potential sun hours	458	427	375		346		299	289			
Total, worst case			145	471		1427					492
Sun reduction			0,49	0,54		0,60					0,72
Oper. time red.			0,86	0,86		0,86					0,86
Wind dir. red.			0,64	0,63		0,63					0,61
Total reduction			0,27	0,29		0,33					0,38
Total, real			39	137		466					186

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 Albano - real case Shadow receptor: R56 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June
1	07:20	16:11 (AL08)	07:07	06:32	06:42	05:57
	16:39	2	16:13 (AL08)	17:13	17:47	19:28 (AL07)
2	07:20	16:13 (AL08)	07:06	06:30	06:40	19:51
	16:40	2	16:15 (AL08)	17:14	17:48	19:29 (AL07)
3	07:20	16:13 (AL08)	07:05	06:29	06:38	05:55
	16:41	3	16:16 (AL08)	17:16	17:49	05:28
4	07:20	16:13 (AL08)	07:04	06:27	06:37	19:52
	16:42	3	16:16 (AL08)	17:17	17:50	05:27
5	07:20	16:14 (AL08)	07:03	06:26	06:35	19:53
	16:43	3	16:17 (AL08)	17:18	17:51	05:27
6	07:20	16:15 (AL08)	07:02	06:24	06:34	19:54
	16:44	3	16:18 (AL08)	17:19	17:52	05:27
7	07:20	16:16 (AL08)	07:01	06:23	06:32	19:54
	16:45	3	16:19 (AL08)	17:21	17:53	05:27
8	07:20	16:18 (AL08)	07:00	06:21	06:30	19:55
	16:46	2	16:20 (AL08)	17:22	17:55	05:26
9	07:20	16:19 (AL08)	06:59	06:19	06:29	19:56
	16:47	2	16:21 (AL08)	17:23	17:56	05:26
10	07:20	16:21 (AL08)	06:58	06:18	06:27	20:00
	16:48	2	16:23 (AL08)	17:24	17:57	05:25
11	07:20	16:22 (AL08)	06:57	06:16	06:26	20:01
	16:49	1	16:23 (AL08)	17:26	17:58	05:25
12	07:20	16:24 (AL08)	06:55	06:15	06:24	20:02
	16:50	1	16:25 (AL08)	17:27	17:59	05:25
13	07:19		06:54	06:13	06:23	20:03
	16:51		17:28	18:00	19:33	05:25
14	07:19		06:53	06:11	06:21	20:04
	16:52		17:29	18:01	19:34	20:28
15	07:19		06:52	06:10	06:19	05:41
	16:53		17:30	18:02	19:35	20:25
16	07:18		06:50	06:08	06:18	20:06
	16:54		17:32	18:03	19:36	05:40
17	07:18		06:49	06:06	06:16	20:07
	16:55		17:33	18:04	19:37	05:39
18	07:17		06:48	06:05	06:15	20:07
	16:56		17:34	18:05	19:38	20:29
19	07:17		06:46	06:03	06:13	05:38
	16:58		17:35	18:06	19:39	20:30
20	07:16		06:45	06:02	06:12	05:37
	16:59		17:36	18:08	19:40	20:09
21	07:16		06:44	06:00	06:10	19:17 (AL07)
	17:00		17:37	18:09	19:41	19:18 (AL07)
22	07:15		06:42	05:58	06:09	19:19 (AL07)
	17:01		17:39	18:10	19:42	20:10
23	07:14		06:41	05:57	06:08	19:17 (AL07)
	17:02		17:40	18:11	19:43	05:35
24	07:14		06:39	05:55	06:06	19:21 (AL07)
	17:03		17:41	18:12	19:44	20:13
25	07:13		06:38	05:53	06:05	19:18 (AL07)
	17:05		17:42	18:13	19:45	05:33
26	07:12		06:36	05:52	06:03	19:22 (AL07)
	17:06		17:43	18:14	19:46	20:14
27	07:12		06:35	05:50	06:02	19:19 (AL07)
	17:07		17:44	18:15	19:47	05:32
28	07:11		06:33	05:48	06:01	19:23 (AL07)
	17:08		17:46	18:16	19:48	20:15
29	07:10			06:47	05:59	19:21 (AL07)
	17:10			19:17	19:49	05:31
30	07:09			06:45	05:58	19:25 (AL07)
	17:11			19:18	19:50	20:16
31	07:08			06:43		19:21 (AL07)
	17:12			19:19		05:31
Potential sun hours	299	298	370	398	447	451
Total, worst case	27			37		1
Sun reduction	0,70			0,50		0,46
Oper. time red.	0,86			0,86		0,86
Wind dir. red.	0,64			0,62		0,62
Total reduction	0,38			0,27		0,25
Total, real	10			10		0

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 Albano - real case Shadow receptor: R56 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	July	August	September	October	November	December	
1	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	06:25 16:54	07:00 16:30	16:04 (AL08)
2	05:29 20:31	05:53 20:12	06:23 19:29	06:53 18:39	06:27 16:53	07:01 16:30	16:05 (AL08)
3	05:30 20:31	05:54 20:10	06:24 19:27	06:54 18:37	06:28 16:52	07:02 16:30	16:02 (AL08)
4	05:30 20:31	05:55 20:09	06:25 19:25	06:55 18:35	06:29 16:51	07:03 16:30	16:02 (AL08)
5	05:31 20:31	05:56 20:08	06:26 19:24	06:56 18:34	06:30 16:49	07:04 16:29	16:01 (AL08)
6	05:31 20:30	05:57 20:07	06:27 19:22	06:57 18:32	06:31 16:48	07:05 16:29	16:01 (AL08)
7	05:32 20:30	05:58 20:06	06:28 19:20	06:58 18:30	06:32 16:47	07:06 16:29	16:01 (AL08)
8	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	07:07 16:29	16:01 (AL08)
9	05:33 20:29	06:00 20:03	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29	16:01 (AL08)
10	05:34 20:29	06:01 20:02	06:31 19:15	07:01 18:26	06:36 16:44	07:08 16:29	16:02 (AL08)
11	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29	16:02 (AL08)
12	05:35 20:28	06:03 20:00	19:35 (AL07) 06:33 19:12	07:03 18:22	06:38 16:42	07:10 16:29	16:02 (AL08)
13	05:36 20:28	06:04 19:58	19:36 (AL07) 3 19:35 (AL07)	06:34 19:10	07:04 18:21	06:40 16:41	07:11 16:30
14	05:37 20:27	06:05 19:57	19:30 (AL07) 4 19:34 (AL07)	06:35 19:09	07:05 18:19	06:41 16:40	07:12 16:30
15	05:38 20:27	06:06 19:56	19:28 (AL07) 5 19:33 (AL07)	06:36 19:07	07:06 18:18	06:42 16:40	07:12 16:30
16	05:38 20:26	06:07 19:54	19:27 (AL07) 4 19:31 (AL07)	06:37 19:05	07:07 18:16	06:43 16:39	07:13 16:30
17	05:39 20:25	06:08 19:53	19:26 (AL07) 4 19:30 (AL07)	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	05:40 20:25	06:09 19:51	19:25 (AL07) 4 19:29 (AL07)	06:39 19:02	07:10 18:13	06:45 16:37	07:14 16:31
19	05:41 20:24	06:10 19:50	19:24 (AL07) 3 19:27 (AL07)	06:40 19:00	07:11 18:12	06:47 16:36	07:15 16:31
20	05:42 20:23	06:11 19:49	19:23 (AL07) 3 19:26 (AL07)	06:41 18:59	07:12 18:10	06:48 16:36	07:16 16:32
21	05:42 20:23	06:12 19:47	19:22 (AL07) 3 19:25 (AL07)	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	05:43 20:22	06:13 19:46	19:21 (AL07) 2 19:23 (AL07)	06:43 18:55	07:14 18:07	06:50 16:34	07:17 16:33
23	05:44 20:21	06:14 19:44	19:21 (AL07) 1 19:22 (AL07)	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	05:45 20:20	06:15 19:43	19:20 (AL07) 1 19:21 (AL07)	06:45 18:52	07:16 18:05	06:52 16:33	07:18 16:34
25	05:46 20:19	06:16 19:41	06:46 18:50	06:17 17:03	06:53 16:33	07:18 16:34	16:07 (AL08)
26	05:47 20:19	06:17 19:40	06:47 18:49	06:19 17:02	06:54 16:32	07:18 16:35	16:07 (AL08)
27	05:48 20:18	06:18 19:38	06:48 18:47	06:20 17:01	06:56 16:32	07:19 16:35	16:09 (AL08)
28	05:49 20:17	06:19 19:36	06:49 18:45	06:21 16:59	06:57 16:31	07:19 16:36	16:09 (AL08)
29	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:19 16:37	16:09 (AL08)
30	05:50 20:15	06:21 19:33	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38	16:10 (AL08)
31	05:51 20:14	06:22 19:32	06:52 16:55	06:24 16:55	07:20 16:38	07:20 16:38	16:10 (AL08)
Potential sun hours	458	427	375	346	299	289	
Total, worst case		38					60
Sun reduction		0,49					0,72
Oper. time red.		0,86					0,86
Wind dir. red.		0,62					0,64
Total reduction		0,26					0,39
Total, real		10					23

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 Albano - real case Shadow receptor: R66 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (20)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:53 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:20 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:25	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	05:51 19:57	05:27 20:24	05:32 20:30	05:57 20:07	06:28 19:22	06:57 18:32	06:31 16:49	07:05 16:30
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:29 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	07:20 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:34 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:26 20:26	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:36 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:30
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11	07:04 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:06 18:20	06:41 16:41	07:12 16:30
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:12 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	05:25 20:29	05:39 20:26	06:07 19:54	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:05	06:17 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:17 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:14 19:39	05:37 20:09	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:00	07:11 18:12	06:47 16:37	07:15 16:31
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:30	05:42 20:24	06:11 19:49	06:41 18:59	07:12 18:11	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	05:26 20:31	05:43 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:08	06:50 16:35	07:17 16:33
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24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	07:16 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	05:27 20:31	05:46 20:20	06:16 19:41	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
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31	07:08 17:12		06:44 19:19	05:57 20:20	05:29 20:20	05:29 20:31	05:52 20:14	06:22 19:32	06:52 16:56	06:24 16:56		07:20 16:39
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
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 Albano - real case Shadow receptor: R67 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30	
2	07:20 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30	
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30	
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:25	06:55 18:35	06:29 16:51	07:03 16:30	
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30	
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:25	05:51 19:57	05:26 20:24	05:32 20:30	05:57 20:07	06:28 19:22	06:57 18:32	06:31 16:49	07:05 16:29	
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:29 19:21	06:58 18:31	06:33 16:47	07:06 16:29	
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11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29	
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:36 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:38 16:42	07:10 16:30	
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14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:05 18:19	06:41 16:41	07:12 16:30	
15	07:19 16:53	06:52 17:31	06:10 18:02	07:06 (AL08) 07:07 (AL08)	06:20 19:35	05:41 20:06	05:25 20:29	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:12 16:30	
16	07:18 16:54	06:50 17:32	06:08 18:03	07:05 (AL08) 07:10 (AL08)	06:18 19:36	05:40 20:07	05:25 20:29	06:07 19:54	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30	
17	07:18 16:55	06:49 17:33	06:07 18:05	07:03 (AL08) 07:11 (AL08)	06:17 19:37	05:39 20:08	05:25 20:30	06:08 19:53	06:38 19:04	07:44 (AL08) 07:54 (AL08)	07:09 18:15	06:44 16:38	07:14 16:31
18	07:17 16:57	06:48 17:34	06:05 18:06	07:02 (AL08) 07:11 (AL08)	06:15 19:38	05:38 20:09	05:25 20:30	06:09 19:52	06:39 19:02	07:41 (AL08) 07:55 (AL08)	07:10 18:13	06:46 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	07:01 (AL08) 07:12 (AL08)	06:14 19:39	05:37 20:09	05:25 20:30	06:10 19:50	06:40 19:00	07:40 (AL08) 07:56 (AL08)	07:11 18:12	06:47 16:37	07:15 16:31
20	07:16 16:59	06:45 17:36	06:02 18:08	06:59 (AL08) 07:12 (AL08)	06:12 19:40	05:36 20:10	05:25 20:30	06:11 19:49	06:41 18:59	07:40 (AL08) 07:57 (AL08)	07:12 18:10	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:57 (AL08) 07:12 (AL08)	06:11 19:41	05:35 20:11	05:26 20:31	06:12 20:23	06:42 19:47	07:41 (AL08) 07:57 (AL08)	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:56 (AL08) 07:12 (AL08)	06:09 19:42	05:35 20:12	05:26 20:31	06:13 20:22	06:43 19:46	07:42 (AL08) 07:57 (AL08)	07:14 18:08	06:50 16:35	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:54 (AL08) 07:11 (AL08)	06:08 19:43	05:34 20:13	05:26 20:31	06:14 20:21	06:44 19:44	07:43 (AL08) 07:57 (AL08)	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:52 (AL08) 07:09 (AL08)	06:06 19:44	05:33 20:14	05:26 20:31	06:15 20:20	06:45 19:43	07:44 (AL08) 07:56 (AL08)	07:16 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:54 (AL08) 07:08 (AL08)	06:05 19:45	05:32 20:15	05:27 20:31	06:16 20:20	06:46 19:41	07:45 (AL08) 07:55 (AL08)	06:18 17:03	06:53 16:33	07:18 16:34
26	07:12 17:06	06:36 17:43	05:52 18:14	06:55 (AL08) 07:06 (AL08)	06:03 19:46	05:32 20:16	05:27 20:31	06:17 20:19	06:47 19:40	07:46 (AL08) 07:54 (AL08)	06:19 17:02	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:59 (AL08) 07:02 (AL08)	06:02 19:47	05:31 20:17	05:27 20:31	06:18 20:18	06:48 19:38	07:46 (AL08) 07:52 (AL08)	06:20 17:01	06:56 16:32	07:19 16:36
28	07:11 17:08	06:34 17:46	05:48 18:16	07:02 (AL08)	06:01 19:48	05:31 20:17	05:28 20:32	06:19 20:17	06:49 19:37	07:47 (AL08) 07:50 (AL08)	06:21 16:59	06:57 16:32	07:19 16:36
29	07:10 17:10	06:47 17:17	06:47 19:17	05:59 19:49	05:30 20:18	05:28 20:31	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37	
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Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289	
Total, worst case			140						141				
Sun reduction			0,56						0,54				
Oper. time red.			0,86						0,86				
Wind dir. red.			0,64						0,64				
Total reduction			0,31						0,29				
Total, real			43						41				

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

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

SHADOW - Calendar

Calculation: WF Albano - real case Shadow receptor: R78 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (22)
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	06:20 (AL05) 20:21	05:28 20:31	05:53 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:21 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 19:53	06:19 (AL05) 20:21	05:28 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:06 17:16	06:29 17:49	06:39 19:22	05:54 19:54	06:17 (AL05) 20:22	05:28 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:05 17:17	06:27 17:50	06:37 19:23	05:53 19:55	06:18 (AL05) 20:23	05:27 20:31	05:55 20:10	06:26 19:26	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:25	05:52 19:56	06:18 (AL05) 20:23	05:27 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	05:51 19:57	06:18 (AL05) 20:24	05:26 20:31	05:57 20:07	06:28 19:22	06:57 18:32	06:32 16:49	07:05 16:30
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10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	06:27 (AL05) 20:26	05:24 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	06:28 (AL05) 20:27	05:25 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:56 17:27	06:15 17:59	06:24 19:32	05:44 20:03	06:29 (AL05) 20:28	05:25 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:30
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	06:30 (AL05) 20:28	05:25 20:28	06:04 19:58	06:34 19:11	07:04 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	06:30 (AL05) 20:28	05:25 20:27	06:05 19:57	06:35 19:09	07:06 18:20	06:41 16:41	07:12 16:30
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	05:41 20:06	06:30 (AL05) 20:29	05:25 20:27	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	06:30 (AL05) 20:29	05:25 20:26	06:07 19:54	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:05	06:17 19:37	05:39 20:08	06:30 (AL05) 20:30	05:25 20:26	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:18 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	06:30 (AL05) 20:30	05:25 20:25	06:09 19:52	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:14 19:39	05:37 20:10	06:30 (AL05) 20:30	05:25 20:24	06:10 19:50	06:40 19:01	07:11 18:12	06:47 16:37	07:15 16:31
20	07:16 16:59	06:45 17:37	06:02 18:08	06:12 19:40	05:36 20:10	06:30 (AL05) 20:31	05:25 20:24	06:11 19:49	06:41 18:59	07:12 18:11	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	06:30 (AL05) 20:31	05:26 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	06:30 (AL05) 20:31	05:26 20:22	06:13 19:46	06:43 18:55	07:14 18:08	06:50 16:35	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	06:30 (AL05) 20:31	05:26 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	06:30 (AL05) 20:31	05:26 20:20	06:15 19:43	06:45 18:52	07:17 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	06:30 (AL05) 20:31	05:27 20:20	06:16 19:41	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
26	07:13 17:06	06:37 17:44	05:52 18:14	06:03 19:46	05:32 20:16	06:30 (AL05) 20:32	05:27 20:19	06:17 19:40	06:47 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	06:30 (AL05) 20:32	05:27 20:18	06:18 19:38	06:48 18:47	06:20 17:01	06:56 16:32	07:19 16:36
28	07:11 17:09	06:34 17:46	05:49 18:16	06:01 19:48	05:31 20:17	06:30 (AL05) 20:32	05:28 20:17	06:19 19:37	06:49 18:45	06:21 16:59	06:57 16:32	07:19 16:36
29	07:10 17:10	06:47 19:17	05:59 19:50	05:30 20:18	05:30 20:18	06:30 (AL05) 20:32	05:28 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	07:09 17:11	06:45 19:18	05:58 19:51	05:29 20:19	05:29 20:19	06:30 (AL05) 20:32	05:29 20:15	06:21 19:34	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	07:08 17:12	06:44 19:19	05:58 19:51	05:29 20:20	05:29 20:20	06:30 (AL05) 20:32	05:29 20:14	06:22 19:32	06:52 18:42	06:25 16:56	07:20 16:39	07:20 16:39
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
Total, worst case					3							
Sun reduction					0,46							0,49
Oper. time red.					0,86							0,86
Wind dir. red.					0,63							0,63
Total reduction					0,25							0,26
Total, real					1							1

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

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

Project:

WF Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 15:20/4.0.531

SHADOW - Calendar

Calculation: WF Albano - real case Shadow receptor: R79 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (23)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:53 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:21 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:06 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:05 17:17	06:28 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:26	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:25	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	05:51 19:57	05:27 20:24	05:32 20:31	05:57 20:07	06:28 19:22	06:57 18:32	06:32 16:49	07:05 16:30
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:29 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	07:21 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:30 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:33 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:26 20:26	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:56 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:28	05:36 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:30
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11	07:05 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:06 18:20	06:41 16:41	07:12 16:30
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	05:25 20:29	05:39 20:26	06:07 19:54	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:56	06:49 17:33	06:07 18:05	06:17 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:18 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:14 19:39	05:37 20:10	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:01	07:11 18:12	06:47 16:37	07:15 16:31
20	07:16 16:59	06:45 17:37	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:31	05:42 20:24	06:11 19:49	06:41 18:59	07:12 18:11	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	05:26 20:31	05:43 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:08	06:50 16:35	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	07:17 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:54 18:13	06:05 19:45	05:32 20:15	05:27 20:31	05:46 20:20	06:16 19:41	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
26	07:13 17:06	06:37 17:44	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:32	05:47 20:19	06:17 19:40	06:47 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	05:27 20:32	05:48 20:18	06:18 19:38	06:48 18:47	06:20 17:01	06:56 16:32	07:19 16:36
28	07:11 17:09	06:34 17:46	05:49 18:16	06:01 19:48	05:31 20:17	05:28 20:32	05:49 20:17	06:19 19:37	06:49 18:45	06:21 16:59	06:57 16:32	07:19 16:36
29	07:10 17:10		06:47 19:17	05:59 19:50	05:30 20:18	05:28 20:32	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	07:09 17:11		06:45 19:18	05:58 19:51	05:29 20:19	05:29 20:32	05:51 20:15	06:21 19:34	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	07:08 17:12		06:44 19:19	05:29 20:20	05:29 20:20	05:29 20:20	05:52 20:14	06:22 19:32	06:25 16:56			07:20 16:39
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
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 Albano - real case Shadow receptor: R81 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:53 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:21 16:40	07:07 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:06 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:05 17:17	06:28 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:31 20:31	05:55 20:10	06:26 19:26	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:25	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:27 19:24	06:56 18:34	06:30 16:50	07:04 16:30
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	05:51 19:57	05:27 20:24	05:32 20:31	05:57 20:07	06:28 19:22	06:57 18:32	06:32 16:49	07:05 16:30
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:29 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	07:21 16:46	07:00 17:22	06:21 17:55	06:31 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:30 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:34 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:26 20:26	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:56 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:28	05:36 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:30
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11	07:05 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:06 18:20	06:41 16:41	07:12 16:30
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	07:18 16:54	06:50 17:32	06:08 18:04	06:18 19:36	05:40 20:07	05:25 20:29	05:39 20:26	06:07 19:54	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:56	06:49 17:33	06:07 18:05	06:17 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:18 16:57	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:14 19:39	05:37 20:10	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:01	07:11 18:12	06:47 16:37	07:15 16:31
20	07:16 16:59	06:45 17:37	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:31	05:42 20:24	06:11 19:49	06:41 18:59	07:12 18:11	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	05:35 20:11	05:26 20:31	05:43 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:35 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:08	06:50 16:35	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	07:17 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:54 18:13	06:05 19:45	05:32 20:15	05:27 20:31	05:46 20:20	06:16 19:41	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
26	07:13 17:06	06:37 17:44	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:32	05:47 20:19	06:17 19:40	06:47 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	05:27 20:32	05:48 20:18	06:18 19:38	06:48 18:47	06:20 17:01	06:56 16:32	07:19 16:36
28	07:11 17:09	06:34 17:46	05:49 18:16	06:01 19:48	05:31 20:17	05:28 20:32	05:49 20:17	06:19 19:37	06:49 18:45	06:21 16:59	06:57 16:32	07:19 16:36
29	07:10 17:10		06:47 19:17	05:59 19:50	05:30 20:18	05:28 20:32	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	07:09 17:11		06:45 19:18	05:58 19:51	05:29 20:19	05:29 20:32	05:51 20:15	06:21 19:34	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	07:08 17:12		06:44 19:19	05:29 20:20	05:29 20:20	05:29 20:20	05:52 20:14	06:22 19:32	06:25 16:56			07:20 16:39
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
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 Albano - real case Shadow receptor: R88 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June
1	07:21 16:40	07:08 17:13	06:32 17:47	07:51 (AL01) 08:54 (AL01)	06:42 19:20	05:57 19:52
2	07:21 16:40	07:07 17:15	06:31 17:48	07:50 (AL01) 08:54 (AL01)	06:40 19:21	05:56 19:53
3	07:21 16:41	07:06 17:16	06:29 17:49	07:50 (AL01) 08:54 (AL01)	06:39 19:22	05:54 19:54
4	07:21 16:42	07:05 17:17	06:28 17:50	07:49 (AL01) 08:54 (AL01)	06:37 19:24	05:53 19:55
5	07:21 16:43	07:04 17:18	06:26 17:51	07:49 (AL01) 08:55 (AL01)	06:35 19:25	05:52 19:56
6	07:21 16:44	07:02 17:20	06:24 17:53	07:48 (AL01) 08:54 (AL01)	06:34 19:26	05:51 19:57
7	07:21 16:45	07:01 17:21	06:23 17:54	07:48 (AL01) 08:55 (AL01)	06:32 19:27	05:49 19:58
8	07:21 16:46	07:00 17:22	06:21 17:55	07:47 (AL01) 08:54 (AL01)	06:31 19:28	05:48 19:59
9	07:20 16:47	06:59 17:23	06:20 17:56	07:46 (AL01) 08:53 (AL01)	06:29 19:29	05:47 20:00
10	07:20 16:48	06:58 17:25	06:18 17:57	07:47 (AL01) 08:53 (AL01)	06:27 19:30	05:46 20:01
11	07:20 16:49	06:57 17:26	06:17 17:58	07:46 (AL01) 08:52 (AL01)	06:26 19:31	05:45 20:02
12	07:20 16:50	06:56 17:27	06:15 17:59	07:46 (AL01) 08:51 (AL01)	06:24 19:32	05:44 20:03
13	07:20 16:51	06:54 17:28	06:13 18:00	07:46 (AL01) 08:51 (AL01)	06:23 19:33	05:43 20:04
14	07:19 16:52	06:53 17:29	06:12 18:01	07:46 (AL01) 08:50 (AL01)	06:21 19:34	05:42 20:05
15	07:19 16:53	06:52 17:31	06:10 18:02	07:46 (AL01) 08:50 (AL01)	06:20 19:35	05:41 20:06
16	07:19 16:54	06:51 17:32	06:08 18:04	07:46 (AL01) 08:48 (AL01)	06:18 19:36	05:40 20:07
17	07:18 16:56	06:49 17:33	06:07 18:05	07:46 (AL01) 08:47 (AL01)	06:17 19:37	05:39 20:08
18	07:18 16:57	06:48 17:34	06:05 18:06	07:47 (AL01) 08:46 (AL01)	06:15 19:38	05:38 20:09
19	07:17 16:58	06:47 17:35	06:03 18:07	07:47 (AL01) 08:45 (AL01)	06:14 19:39	05:37 20:10
20	07:17 16:59	06:45 17:37	06:02 18:08	07:47 (AL01) 08:43 (AL01)	06:12 19:40	05:36 20:11
21	07:16 17:00	06:44 17:38	06:00 18:09	07:48 (AL01) 08:42 (AL01)	06:11 19:41	05:35 20:11
22	07:15 17:01	06:42 17:39	05:59 18:10	07:49 (AL01) 08:40 (AL01)	06:09 19:42	05:35 20:12
23	07:15 17:02	06:41 17:40	05:57 18:11	07:49 (AL01) 08:38 (AL01)	06:08 19:43	05:34 20:13
24	07:14 17:04	06:40 17:41	05:55 18:12	07:51 (AL01) 08:37 (AL01)	06:06 19:44	05:33 20:14
25	07:13 17:05	06:38 17:42	05:54 18:13	07:51 (AL01) 08:34 (AL01)	06:05 19:45	05:32 20:15
26	07:13 17:06	06:37 17:43	05:52 18:14	07:52 (AL01) 08:31 (AL01)	06:04 19:46	05:32 20:16
27	07:12 17:07	06:35 17:45	05:50 18:15	07:53 (AL01) 08:29 (AL01)	06:02 19:48	05:31 20:17
28	07:11 17:09	06:34 17:46	05:49 18:16	07:53 (AL01) 08:26 (AL01)	06:01 19:49	05:31 20:18
29	07:10 17:10		06:47 19:17	08:59 (AL01) 09:22 (AL01)	05:59 19:50	05:30 20:18
30	07:09 17:11		06:45 19:18	09:03 (AL01) 09:17 (AL01)	05:58 19:51	05:29 20:19
31	07:08 17:12		06:44 19:19			05:29 20:20
Potential sun hours	299	298	370	398	447	451
Total, worst case		589	1658	798	9	
Sun reduction		0,63	0,56	0,50	0,46	
Oper. time red.		0,86	0,86	0,86	0,86	
Wind dir. red.		0,63	0,63	0,64	0,64	
Total reduction		0,34	0,31	0,28	0,26	
Total, real		202	506	222	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 Albano - real case Shadow receptor: R88 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	July	August	September	October	November	December		
1	05:29 20:32	05:53 20:13	06:23 19:30	07:09 (AL02) 19:30	06:52 18:40	08:25 (AL01) 09:31 (AL01)	06:26 16:54	07:00 16:31
2	05:29 20:31	05:53 20:12	06:24 19:29	07:10 (AL02) 07:42 (AL02)	06:53 18:39	08:25 (AL01) 09:31 (AL01)	06:27 16:53	07:01 16:30
3	05:30 20:31	05:54 20:11	06:25 19:27	07:11 (AL02) 07:41 (AL02)	06:54 18:37	08:24 (AL01) 09:31 (AL01)	06:28 16:52	07:02 16:30
4	05:30 20:31	05:55 20:10	06:26 19:26	07:12 (AL02) 07:39 (AL02)	06:55 18:36	08:24 (AL01) 09:31 (AL01)	06:29 16:51	07:03 16:30
5	05:31 20:31	05:56 20:09	06:27 19:24	07:13 (AL02) 07:37 (AL02)	06:56 18:34	08:24 (AL01) 09:31 (AL01)	06:30 16:50	07:04 16:30
6	05:32 20:31	05:57 20:07	06:28 19:22	07:15 (AL02) 07:35 (AL02)	06:57 18:32	08:24 (AL01) 09:30 (AL01)	06:32 16:49	07:05 16:30
7	05:32 20:30	05:58 20:06	06:29 19:21	07:18 (AL02) 07:31 (AL02)	06:58 18:31	08:23 (AL01) 09:30 (AL01)	06:33 16:47	07:06 16:29
8	05:33 20:30	05:59 20:05	06:30 19:19	06:30 19:19	06:59 18:29	08:23 (AL01) 09:30 (AL01)	06:34 16:46	07:07 16:29
9	05:34 20:30	06:00 20:04	06:31 19:17	06:31 19:17	07:00 18:27	08:23 (AL01) 09:29 (AL01)	06:35 16:45	07:08 16:29
10	05:34 20:29	06:01 20:02	06:31 19:16	06:31 19:16	07:01 18:26	08:23 (AL01) 09:28 (AL01)	06:36 16:44	07:09 16:29
11	05:35 20:29	06:02 20:01	06:32 19:14	06:32 19:14	07:02 18:24	08:25 (AL01) 09:29 (AL01)	06:37 16:43	07:10 16:29
12	05:36 20:28	06:03 20:00	06:33 19:12	06:33 19:12	07:04 18:23	08:25 (AL01) 09:28 (AL01)	06:39 16:42	07:10 16:30
13	05:36 20:28	06:04 19:59	06:34 07:22 (AL02) 07:36 (AL02)	06:34 19:11	07:05 08:56 (AL01) 09:08 (AL01)	08:25 (AL01) 09:27 (AL01)	06:40 16:42	07:11 16:30
14	05:37 20:27	06:05 19:57	06:35 07:20 (AL02) 07:41 (AL02)	06:35 19:09	07:06 08:50 (AL01) 09:13 (AL01)	08:26 (AL01) 09:26 (AL01)	06:41 16:41	07:12 16:30
15	05:38 20:27	06:06 19:56	06:36 07:18 (AL02) 07:42 (AL02)	06:36 19:07	07:07 08:46 (AL01) 09:15 (AL01)	08:26 (AL01) 09:25 (AL01)	06:42 16:40	07:13 16:30
16	05:39 20:26	06:07 19:54	06:37 07:16 (AL02) 07:43 (AL02)	06:37 19:06	07:08 08:43 (AL01) 09:17 (AL01)	08:27 (AL01) 09:24 (AL01)	06:43 16:39	07:13 16:30
17	05:39 20:26	06:08 19:53	06:38 07:15 (AL02) 07:44 (AL02)	06:38 19:04	07:09 08:41 (AL01) 09:19 (AL01)	08:27 (AL01) 09:22 (AL01)	06:45 16:38	07:14 16:31
18	05:40 20:25	06:09 19:52	06:39 07:14 (AL02) 07:45 (AL02)	06:39 19:02	07:10 08:39 (AL01) 09:21 (AL01)	08:28 (AL01) 09:21 (AL01)	06:46 16:37	07:15 16:31
19	05:41 20:24	06:10 19:50	06:40 07:13 (AL02) 07:46 (AL02)	06:40 19:01	07:11 08:37 (AL01) 09:23 (AL01)	08:30 (AL01) 09:20 (AL01)	06:47 16:37	07:15 16:31
20	05:42 20:24	06:11 19:49	06:41 07:12 (AL02) 07:46 (AL02)	06:41 18:59	07:12 08:36 (AL01) 09:24 (AL01)	08:31 (AL01) 09:19 (AL01)	06:48 16:36	07:16 16:32
21	05:43 20:23	06:12 19:47	06:42 07:11 (AL02) 07:47 (AL02)	06:42 18:57	07:13 08:34 (AL01) 09:25 (AL01)	08:33 (AL01) 09:17 (AL01)	06:49 16:35	07:16 16:32
22	05:43 20:22	06:13 19:46	06:43 07:11 (AL02) 07:47 (AL02)	06:43 18:56	07:14 08:33 (AL01) 09:26 (AL01)	08:34 (AL01) 09:15 (AL01)	06:50 16:35	07:17 16:33
23	05:44 20:21	06:14 19:44	06:44 07:10 (AL02) 07:47 (AL02)	06:44 18:54	07:15 08:32 (AL01) 09:27 (AL01)	08:36 (AL01) 09:12 (AL01)	06:51 16:34	07:18 16:33
24	05:45 20:21	06:15 19:43	06:45 07:10 (AL02) 07:47 (AL02)	06:45 18:52	07:17 08:31 (AL01) 09:28 (AL01)	08:38 (AL01) 09:09 (AL01)	06:53 16:33	07:18 16:34
25	05:46 20:20	06:16 19:41	06:46 07:09 (AL02) 07:47 (AL02)	06:46 18:50	06:18 08:30 (AL01) 09:29 (AL01)	07:42 (AL01) 08:07 (AL01)	06:54 16:33	07:18 16:34
26	05:47 20:19	06:17 19:40	06:47 07:09 (AL02) 07:47 (AL02)	06:47 18:49	06:19 08:29 (AL01) 09:29 (AL01)	07:47 (AL01) 08:02 (AL01)	06:55 16:32	07:19 16:35
27	05:48 20:18	06:18 19:38	06:48 07:09 (AL02) 07:47 (AL02)	06:48 18:47	06:20 08:28 (AL01) 09:30 (AL01)	06:56 16:32	07:19 16:36	
28	05:49 20:17	06:19 19:37	06:49 07:09 (AL02) 07:47 (AL02)	06:49 18:45	06:21 08:27 (AL01) 09:30 (AL01)	06:57 16:32	07:19 16:36	
29	05:50 20:16	06:20 19:35	06:50 07:09 (AL02) 07:46 (AL02)	06:50 18:44	06:22 08:26 (AL01) 09:30 (AL01)	06:58 16:31	07:20 16:37	
30	05:51 20:15	06:21 19:34	06:51 07:09 (AL02) 07:46 (AL02)	06:51 18:42	06:23 08:26 (AL01) 09:31 (AL01)	06:59 16:31	07:20 16:38	
31	05:52 20:14	06:22 19:32	06:52 07:09 (AL02) 07:44 (AL02)	06:52 18:40	06:25 06:25 16:56	07:20 16:31	07:20 16:39	
Potential sun hours	458	427	375	346	299	289		
Total, worst case		634	1041	1427				
Sun reduction		0,49	0,54	0,60				
Oper. time red.		0,86	0,86	0,86				
Wind dir. red.		0,64	0,63	0,63				
Total reduction		0,27	0,29	0,33				
Total, real		170	304	466				

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 Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 15:20/4.0.531

SHADOW - Calendar

Calculation: WF Albano - real case Shadow receptor: R93 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (26)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 19:52	05:28 20:21	05:29 20:31	05:52 20:13	06:23 19:30	06:52 18:40	06:26 16:54	07:00 16:30
2	07:20 16:40	07:06 17:14	06:30 17:48	06:40 19:21	05:55 19:53	05:28 20:21	05:29 20:31	05:53 20:12	06:24 19:29	06:53 18:39	06:27 16:53	07:01 16:30
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:27 20:22	05:30 20:31	05:54 20:11	06:25 19:27	06:54 18:37	06:28 16:52	07:02 16:30
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	05:53 19:55	05:27 20:23	05:30 20:31	05:55 20:10	06:26 19:25	06:55 18:35	06:29 16:51	07:03 16:30
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	05:52 19:56	05:27 20:23	05:31 20:31	05:56 20:08	06:26 19:24	06:56 18:34	06:30 16:50	07:04 16:29
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:25	05:50 19:57	05:26 20:24	05:31 20:31	05:57 20:07	06:27 19:22	06:57 18:32	06:31 16:48	07:05 16:29
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	05:49 19:58	05:26 20:25	05:32 20:30	05:58 20:06	06:28 19:21	06:58 18:30	06:33 16:47	07:06 16:29
8	07:20 16:46	07:00 17:22	06:21 17:55	06:30 19:28	05:48 19:59	05:26 20:25	05:33 20:30	05:59 20:05	06:29 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	05:47 20:00	05:26 20:26	05:33 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	05:46 20:01	05:25 20:26	05:34 20:29	06:01 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	05:45 20:02	05:25 20:27	05:35 20:29	06:02 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	07:20 16:50	06:55 17:27	06:15 17:59	06:24 19:32	05:44 20:03	05:25 20:27	05:35 20:28	06:03 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:29
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	05:43 20:04	05:25 20:28	05:36 20:28	06:04 19:58	06:34 19:11	07:04 18:21	06:40 16:41	07:11 16:30
14	07:19 16:52	06:53 17:29	06:11 18:01	06:21 19:34	05:42 20:05	05:25 20:28	05:37 20:27	06:05 19:57	06:35 19:09	07:05 18:19	06:41 16:40	07:12 16:30
15	07:19 16:53	06:52 17:30	06:10 18:02	06:19 19:35	05:41 20:06	05:25 20:29	05:38 20:27	06:06 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	05:40 20:07	05:25 20:29	05:38 20:26	06:07 19:54	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	07:18 16:55	06:49 17:33	06:07 18:04	06:16 19:37	05:39 20:08	05:25 20:30	05:39 20:26	06:08 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	07:17 16:56	06:48 17:34	06:05 18:06	06:15 19:38	05:38 20:09	05:25 20:30	05:40 20:25	06:09 19:52	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	05:37 20:10	05:25 20:30	05:41 20:24	06:10 19:50	06:40 19:00	07:11 18:12	06:47 16:36	07:15 16:31
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	05:36 20:10	05:25 20:30	05:42 20:24	06:11 19:49	06:41 18:59	07:12 18:10	06:48 16:36	07:16 16:32
21	07:16 17:00	06:44 17:38	06:00 18:09	06:10 19:41	05:35 20:11	05:25 20:31	05:42 20:23	06:12 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	05:34 20:12	05:26 20:31	05:43 20:22	06:13 19:46	06:43 18:55	07:14 18:08	06:50 16:34	07:17 16:33
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	05:34 20:13	05:26 20:31	05:44 20:21	06:14 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	05:33 20:14	05:26 20:31	05:45 20:20	06:15 19:43	06:45 18:52	07:16 18:05	06:52 16:33	07:18 16:34
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	05:32 20:15	05:26 20:31	05:46 20:20	06:16 19:41	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
26	07:12 17:06	06:36 17:43	05:52 18:14	06:03 19:46	05:32 20:16	05:27 20:31	05:47 20:19	06:17 19:40	06:47 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	05:31 20:17	05:27 20:32	05:48 20:18	06:18 19:38	06:48 18:47	06:20 17:01	06:56 16:32	07:19 16:35
28	07:11 17:08	06:33 17:46	05:48 18:16	06:01 19:48	05:30 20:17	05:28 20:32	05:49 20:17	06:19 19:37	06:49 18:45	06:21 16:59	06:57 16:31	07:19 16:36
29	07:10 17:10		06:47 19:17	05:59 19:49	05:30 20:18	05:28 20:32	05:50 20:16	06:20 19:35	06:50 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	07:09 17:11		06:45 19:18	05:58 19:50	05:29 20:19	05:28 20:32	05:50 20:15	06:21 19:33	06:51 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	07:08 17:12		06:43 19:19	05:29 20:20	05:29 20:20		05:51 20:14	06:22 19:32	06:24 16:55			07:20 16:38
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
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 Albano - real case Shadow receptor: R95 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (27)
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:20	07:07	06:32	06:42	05:57	05:28	05:29	05:52	06:23	06:52	06:26	07:00
	16:39	17:13	17:47	19:20	19:52	20:21	20:31	20:13	19:30	18:40	16:54	16:30
2	07:20	07:06	06:30	06:40	05:55	05:28	05:29	05:53	06:24	06:53	06:27	07:01
	16:40	17:14	17:48	19:21	19:53	20:21	20:31	20:12	19:29	18:39	16:53	16:30
3	07:21	07:05	06:29	06:39	05:54	05:27	05:30	05:54	06:25	06:54	06:28	07:02
	16:41	17:16	17:49	19:22	19:54	20:22	20:31	20:11	19:27	18:37	16:52	16:30
4	07:21	07:04	06:27	06:37	05:53	05:27	05:30	05:55	06:26	06:55	06:29	07:03
	16:42	17:17	17:50	19:23	19:55	20:23	20:31	20:10	19:25	18:35	16:51	16:30
5	07:21	07:03	06:26	06:35	05:52	05:27	05:31	05:56	06:26	06:56	06:30	07:04
	16:43	17:18	17:51	19:24	19:56	20:23	20:31	20:08	19:24	18:34	16:50	16:29
6	07:21	07:02	06:24	06:34	05:50	05:26	05:31	05:57	06:27	06:57	06:31	07:05
	16:44	17:19	17:52	19:25	19:57	20:24	20:31	20:07	19:22	18:32	16:48	16:29
7	07:21	07:01	06:23	06:32	05:49	05:26	05:32	05:58	06:28	06:58	06:33	07:06
	16:45	17:21	17:54	19:27	19:58	20:25	20:30	20:06	19:21	18:30	16:47	16:29
8	07:20	07:00	06:21	06:30	05:48	05:26	05:33	05:59	06:29	06:59	06:34	07:07
	16:46	17:22	17:55	19:28	19:59	20:25	20:30	20:05	19:19	18:29	16:46	16:29
9	07:20	06:59	06:20	06:29	05:47	05:26	05:33	06:00	06:30	07:00	06:35	07:08
	16:47	17:23	17:56	19:29	20:00	20:26	20:30	20:04	19:17	18:27	16:45	16:29
10	07:20	06:58	06:18	06:27	05:46	05:25	05:34	06:01	06:31	07:01	06:36	07:09
	16:48	17:24	17:57	19:30	20:01	20:26	20:29	20:02	19:16	18:26	16:44	16:29
11	07:20	06:57	06:16	06:26	05:45	05:25	05:35	06:02	06:32	07:02	06:37	07:09
	16:49	17:26	17:58	19:31	20:02	20:27	20:29	20:01	19:14	18:24	16:43	16:29
12	07:20	06:55	06:15	06:24	05:44	05:25	05:35	06:03	06:33	07:03	06:39	07:10
	16:50	17:27	17:59	19:32	20:03	20:27	20:28	20:00	19:12	18:23	16:42	16:29
13	07:19	06:54	06:13	06:23	05:43	05:25	05:36	06:04	19:30 (AL03)	06:34	07:04	06:40
	16:51	17:28	18:00	19:33	20:04	20:28	20:28	19:58	5 19:35 (AL03)	19:11	18:21	16:41
14	07:19	06:53	06:11	06:21	19:11 (AL03)	05:42	05:25	05:37	19:26 (AL03)	06:35	07:05	06:41
	16:52	17:29	18:01	19:34	1 20:05	20:28	20:27	19:57	8 19:34 (AL03)	19:09	18:19	16:40
15	07:19	06:52	06:10	06:19	19:11 (AL03)	05:41	05:25	05:38	19:24 (AL03)	06:36	07:07	06:42
	16:53	17:30	18:02	19:35	2 19:13 (AL03)	20:06	20:29	20:27	19:34 (AL03)	19:07	18:18	16:40
16	07:18	06:50	06:08	06:18	19:10 (AL03)	05:40	05:25	05:38	19:22 (AL03)	06:37	07:08	06:43
	16:54	17:32	18:03	19:36	4 19:14 (AL03)	20:07	20:29	20:26	19:31 (AL03)	19:06	18:16	16:39
17	07:18	06:49	06:07	06:16	19:10 (AL03)	05:39	05:25	05:39	19:21 (AL03)	06:38	07:09	06:44
	16:55	17:33	18:04	19:37	5 19:15 (AL03)	20:08	20:30	20:26	19:30 (AL03)	19:04	18:15	16:38
18	07:17	06:48	06:05	06:15	19:10 (AL03)	05:38	05:25	05:40	19:19 (AL03)	06:39	07:10	06:46
	16:56	17:34	18:06	19:38	6 19:16 (AL03)	20:09	20:30	20:25	19:29 (AL03)	19:02	18:13	16:37
19	07:17	06:46	06:03	06:13	19:10 (AL03)	05:37	05:25	05:41	19:18 (AL03)	06:40	07:11	06:47
	16:58	17:35	18:07	19:39	7 19:17 (AL03)	20:09	20:30	20:24	19:28 (AL03)	19:00	18:12	16:36
20	07:16	06:45	06:02	06:12	19:11 (AL03)	05:36	05:25	05:42	19:17 (AL03)	06:41	07:12	06:48
	16:59	17:36	18:08	19:40	7 19:18 (AL03)	20:10	20:30	20:24	19:26 (AL03)	18:59	18:10	16:36
21	07:16	06:44	06:00	06:10	19:11 (AL03)	05:35	05:25	05:42	19:16 (AL03)	06:42	07:13	06:49
	17:00	17:38	18:09	19:41	8 19:19 (AL03)	20:11	20:31	20:23	19:25 (AL03)	18:57	18:09	16:35
22	07:15	06:42	05:58	06:09	19:12 (AL03)	05:34	05:26	05:43	19:15 (AL03)	06:43	07:14	06:50
	17:01	17:39	18:10	19:42	8 19:20 (AL03)	20:12	20:31	20:22	19:23 (AL03)	18:55	18:08	16:34
23	07:15	06:41	05:57	06:08	19:11 (AL03)	05:34	05:26	05:44	19:15 (AL03)	06:44	07:15	06:51
	17:02	17:40	18:11	19:43	10 19:21 (AL03)	20:13	20:31	20:21	19:22 (AL03)	18:54	18:06	16:34
24	07:14	06:39	05:55	06:06	19:13 (AL03)	05:33	05:26	05:45	19:14 (AL03)	06:45	07:16	06:52
	17:04	17:41	18:12	19:44	9 19:22 (AL03)	20:14	20:31	20:20	19:21 (AL03)	18:52	18:05	16:33
25	07:13	06:38	05:53	06:05	19:14 (AL03)	05:32	05:26	05:46	19:14 (AL03)	06:46	06:18	06:54
	17:05	17:42	18:13	19:45	9 19:23 (AL03)	20:15	20:31	20:20	19:19 (AL03)	18:50	17:03	16:33
26	07:12	06:36	05:52	06:03	19:14 (AL03)	05:32	05:27	05:47	19:13 (AL03)	06:47	06:19	06:55
	17:06	17:43	18:14	19:46	10 19:24 (AL03)	20:16	20:31	20:19	19:18 (AL03)	18:49	17:02	16:32
27	07:12	06:35	05:50	06:02	19:16 (AL03)	05:31	05:27	05:48	19:13 (AL03)	06:48	06:20	06:56
	17:07	17:45	18:15	19:47	9 19:25 (AL03)	20:17	20:32	20:18	19:16 (AL03)	18:47	17:01	16:32
28	07:11	06:33	05:48	06:01	19:18 (AL03)	05:30	05:28	05:49	19:13 (AL03)	06:49	06:21	06:57
	17:08	17:46	18:16	19:48	8 19:26 (AL03)	20:17	20:32	20:17	19:15 (AL03)	18:45	16:59	16:31
29	07:10	06:47	05:59	06:04	19:19 (AL03)	05:30	05:28	05:50	19:15 (AL03)	06:50	06:22	06:58
	17:10	17:49	18:19	19:49	7 19:26 (AL03)	20:18	20:32	20:16	19:15 (AL03)	18:44	16:58	16:31
30	07:09	06:45	05:58	06:03	19:23 (AL03)	05:29	05:28	05:50	19:15 (AL03)	06:51	06:23	06:59
	17:11	17:50	18:20	19:50	5 19:28 (AL03)	20:19	20:31	20:15	19:15 (AL03)	18:42	16:57	16:31
31	07:08	06:43	05:57	06:02	19:20 (AL03)	05:29	05:28	05:51	19:15 (AL03)	06:52	06:24	07:20
	17:12	17:51	18:21	19:51	20:20	20:20	20:14	19:32	19:15 (AL03)	18:43	16:55	16:38
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289
Total, worst case				115								
Sun reduction				0,50								
Oper. time red.				0,86								
Wind dir. red.				0,63								
Total reduction				0,27								
Total, real				31				30				

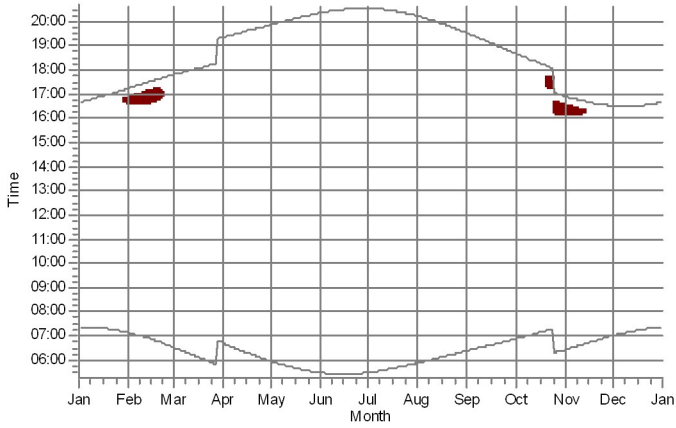
Table layout: For each day in each month the following matrix apply

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)

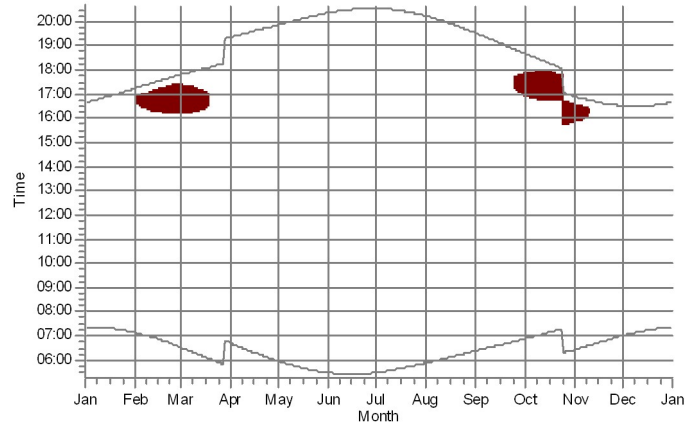
SHADOW - Calendar, graphical

Calculation: WF Albano - real case

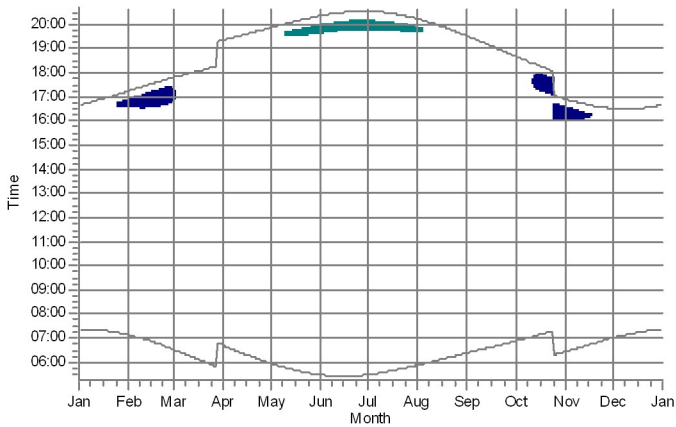
R1: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (1)



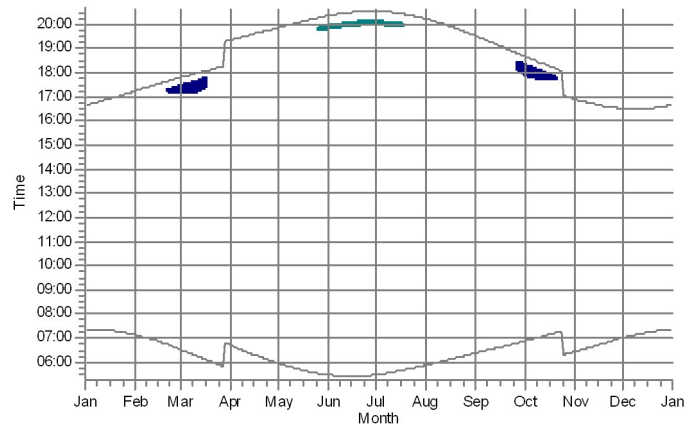
R10: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (2)



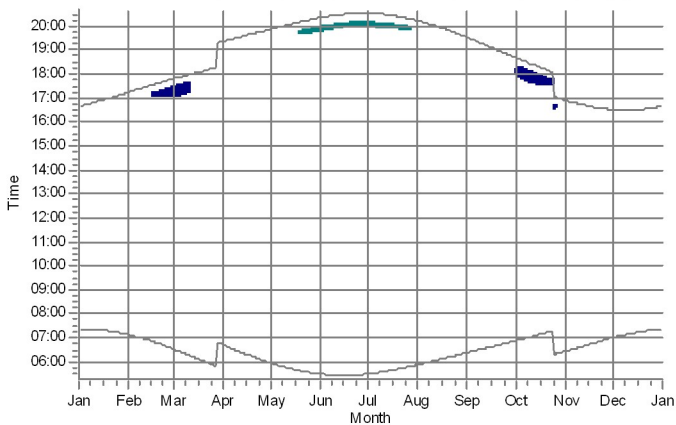
R12: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)



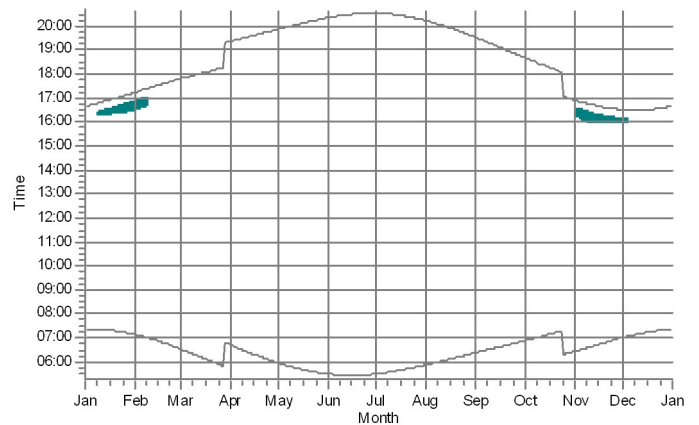
R17: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)



R18: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)



R19: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (6)



WTGs

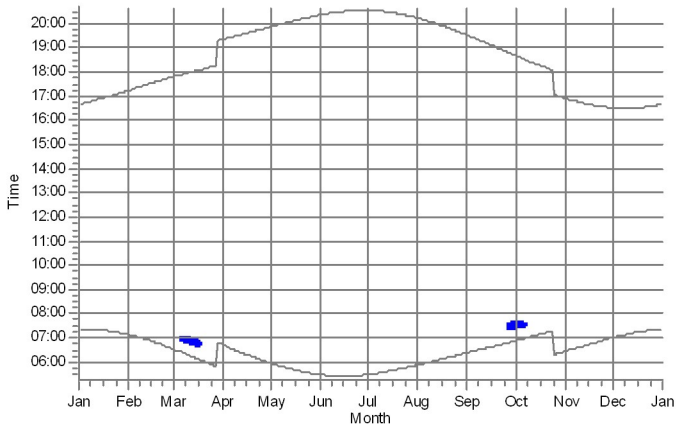
AL06: Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 m) (7)
AL07: Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 m) (8)

AL08: Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 m) (9)

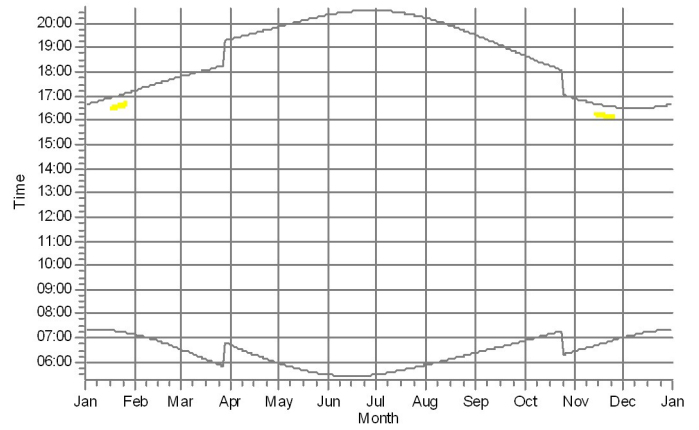
SHADOW - Calendar, graphical

Calculation: WF Albano - real case

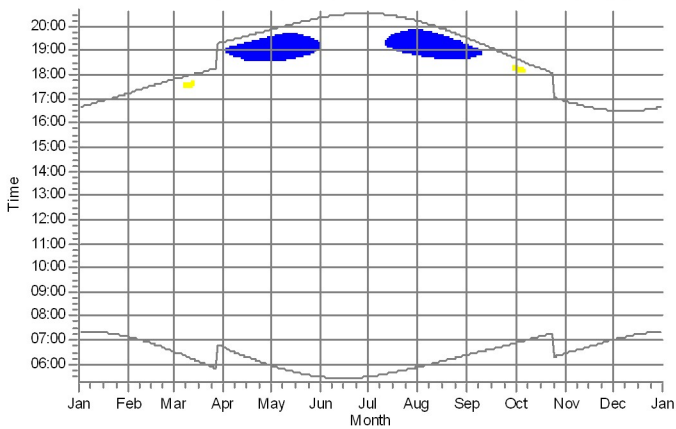
R20: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (7)



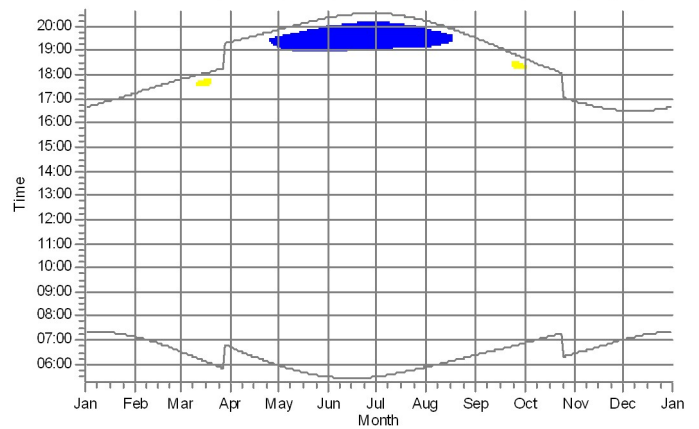
R26: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)



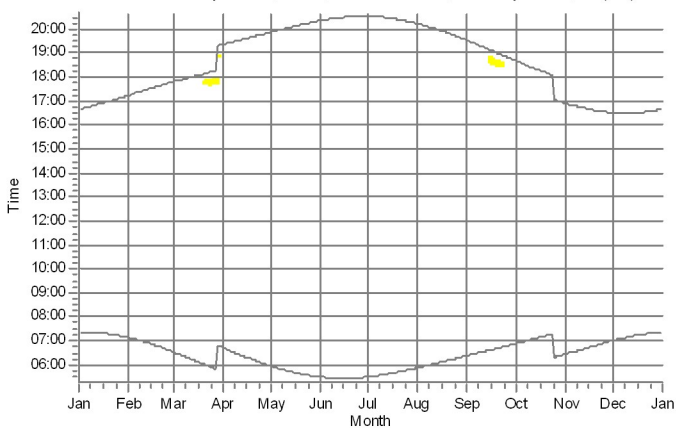
R30: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)



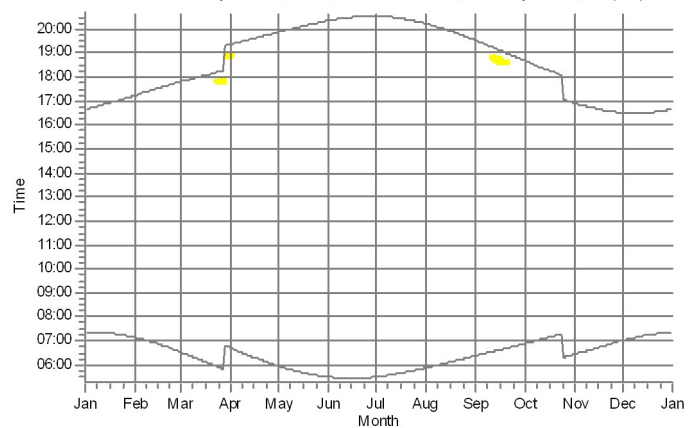
R31: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)



R33: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (11)



R35: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (12)



WTGs

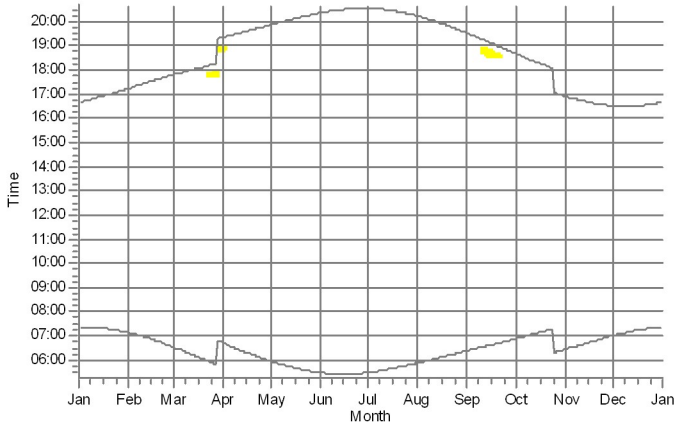
AL02: Siemens Gamesa SG 6.0-170 6000 170.0 IOI hub: 135,0 m (TOT: 220,0 m) (3)

AL03: Siemens Gamesa SG 6.0-170 6000 170.0 IOI hub: 135,0 m (TOT: 220,0 m) (4)

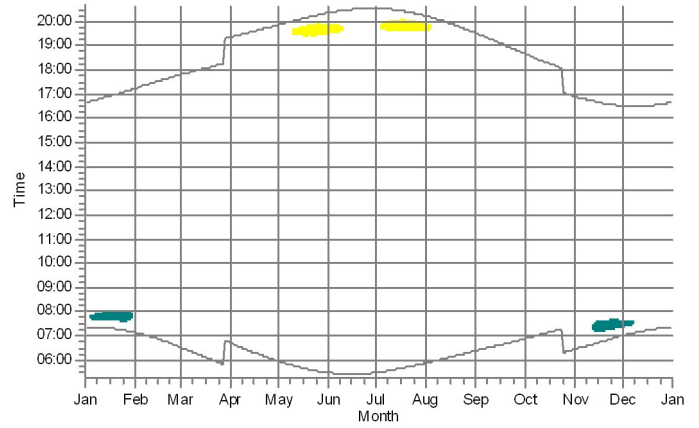
SHADOW - Calendar, graphical

Calculation: WF Albano - real case

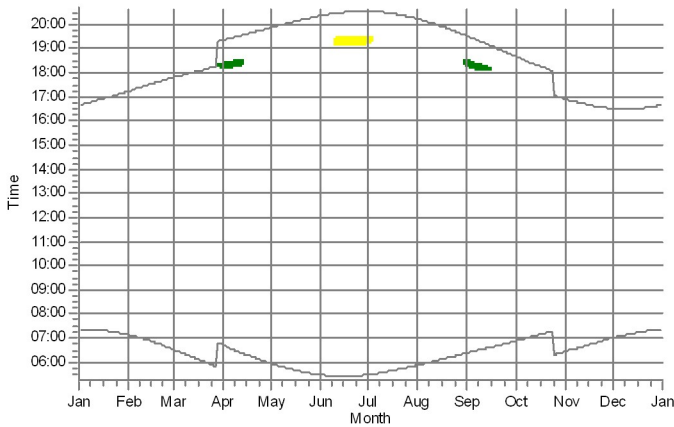
R36a: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (13)



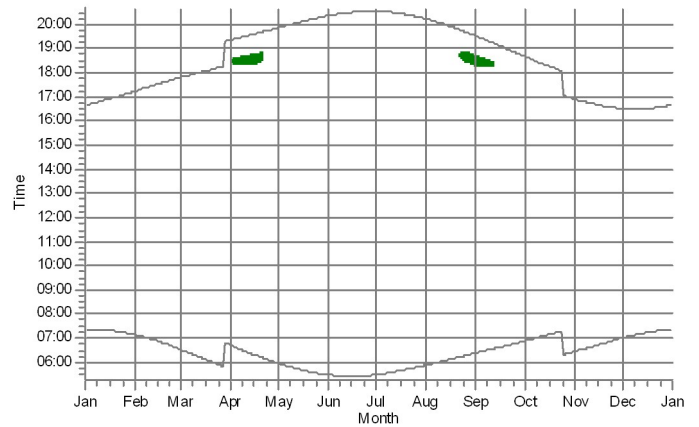
R41: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)



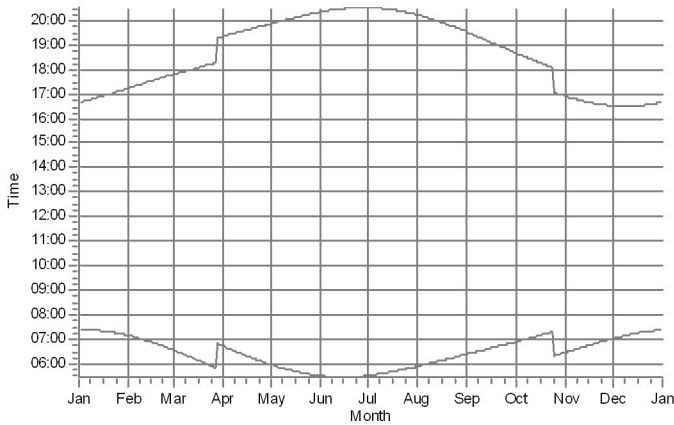
R43: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)



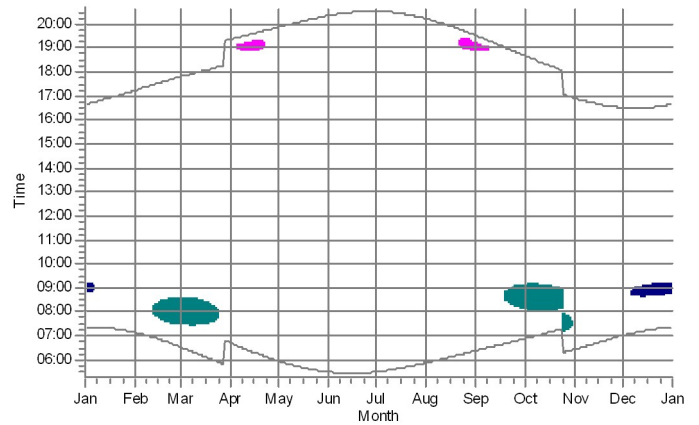
R44: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (16)



R45: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (17)



R49: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)



WTGs

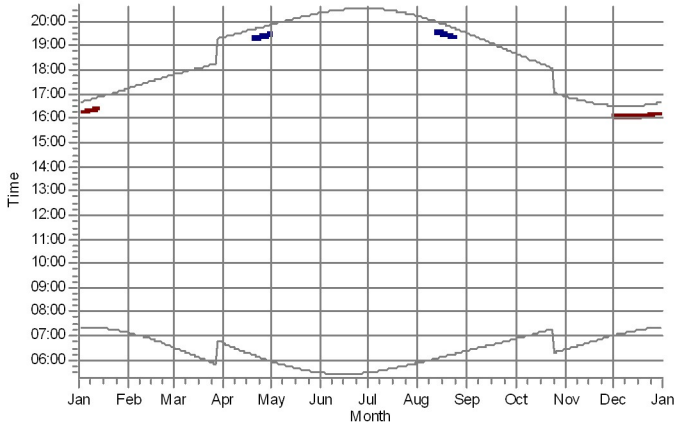
- AL01: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (2)
- AL02: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (3)
- AL05: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (6)

- AL06: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (7)
- AL07: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 135,0 m (TOT: 220,0 m) (8)

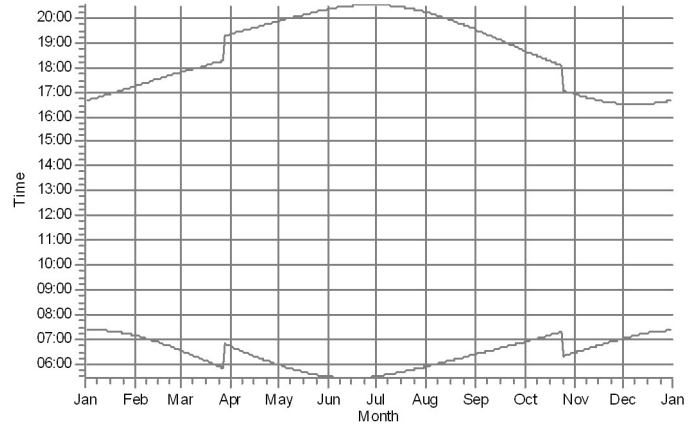
SHADOW - Calendar, graphical

Calculation: WF Albano - real case

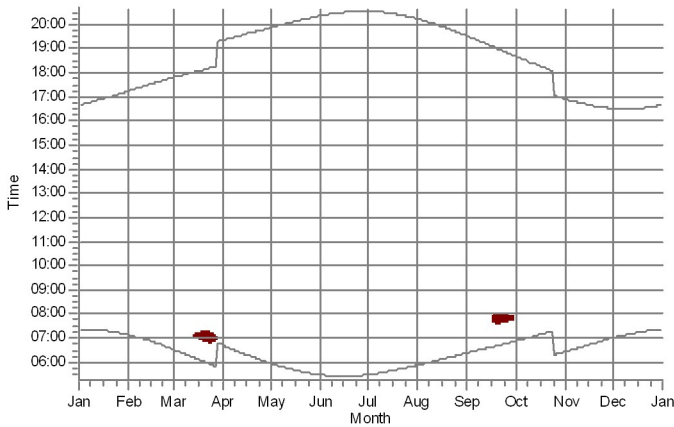
R56: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)



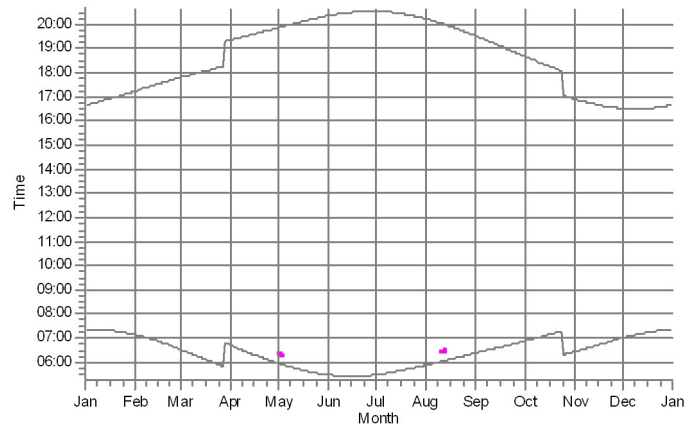
R66: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (20)



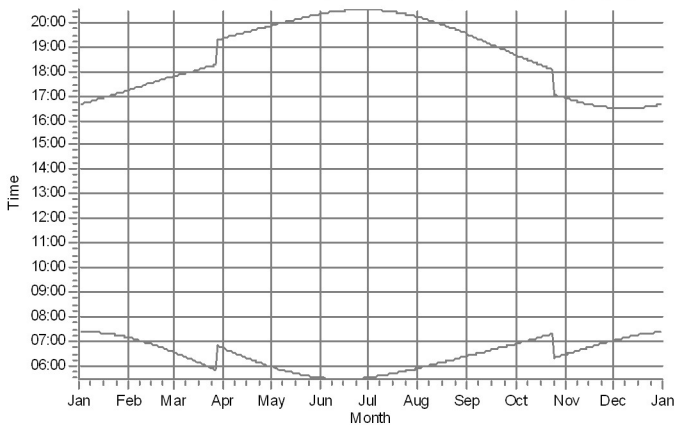
R67: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)



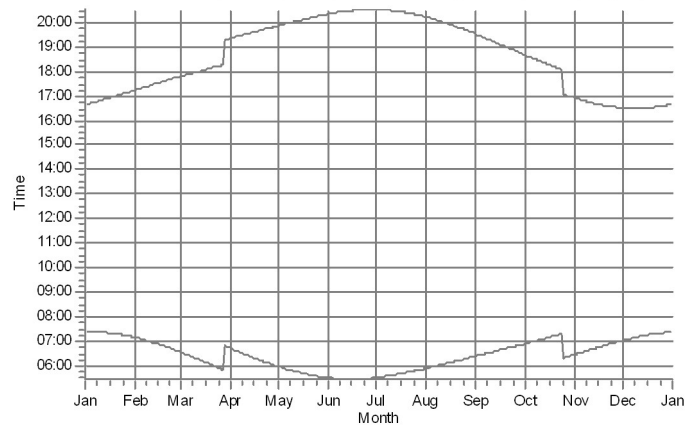
R78: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (22)



R79: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)



R81: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)



WTGs

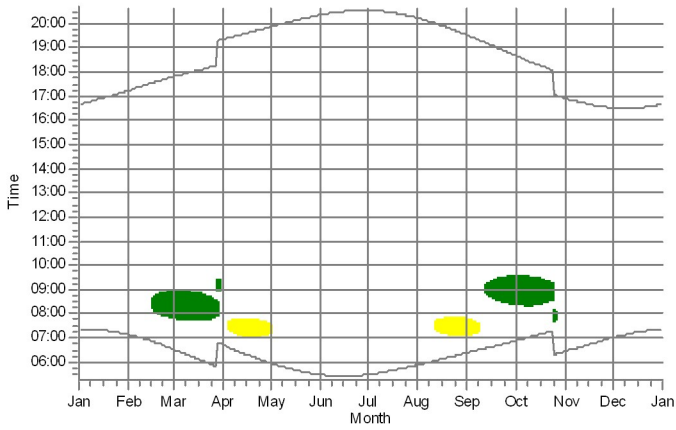
- AL05: Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 m) (6)
- AL07: Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 m) (8)

- AL08: Siemens Gamesa SG 6.0-170 6000 170.0 !OI hub: 135,0 m (TOT: 220,0 m) (9)

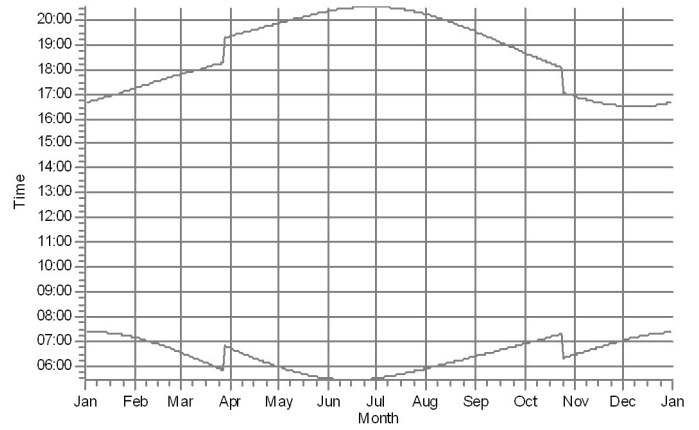
SHADOW - Calendar, graphical

Calculation: WF Albano - real case

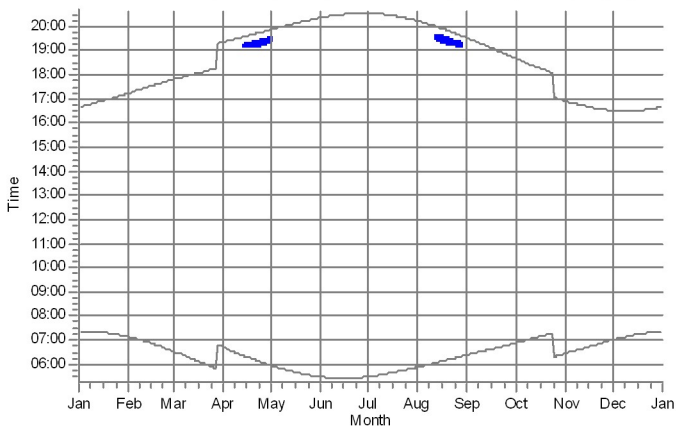
R88: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)



R93: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (26)



R95: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (27)



WTGs

- AL01: Siemens Gamesa SG 6.0-170 6000 170.0 !OI! hub: 135,0 m (TOT: 220,0 m) (2)
- AL02: Siemens Gamesa SG 6.0-170 6000 170.0 !OI! hub: 135,0 m (TOT: 220,0 m) (3)

- AL03: Siemens Gamesa SG 6.0-170 6000 170.0 !OI! hub: 135,0 m (TOT: 220,0 m) (4)

Project:

WF Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it
Calculated:
18/03/2024 15:20/4.0.531

SHADOW - Calendar per WTG

Calculation: WF Albano - real case WTG: AL01 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (2)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

|January |February |March |April |May |June

1	07:20 16:40	07:08 17:13	06:32 07:51-08:54/63 17:47	06:42 18:16-18:20/4 19:20	05:57 19:52	05:28 20:21
2	07:21 16:40	07:07 17:15	06:31 07:50-08:54/64 17:48	06:40 18:27-18:30/3 19:21 18:16-18:21/5	05:55 19:53	05:28 20:21
3	07:21 16:41	07:06 17:16	06:29 07:50-08:54/64 17:49	06:39 18:26-18:30/4 19:22 18:15-18:22/7	05:54 19:54	05:28 20:22
4	07:21 16:42	07:05 17:17	06:28 07:49-08:54/65 17:50	06:37 18:25-18:31/6 19:24 18:15-18:22/7	05:53 19:55	05:27 20:23
5	07:21 16:43	07:04 17:18	06:26 07:49-08:55/66 17:51	06:35 18:16-18:33/17 19:25	05:52 19:56	05:27 20:24
6	07:21 16:44	07:02 17:20	06:24 07:48-08:54/66 17:53	06:34 18:16-18:33/17 19:26	05:51 19:57	05:26 20:24
7	07:21 16:45	07:01 17:21	06:23 07:48-08:55/67 17:54	06:32 18:17-18:35/18 19:27	05:49 19:58	05:26 20:25
8	07:21 16:46	07:00 17:22	06:21 07:47-08:54/67 17:55	06:31 18:17-18:35/18 19:28	05:48 19:59	05:26 20:25
9	07:20 16:47	06:59 17:23	06:20 07:46-08:53/67 17:56	06:29 18:17-18:36/19 19:29	05:47 20:00	05:26 20:26
10	07:20 16:48	06:58 17:24	06:18 07:47-08:53/66 17:57	06:27 18:19-18:37/18 19:30	05:46 20:01	05:26 20:27
11	07:20 16:49	06:57 17:26	06:16 07:46-08:52/66 17:58	06:26 18:20-18:38/18 19:31	05:45 20:02	05:25 20:27
12	07:20 16:50	06:56 17:27	06:15 07:46-08:51/65 17:59	06:24 18:22-18:39/17 19:32	05:44 20:03	05:25 20:28
13	07:20 16:51	06:54 17:28	06:13 07:46-08:51/65 18:00	06:23 18:23-18:39/16 19:33	05:43 20:04	05:25 20:28
14	07:19 16:52	06:53 17:29	06:12 07:46-08:50/64 18:01	06:21 18:24-18:40/16 19:34	05:42 20:05	05:25 20:28
15	07:19 16:53	06:52 17:31	06:10 07:46-08:50/64 18:02	06:20 18:24-18:41/17 19:35	05:41 20:06	05:25 20:29
16	07:18 16:54	06:51 08:15-08:34/19 17:32	06:08 07:46-08:48/62 18:04	06:18 18:25-18:42/17 19:36	05:40 20:07	05:25 20:29
17	07:18 16:55	06:49 08:11-08:37/26 17:33	06:07 07:46-08:47/61 18:05	06:17 18:26-18:42/16 19:37	05:39 20:08	05:25 20:30
18	07:18 16:57	06:48 08:08-08:40/32 17:34	06:05 07:47-08:46/59 18:06	06:15 18:28-18:43/15 19:38	05:38 20:09	05:25 20:30
19	07:17 16:58	06:47 08:06-08:43/37 17:35	06:03 07:47-08:45/58 18:07	06:14 18:29-18:43/14 19:39	05:37 20:10	05:25 20:30
20	07:17 16:59	06:45 08:03-08:45/42 17:37	06:02 07:47-08:43/56 18:08	06:12 18:32-18:45/13 19:40	05:36 20:11	05:25 20:31
21	07:16 17:00	06:44 08:02-08:47/45 17:38	06:00 07:48-08:42/54 18:09	06:11 18:33-18:46/12 19:41	05:35 20:11	05:26 20:31
22	07:15 17:01	06:42 07:59-08:48/49 17:39	05:58 07:49-08:40/51 18:10	06:09 18:34-18:47/11 19:42	05:35 20:12	05:26 20:31
23	07:15 17:02	06:41 07:58-08:49/51 17:40	05:57 07:49-08:38/49 18:11	06:08 18:35-18:48/10 19:43	05:34 20:13	05:26 20:31
24	07:14 17:04	06:40 07:57-08:51/54 17:41	05:55 07:51-08:37/46 18:12	06:06 18:36-18:49/9 19:44	05:33 20:14	05:26 20:31
25	07:13 17:05	06:38 07:56-08:51/55 17:42	05:54 07:51-08:34/43 18:13	06:05 18:37-18:50/8 19:45	05:32 20:15	05:27 20:32
26	07:13 17:06	06:37 07:55-08:53/58 17:44	05:52 07:52-08:31/39 18:14	06:03 18:38-18:51/7 19:46	05:32 20:16	05:27 20:32
27	07:12 17:07	06:35 07:53-08:53/60 17:45	05:50 07:55-08:29/34 18:15	06:02 18:39-18:52/6 19:47	05:31 20:17	05:27 20:32
28	07:11 17:09	06:34 07:53-08:54/61 17:46	05:49 07:56-08:26/30 18:16	06:01 18:40-18:53/5 19:49	05:31 20:18	05:28 20:32
29	07:10 17:10		06:47 08:59-09:22/23 19:17 18:17-18:18/1	05:59 19:50	05:30 20:18	05:28 20:32
30	07:09 17:11		06:45 09:03-09:17/14 19:18 18:17-18:19/2	05:58 19:51	05:29 20:19	05:29 20:32
31	07:08 17:12		06:44 18:16-18:20/4 19:19		05:29 20:20	
Potential sun hours	299	298	370	398	447	451
Sum of minutes with flicker	0	589	1665	302	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 Albano - real case WTG: AL01 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (2)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	July	August	September	October	November	December
1	05:29 20:32	05:53 20:13	06:23 18:19-18:36/17 19:30	06:52 08:25-09:31/66 18:40	06:26 16:54	07:00 16:30
2	05:29 20:31	05:53 20:12	06:24 18:17-18:35/18 19:29	06:53 08:25-09:31/66 18:39	06:27 16:53	07:01 16:30
3	05:30 20:31	05:54 20:11	06:25 18:15-18:34/19 19:27	06:54 08:24-09:31/67 18:37	06:28 16:52	07:02 16:30
4	05:30 20:31	05:55 20:10	06:26 18:14-18:32/18 19:26	06:55 08:24-09:31/67 18:36	06:29 16:51	07:03 16:30
5	05:31 20:31	05:56 20:08	06:27 18:13-18:31/18 19:24	06:56 08:24-09:31/67 18:34	06:30 16:50	07:04 16:30
6	05:32 20:31	05:57 20:07	06:28 18:12-18:30/18 19:22	06:57 08:24-09:30/66 18:32	06:32 16:49	07:05 16:30
7	05:32 20:30	05:58 20:06	06:29 18:20-18:28/8 19:21	06:58 08:23-09:30/67 18:31	06:33 16:47	07:06 16:29
8	05:33 20:30	05:59 20:05	06:30 18:20-18:26/6 19:19	06:59 08:23-09:30/67 18:29	06:34 16:46	07:07 16:29
9	05:33 20:30	06:00 20:04	06:31 18:20-18:25/5 19:17	07:00 08:23-09:29/66 18:27	06:35 16:45	07:08 16:29
10	05:34 20:29	06:01 20:02	06:31 18:20-18:23/3 19:16	07:01 08:23-09:28/65 18:26	06:36 16:44	07:09 16:29
11	05:35 20:29	06:02 20:01	06:32 18:21-18:22/1 19:14	07:02 08:25-09:29/64 18:24	06:37 16:43	07:10 16:29
12	05:36 20:28	06:03 20:00	06:33 18:08-18:12/4 19:12	07:03 08:25-09:28/63 18:23	06:39 16:42	07:10 16:30
13	05:36 20:28	06:04 19:59	06:34 08:56-09:08/12 19:11	07:05 08:25-09:27/62 18:21	06:40 16:41	07:11 16:30
14	05:37 20:27	06:05 19:57	06:35 08:50-09:13/23 19:09	07:06 08:26-09:26/60 18:20	06:41 16:41	07:12 16:30
15	05:38 20:27	06:06 19:56	06:36 08:46-09:15/29 19:07	07:07 08:26-09:25/59 18:18	06:42 16:40	07:13 16:30
16	05:39 20:26	06:07 19:54	06:37 08:43-09:17/34 19:06	07:08 08:27-09:24/57 18:16	06:43 16:39	07:13 16:30
17	05:39 20:26	06:08 19:53	06:38 08:41-09:19/38 19:04	07:09 08:27-09:22/55 18:15	06:44 16:38	07:14 16:31
18	05:40 20:25	06:09 19:52	06:39 08:39-09:21/42 19:02	07:10 08:28-09:21/53 18:13	06:46 16:37	07:15 16:31
19	05:41 20:24	06:10 19:50	06:40 08:37-09:23/46 19:01	07:11 08:30-09:20/50 18:12	06:47 16:37	07:15 16:31
20	05:42 20:24	06:11 19:49	06:41 08:36-09:24/48 18:59	07:12 08:31-09:19/48 18:11	06:48 16:36	07:16 16:32
21	05:43 20:23	06:12 19:47	06:42 08:34-09:25/51 18:57	07:13 08:33-09:17/44 18:09	06:49 16:35	07:16 16:32
22	05:43 20:22	06:13 18:41-18:44/3 19:46	06:43 08:33-09:26/53 18:56	07:14 08:34-09:15/41 18:08	06:50 16:35	07:17 16:33
23	05:44 20:21	06:14 18:36-18:48/12 19:44	06:44 08:32-09:27/55 18:54	07:15 08:36-09:12/36 18:06	06:51 16:34	07:17 16:33
24	05:45 20:21	06:15 18:33-18:47/14 19:43	06:45 08:31-09:28/57 18:52	07:17 08:38-09:09/31 18:05	06:53 16:33	07:18 16:34
25	05:46 20:20	06:16 18:31-18:46/15 19:41	06:46 08:30-09:29/59 18:50	06:18 07:42-08:07/25 17:03	06:54 16:33	07:18 16:34
26	05:47 20:19	06:17 18:29-18:45/16 19:40	06:47 08:29-09:29/60 18:49	06:19 07:47-08:02/15 17:02	06:55 16:32	07:19 16:35
27	05:48 20:18	06:18 18:27-18:44/17 19:38	06:48 08:28-09:30/62 18:47	06:20 17:01	06:56 16:32	07:19 16:36
28	05:49 20:17	06:19 18:26-18:42/16 19:37	06:49 08:27-09:30/63 18:45	06:21 16:59	06:57 16:32	07:19 16:36
29	05:50 20:16	06:20 18:25-18:41/16 19:35	06:50 08:26-09:30/64 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	05:51 20:15	06:21 18:23-18:39/16 19:34	06:51 08:26-09:31/65 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	05:52 20:14	06:22 18:21-18:38/17 19:32		06:25 16:56		07:20 16:39
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	0	142	1031	1427	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 Albano - real case WTG: AL02 - Siemens Gamesa SG 6.0-170 6000 170.0 !0! 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
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	January	February	March	April	May	June
1	07:20 16:40	07:07 17:13	06:32 17:47	06:42 18:47-18:59/12	05:57 19:20	07:18-07:27/9 05:28 19:32-19:50/18 20:21
2	07:21 16:40	07:07 17:15	06:31 17:48	06:40 19:21	05:55 19:53	05:28 19:33-19:49/16 20:21
3	07:21 16:41	07:06 17:16	06:29 17:49	06:39 19:22	05:54 19:54	05:28 19:34-19:49/15 20:22
4	07:21 16:42	07:05 17:17	06:28 17:50	06:37 19:23	05:53 19:55	05:27 19:35-19:49/14 20:23
5	07:21 16:43	07:04 17:18	06:26 17:51	06:35 19:25	07:23-07:36/13 05:52 19:56	05:27 19:35-19:48/13 20:23
6	07:21 16:44	07:02 17:20	06:24 17:53	06:34 19:26	07:19-07:38/19 05:51 19:57	05:26 19:36-19:47/11 20:24
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	07:17-07:41/24 05:49 19:58	05:26 19:38-19:47/9 20:25
8	07:21 16:46	07:00 17:22	06:21 17:55	06:31 19:28	07:15-07:42/27 05:48 19:59	05:26 19:39-19:46/7 20:25
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	07:13-07:42/29 05:47 20:00	05:26 19:41-19:43/2 20:26
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	07:12-07:44/32 05:46 19:34-19:38/4 20:01	05:26 19:14-19:22/8 20:27
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	07:10-07:44/34 05:45 20:02	19:32-19:39/7 05:25 19:13-19:22/9 20:27
12	07:20 16:50	06:56 17:27	06:15 17:59	06:24 19:32	07:10-07:45/35 05:44 20:03	19:31-19:40/9 05:25 19:12-19:23/11 20:28
13	07:20 16:51	06:54 17:28	06:13 18:00	06:23 19:33	07:08-07:45/37 05:43 20:04	19:30-19:41/11 05:25 19:11-19:23/12 20:28
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	07:08-07:45/37 05:42 20:05	19:30-19:41/11 05:25 19:10-19:24/14 20:28
15	07:19 16:53	06:52 17:31	06:10 18:02	06:20 19:35	07:07-07:45/38 05:41 20:06	19:29-19:42/13 05:25 19:10-19:24/14 20:29
16	07:18 16:54	06:51 17:32	06:08 18:03	06:18 19:36	07:07-07:45/38 05:40 20:07	19:28-19:43/15 05:25 19:10-19:25/15 20:29
17	07:18 16:55	06:49 17:33	06:07 18:05	06:17 19:37	07:06-07:44/38 05:39 20:08	19:28-19:44/16 05:25 19:09-19:25/16 20:30
18	07:18 16:57	16:30-16:31/1 06:48 17:34	06:05 18:06	06:15 19:38	07:07-07:45/38 05:38 20:09	19:27-19:45/18 05:25 19:09-19:25/16 20:30
19	07:17 16:58	16:31-16:33/2 06:47 17:35	06:03 18:07	06:14 19:39	07:06-07:44/38 05:37 20:10	19:27-19:45/18 05:25 19:09-19:25/16 20:30
20	07:17 16:59	16:32-16:34/2 06:45 17:36	06:02 18:08	06:12 19:40	07:06-07:43/37 05:36 20:11	19:28-19:47/19 05:25 19:10-19:26/16 20:31
21	07:16 17:00	16:33-16:36/3 06:44 17:38	06:00 18:09	06:11 19:41	07:06-07:42/36 05:35 20:11	19:28-19:47/19 05:26 19:10-19:26/16 20:31
22	07:15 17:01	16:33-16:37/4 06:42 17:39	05:58 18:10	06:09 19:42	07:07-07:42/35 05:35 20:12	19:28-19:48/20 05:26 19:10-19:26/16 20:31
23	07:15 17:02	16:34-16:38/4 06:41 17:40	05:57 18:11	06:08 19:43	07:06-07:40/34 05:34 20:13	19:27-19:49/22 05:26 19:10-19:26/16 20:31
24	07:14 17:04	16:35-16:39/4 06:39 17:41	05:55 18:12	06:06 19:44	07:07-07:40/33 05:33 20:14	19:28-19:50/22 05:26 19:11-19:27/16 20:31
25	07:13 17:05	16:37-16:41/4 06:38 17:42	05:54 18:13	06:05 19:45	07:08-07:39/31 05:32 20:15	19:28-19:50/22 05:27 19:11-19:27/16 20:31
26	07:13 17:06	16:39-16:42/3 06:37 17:43	05:52 18:14	06:03 19:46	07:08-07:37/29 05:32 20:16	19:29-19:52/23 05:27 19:11-19:27/16 20:32
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	07:10-07:36/26 05:31 20:17	19:29-19:51/22 05:27 19:13-19:27/14 20:32
28	07:11 17:08	06:34 17:46	05:49 18:16	06:01 19:49	07:11-07:35/24 05:30 20:18	19:29-19:51/22 05:28 19:13-19:27/14 20:32
29	07:10 17:10	06:47 19:19	18:45-18:56/11 19:17	05:59 19:50	07:12-07:32/20 05:30 20:18	19:30-19:51/21 05:28 19:14-19:27/13 20:32
30	07:09 17:11	06:45 19:18	18:46-18:58/12 19:18	05:58 19:51	07:14-07:30/16 05:29 20:19	19:30-19:50/20 05:28 19:15-19:27/12 20:32
31	07:08 17:12	06:44 19:19	18:46-18:58/12 19:19	05:29 20:20	19:31-19:50/19 05:29 20:20	19:31-19:50/19 05:29 20:20
Potential sun hours	299	298	370	398	447	451
Sum of minutes with flicker	27	0	148	819	382	401

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 Albano - real case WTG: AL02 - Siemens Gamesa SG 6.0-170 6000 170.0 IO! 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
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	July	August	September	October	November	December
1	05:29 19:16-19:27/11 20:32	05:52 19:41-19:49/8 20:13	06:23 07:09-07:43/34 19:30	06:52 18:14-18:18/4 18:40	06:26 16:54	07:00 16:30
2	05:29 19:19-19:27/8 20:31	05:53 19:43-19:48/5 20:12	06:24 07:10-07:42/32 19:29	06:53 18:12-18:16/4 18:39	06:27 16:53	07:01 16:30
3	05:30 19:21-19:26/5 20:31	05:54 19:45-19:47/2 20:11	06:25 07:11-07:41/30 19:27	06:54 18:10-18:15/5 18:37	06:28 16:52	07:02 16:30
4	05:30 19:45-19:50/5 20:31	05:55 20:10	06:26 07:12-07:39/27 19:26	06:55 18:09-18:13/4 18:35	06:29 16:51	07:03 16:30
5	05:31 19:43-19:51/8 20:31	05:56 20:08	06:27 07:13-07:37/24 19:24	06:56 18:09-18:11/2 18:34	06:30 16:50	07:04 16:30
6	05:32 19:43-19:53/10 20:31	05:57 20:07	06:28 07:15-07:35/20 19:22	06:57 18:08-18:09/1 18:32	06:32 16:49	07:05 16:29
7	05:32 19:43-19:54/11 20:30	05:58 20:06	06:29 07:18-07:31/13 19:21	06:58 18:31	06:33 16:47	07:06 16:29
8	05:33 19:41-19:55/14 20:30	05:59 20:05	06:30 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	05:33 19:41-19:56/15 20:30	06:00 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	05:34 19:40-19:56/16 20:29	06:01 20:02	06:31 18:44-18:51/7 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	05:35 19:40-19:57/17 20:29	06:02 20:01	06:32 18:41-18:52/11 19:14	07:02 18:24	06:37 16:43	07:10 16:29
12	05:36 19:40-19:58/18 20:28	06:03 07:25-07:36/11 20:00	06:33 18:39-18:51/12 19:12	07:03 18:23	06:39 16:42	07:10 16:30
13	05:36 19:40-19:59/19 20:28	06:04 07:22-07:39/17 19:59	06:34 18:36-18:48/12 19:11	07:05 18:21	06:40 16:41	07:11 16:30
14	05:37 19:39-19:59/20 20:27	06:05 07:20-07:41/21 19:57	06:35 18:35-18:46/11 19:09	07:06 18:20	06:41 16:41	07:12 16:30
15	05:38 19:39-20:00/21 20:27	06:06 07:18-07:42/24 19:56	06:36 18:34-18:45/11 19:07	07:07 18:18	06:42 16:15-16:16/1 16:40	07:13 16:30
16	05:38 19:39-20:00/21 20:26	06:07 07:16-07:43/27 19:54	06:37 18:34-18:43/9 19:06	07:08 18:16	06:43 16:12-16:15/3 16:39	07:13 16:30
17	05:39 19:39-20:01/22 20:26	06:08 07:15-07:44/29 19:53	06:38 18:33-18:41/8 19:04	07:09 18:15	06:44 16:10-16:14/4 16:38	07:14 16:31
18	05:40 19:38-20:00/22 20:25	06:09 07:14-07:45/31 19:52	06:39 18:32-18:40/8 19:02	07:10 18:13	06:46 16:09-16:13/4 16:37	07:15 16:31
19	05:41 19:38-20:00/22 20:24	06:10 07:13-07:46/33 19:50	06:40 18:31-18:38/7 19:01	07:11 18:12	06:47 16:09-16:13/4 16:37	07:15 16:31
20	05:42 19:38-19:59/21 20:24	06:11 07:12-07:46/34 19:49	06:41 18:30-18:37/7 18:59	07:12 18:11	06:48 16:08-16:12/4 16:36	07:16 16:32
21	05:43 19:38-19:59/21 20:23	06:12 07:11-07:47/36 19:47	06:42 18:30-18:35/5 18:57	07:13 18:09	06:49 16:08-16:11/3 16:35	07:16 16:32
22	05:43 19:38-19:58/20 20:22	06:13 07:11-07:47/36 19:46	06:43 18:29-18:33/4 18:55	07:14 18:08	06:50 16:08-16:10/2 16:35	07:17 16:33
23	05:44 19:37-19:57/20 20:21	06:14 07:10-07:47/37 19:44	06:44 18:29-18:31/2 18:54	07:15 18:06	06:51 16:07-16:09/2 16:34	07:17 16:33
24	05:45 19:38-19:56/18 20:21	06:15 07:10-07:47/37 19:43	06:45 18:25-18:30/5 18:52	07:17 18:05	06:53 16:08-16:09/1 16:33	07:18 16:34
25	05:46 19:38-19:55/17 20:20	06:16 07:09-07:47/38 19:41	06:46 18:22-18:28/6 18:50	06:18 17:03	06:54 16:08-16:09/1 16:33	07:18 16:34
26	05:47 19:38-19:55/17 20:19	06:17 07:09-07:47/38 19:40	06:47 18:20-18:26/6 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	05:48 19:39-19:54/15 20:18	06:18 07:09-07:47/38 19:38	06:48 18:19-18:25/6 18:47	06:20 17:01	06:56 16:32	07:19 16:36
28	05:49 19:39-19:53/14 20:17	06:19 07:09-07:47/38 19:37	06:49 18:18-18:23/5 18:45	06:21 16:59	06:57 16:31	07:19 16:36
29	05:50 19:40-19:52/12 20:16	06:20 07:09-07:46/37 19:35	06:50 18:17-18:21/4 18:44	06:22 16:58	06:58 16:31	07:20 16:37
30	05:51 19:40-19:52/12 20:15	06:21 07:09-07:46/37 19:34	06:51 18:16-18:20/4 18:42	06:23 16:57	06:59 16:31	07:20 16:38
31	05:52 19:40-19:50/10 20:14	06:22 07:09-07:44/35 19:32		06:25 16:56		07:20 16:39
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	482	649	330	20	29	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 Albano - real case WTG: AL03 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (4)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70	6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	January	February	March	April	May	June
1	07:20 16:39	07:07 17:13	06:32 17:47	06:42 19:20	05:57 18:37-19:29/52 19:52	05:28 19:01-19:56/55 20:21
2	07:21 16:40	07:06 17:15	06:31 17:48	06:40 19:21	05:55 18:37-19:30/53 19:53	05:28 19:01-19:56/55 20:21
3	07:21 16:41	07:05 17:16	06:29 17:49	06:39 19:22	05:54 18:37-19:30/53 19:54	05:27 19:02-19:57/55 20:22
4	07:21 16:42	07:04 17:17	06:27 17:50	06:37 19:23	18:59-19:02/3 05:53 18:37-19:31/54 19:55	05:27 19:01-19:57/56 20:23
5	07:21 16:43	07:03 17:18	06:26 17:51	06:35 19:24	18:57-19:03/6 05:52 18:38-19:33/55 19:56	05:27 19:02-19:58/56 20:23
6	07:21 16:44	07:02 17:19	06:24 17:52	06:34 19:26	18:54-19:04/10 05:50 18:38-19:34/56 19:57	05:26 19:02-19:59/57 20:24
7	07:21 16:45	07:01 17:21	06:23 17:54	06:32 19:27	18:51-19:05/14 05:49 18:39-19:35/56 19:58	05:26 19:03-20:00/57 20:25
8	07:21 16:46	07:00 17:22	06:21 17:55	06:31 19:28	18:50-19:06/16 05:48 18:39-19:36/57 19:59	05:26 19:02-20:00/58 20:25
9	07:20 16:47	06:59 17:23	06:20 17:56	06:29 19:29	18:48-19:07/19 05:47 18:40-19:37/57 20:00	05:26 19:02-20:00/58 20:26
10	07:20 16:48	06:58 17:24	06:18 17:57	06:27 19:30	18:47-19:08/21 05:46 18:41-19:38/57 20:01	05:25 19:03-20:01/58 20:26
11	07:20 16:49	06:57 17:26	06:16 17:58	06:26 19:31	18:45-19:09/24 05:45 18:41-19:39/58 20:02	05:25 19:03-20:02/59 20:27
12	07:20 16:50	06:56 17:27	06:15 17:59	06:24 19:32	18:45-19:11/26 05:44 18:42-19:40/58 20:03	05:25 19:04-20:02/58 20:27
13	07:19 16:51	06:54 17:28	06:13 18:00	06:23 19:33	18:43-19:11/28 05:43 18:43-19:41/58 20:04	05:25 19:04-20:03/59 20:28
14	07:19 16:52	06:53 17:29	06:12 18:01	06:21 19:34	18:43-19:13/30 05:42 18:43-19:41/58 20:05	05:25 19:04-20:03/59 20:28
15	07:19 16:53	06:52 17:30	06:10 18:02	06:20 19:35	18:41-19:13/32 05:41 18:44-19:42/58 20:06	05:25 19:04-20:04/60 20:29
16	07:18 16:54	06:50 17:32	06:08 18:03	06:18 19:36	18:40-19:14/34 05:40 18:45-19:43/58 20:07	05:25 19:05-20:04/59 20:29
17	07:18 16:55	06:49 17:33	06:07 18:05	06:16 19:37	18:40-19:15/35 05:39 18:46-19:44/58 20:08	05:25 19:05-20:04/59 20:30
18	07:18 16:57	06:48 17:34	06:05 18:06	06:15 19:38	18:40-19:17/37 05:38 18:47-19:45/58 20:09	05:25 19:05-20:04/59 20:30
19	07:17 16:58	06:46 17:35	06:03 18:07	06:13 19:39	18:38-19:17/39 05:37 18:47-19:45/58 20:10	05:25 19:05-20:05/60 20:30
20	07:16 16:59	06:45 17:36	06:02 18:08	06:12 19:40	18:38-19:18/40 05:36 18:49-19:47/58 20:10	05:25 19:06-20:06/60 20:31
21	07:16 17:00	06:44 17:38	06:00 18:09	06:11 19:41	18:37-19:19/42 05:35 18:50-19:47/57 20:11	05:26 19:06-20:06/60 20:31
22	07:15 17:01	06:42 17:39	05:58 18:10	06:09 19:42	18:37-19:20/43 05:35 18:51-19:48/57 20:12	05:26 19:06-20:06/60 20:31
23	07:15 17:02	06:41 17:40	05:57 18:11	06:08 19:43	18:37-19:21/44 05:34 18:52-19:49/57 20:13	05:26 19:06-20:06/60 20:31
24	07:14 17:04	06:39 17:41	05:55 18:12	06:06 19:44	18:37-19:22/45 05:33 18:54-19:50/56 20:14	05:26 19:07-20:06/59 20:31
25	07:13 17:05	06:38 17:42	05:53 18:13	06:05 19:45	18:37-19:23/46 05:32 18:55-19:50/55 20:15	05:27 19:07-20:06/59 20:31
26	07:13 17:06	06:37 17:43	05:52 18:14	06:03 19:46	18:36-19:24/48 05:32 18:57-19:51/54 20:16	05:27 19:07-20:06/59 20:32
27	07:12 17:07	06:35 17:45	05:50 18:15	06:02 19:47	18:36-19:25/49 05:31 18:59-19:52/53 20:17	05:27 19:07-20:07/60 20:32
28	07:11 17:08	06:34 17:46	05:48 18:16	06:01 19:48	18:37-19:26/49 05:30 19:00-19:53/53 20:17	05:28 19:07-20:06/59 20:32
29	07:10 17:10		06:47 19:17	05:59 19:49	18:36-19:26/50 05:30 19:01-19:54/53 20:18	05:28 19:07-20:06/59 20:32
30	07:09 17:11		06:45 19:18	05:58 19:51	18:36-19:28/52 05:29 19:00-19:54/54 20:19	05:28 19:08-20:06/58 20:32
31	07:08 17:12		06:44 19:19		05:29 19:01-19:55/54 20:20	
Potential sun hours	299	298	370	398	447	451
Sum of minutes with flicker	0	0	88	882	1733	1750

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 Albano - real case WTG: AL03 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (4)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	July	August	September	October	November	December
1	05:29 19:07-20:06/59 20:31	05:52 18:51-19:49/58 20:13	06:23 18:44-19:08/24 19:30	06:52 07:27-07:37/10 18:40	06:26 16:54	07:00 16:30
2	05:29 19:08-20:06/58 20:31	05:53 18:51-19:48/57 20:12	06:24 18:45-19:06/21 19:29	06:53 07:27-07:37/10 18:39	06:27 16:53	07:01 16:30
3	05:30 19:08-20:06/58 20:31	05:54 18:50-19:47/57 20:11	06:25 18:46-19:05/19 19:27	06:54 07:28-07:37/9 18:37	06:28 16:52	07:02 16:30
4	05:30 19:08-20:06/58 20:31	05:55 18:49-19:46/57 20:10	06:26 18:47-19:03/16 19:25	06:55 07:29-07:36/7 18:35	06:29 16:51	07:03 16:30
5	05:31 19:08-20:05/57 20:31	05:56 18:49-19:45/56 20:08	06:27 18:48-19:02/14 19:24	06:56 07:30-07:36/6 18:34	06:30 16:50	07:04 16:30
6	05:32 19:08-20:06/58 20:31	05:57 18:48-19:44/56 20:07	06:27 18:50-19:00/10 19:22	06:57 07:30-07:35/5 18:32	06:31 16:48	07:05 16:29
7	05:32 19:09-20:06/57 20:30	05:58 18:48-19:43/55 20:06	06:28 18:51-18:59/8 19:21	06:58 07:31-07:34/3 18:31	06:33 16:47	07:06 16:29
8	05:33 19:08-20:05/57 20:30	05:59 18:47-19:42/55 20:05	06:29 18:53-18:57/4 19:19	06:59 18:29	06:34 16:46	07:07 16:29
9	05:33 19:09-20:05/56 20:30	06:00 18:47-19:41/54 20:04	06:30 19:17	07:00 18:27	06:35 16:45	07:08 16:29
10	05:34 19:08-20:04/56 20:29	06:01 18:46-19:40/54 20:02	06:31 19:16	07:01 18:26	06:36 16:44	07:09 16:29
11	05:35 19:09-20:04/55 20:29	06:02 18:46-19:39/53 20:01	06:32 19:14	07:02 18:24	06:37 16:43	07:09 16:29
12	05:35 19:09-20:04/55 20:28	06:03 18:45-19:37/52 20:00	06:33 19:12	07:03 18:23	06:39 16:42	07:10 16:29
13	05:36 19:09-20:04/55 20:28	06:04 18:44-19:35/51 19:58	06:34 19:11	07:04 18:21	06:40 16:41	07:11 16:30
14	05:37 19:09-20:02/53 20:27	06:05 18:44-19:34/50 19:57	06:35 19:09	07:06 18:19	06:41 16:40	07:12 16:30
15	05:38 19:09-20:02/53 20:27	06:06 18:43-19:33/50 19:56	06:36 19:07	07:07 18:18	06:42 16:40	07:13 16:30
16	05:38 19:09-20:02/53 20:26	06:07 18:43-19:31/48 19:54	06:37 19:06	07:08 18:16	06:43 16:39	07:13 16:30
17	05:39 19:07-20:01/54 20:26	06:08 18:43-19:30/47 19:53	06:38 19:04	07:09 18:15	06:44 16:38	07:14 16:31
18	05:40 19:06-20:00/54 20:25	06:09 18:43-19:29/46 19:52	06:39 19:02	07:10 18:13	06:46 16:37	07:15 16:31
19	05:41 19:04-20:00/56 20:24	06:10 18:42-19:28/46 19:50	06:40 19:00	07:11 18:12	06:47 16:36	07:15 16:31
20	05:42 19:03-19:59/56 20:24	06:11 18:42-19:26/44 19:49	06:41 18:59	07:12 18:10	06:48 16:36	07:16 16:32
21	05:42 19:02-19:59/57 20:23	06:12 18:42-19:25/43 19:47	06:42 18:57	07:13 18:09	06:49 16:35	07:16 16:32
22	05:43 19:01-19:58/57 20:22	06:13 18:42-19:23/41 19:46	06:43 18:55	07:14 18:08	06:50 16:34	07:17 16:33
23	05:44 18:59-19:57/58 20:21	06:14 18:42-19:22/40 19:44	06:44 18:54	07:15 18:06	06:51 16:34	07:17 16:33
24	05:45 18:58-19:56/58 20:20	06:15 18:42-19:21/39 19:43	06:45 18:52	07:16 18:05	06:52 16:33	07:18 16:34
25	05:46 18:58-19:55/57 20:20	06:16 18:43-19:19/36 19:41	06:46 18:50	06:18 17:03	06:54 16:33	07:18 16:34
26	05:47 18:57-19:55/58 20:19	06:17 18:43-19:18/35 19:40	06:47 18:49	06:19 17:02	06:55 16:32	07:19 16:35
27	05:48 18:56-19:54/58 20:18	06:18 18:43-19:16/33 19:38	06:48 18:47	07:24-07:33/9 17:01	06:20 16:32	07:19 16:36
28	05:49 18:55-19:53/58 20:17	06:19 18:43-19:15/32 19:37	06:49 18:45	07:24-07:35/11 16:59	06:21 16:31	07:19 16:36
29	05:50 18:54-19:53/59 20:16	06:20 18:43-19:12/29 19:35	06:50 18:44	07:25-07:36/11 16:58	06:22 16:31	07:20 16:37
30	05:51 18:54-19:52/58 20:15	06:21 18:43-19:11/28 19:34	06:51 18:42	07:26-07:36/10 16:57	06:23 16:31	07:20 16:38
31	05:51 18:52-19:50/58 20:14	06:22 18:44-19:09/25 19:32		06:24 16:56		07:20 16:38
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	1754	1427	157	50	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 Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 15:20/4.0.531

SHADOW - Calendar per WTG

Calculation: WF Albano - real case WTG: AL04 - 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
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

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

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

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

Project:

WF Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 15:20/4.0.531

SHADOW - Calendar per WTG

Calculation: WF Albano - real case WTG: AL05 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (6)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:20	07:07	06:32	06:42	05:57	06:20-06:21/1	05:28	05:29	05:52	06:23	18:56-19:08/12	06:52	06:26	07:00
	16:40	17:13	17:47	19:20	19:52		20:21	20:31	20:13	19:30		18:40	16:54	16:30
2	07:20	07:06	06:31	06:40	05:55	06:19-06:20/1	05:28	05:29	05:53	06:24	18:56-19:06/10	06:53	06:27	07:01
	16:40	17:15	17:48	19:21	19:53		20:21	20:31	20:12	19:29		18:39	16:53	16:30
3	07:21	07:05	06:29	06:39	05:54	06:17-06:18/1	05:27	05:30	05:54	06:25	18:56-19:05/9	06:54	06:28	07:02
	16:41	17:16	17:49	19:22	19:54		20:22	20:31	20:11	19:27		18:37	16:52	16:30
4	07:21	07:04	06:27	06:37	05:53		05:27	05:30	05:55	06:26	18:56-19:03/7	06:55	06:29	07:03
	16:42	17:17	17:50	19:23	19:55		20:23	20:31	20:10	19:25		18:35	16:51	16:30
5	07:21	07:03	06:26	06:35	05:52		05:27	05:31	05:56	06:27	18:56-19:02/6	06:56	06:30	07:04
	16:43	17:18	17:51	19:24	19:56		20:23	20:31	20:08	19:24		18:34	16:50	16:30
6	07:21	07:02	06:24	06:34	05:50	19:01-19:04/3	05:26	05:32	05:57	06:28	18:57-19:00/3	06:57	06:31	07:05
	16:44	17:20	17:53	19:26	19:57		20:24	20:31	20:07	19:22		18:32	16:48	16:29
7	07:21	07:01	06:23	06:32	05:49	18:59-19:05/6	05:26	05:32	05:58	06:28	18:58-18:59/1	06:58	06:33	07:06
	16:45	17:21	17:54	19:27	19:58		20:25	20:30	20:06	19:21		18:31	16:47	16:29
8	07:20	07:00	06:21	06:31	05:48	18:59-19:06/7	05:26	05:33	05:59	06:29		06:59	06:34	07:07
	16:46	17:22	17:55	19:28	19:59		20:25	20:30	20:05	19:19		18:29	16:46	16:29
9	07:20	06:59	06:20	06:29	05:47	18:58-19:07/9	05:26	05:33	06:00	06:30		07:00	06:35	07:08
	16:47	17:23	17:56	19:29	20:00		20:26	20:30	20:04	19:17		18:27	16:45	16:29
10	07:20	06:58	06:18	06:27	05:46	18:58-19:08/10	05:25	05:34	06:01	06:27-06:28/1	06:31	07:01	06:36	07:09
	16:48	17:24	17:57	19:30	20:01		20:26	20:29	20:02	19:16		18:26	16:44	16:29
11	07:20	06:57	06:16	06:26	05:45	18:57-19:09/12	05:25	05:35	06:02	06:28-06:29/1	06:32	07:02	06:37	07:09
	16:49	17:26	17:58	19:31	20:02		20:27	20:29	20:01	19:14		18:24	16:43	16:29
12	07:20	06:55	06:15	06:24	05:44	18:57-19:11/14	05:25	05:35	06:03	06:29-06:30/1	06:33	07:03	06:39	07:10
	16:50	17:27	17:59	19:32	20:03		20:27	20:28	20:00	19:12		18:23	16:42	16:30
13	07:19	06:54	06:13	06:23	05:43	18:57-19:11/14	05:25	05:36	06:04	06:34		07:04	06:40	07:11
	16:51	17:28	18:00	19:33	20:04		20:28	20:28	19:58	19:11		18:21	16:41	16:30
14	07:19	06:53	06:12	06:21	05:42	18:56-19:12/16	05:25	05:37	06:05	06:35		07:06	06:41	07:12
	16:52	17:29	18:01	19:34	20:05		20:28	20:27	19:57	19:09		18:19	16:41	16:30
15	07:19	06:52	06:10	06:20	05:41	18:57-19:13/16	05:25	05:38	06:06	06:36		07:07	06:42	07:13
	16:53	17:30	18:02	19:35	20:06		20:29	20:27	19:56	19:07		18:18	16:40	16:30
16	07:18	06:50	06:08	06:18	05:40	18:57-19:14/17	05:25	05:38	06:07	06:37		07:08	06:43	07:13
	16:54	17:32	18:03	19:36	20:07		20:29	20:26	19:54	19:06		18:16	16:39	16:30
17	07:18	06:49	06:07	06:17	05:39	18:58-19:15/17	05:25	05:39	06:08	06:38		07:09	06:44	07:14
	16:55	17:33	18:05	19:37	20:08		20:30	20:26	19:53	19:04		18:15	16:38	16:31
18	07:17	06:48	06:05	06:15	05:38	18:59-19:15/16	05:25	05:40	06:09	06:39		07:10	06:46	07:15
	16:57	17:34	18:06	19:38	20:09		20:30	20:25	19:52	19:02		18:13	16:37	16:31
19	07:17	06:46	06:03	06:13	05:37	19:00-19:17/17	05:25	05:41	06:10	06:40		07:11	06:47	07:15
	16:58	17:35	18:07	19:39	20:10		20:30	20:24	19:50	19:00		18:12	16:37	16:31
20	07:16	06:45	06:02	06:12	05:36	19:03-19:15/12	05:25	05:42	06:11	06:41		07:12	06:48	07:16
	16:59	17:36	18:08	19:40	20:10		20:30	20:24	19:49	18:59		18:10	16:36	16:32
21	07:16	06:44	06:00	06:11	05:35	19:06-19:10/4	05:26	05:43	06:12	06:42		07:13	06:49	07:16
	17:00	17:38	18:09	19:41	20:11		20:31	20:23	19:47	18:57		18:09	16:35	16:32
22	07:15	06:42	05:58	06:09	05:35		05:26	05:43	06:13	19:10-19:16/6	06:43	07:14	06:50	07:17
	17:01	17:39	18:10	19:42	20:12		20:31	20:22	19:46	18:55		18:08	16:35	16:33
23	07:15	06:41	05:57	06:08	05:34		05:26	05:44	06:14	19:06-19:19/13	06:44	07:15	06:51	07:17
	17:02	17:40	18:11	19:43	20:13		20:31	20:21	19:44	18:54		18:06	16:34	16:33
24	07:14	06:39	05:55	06:06	05:33		05:26	05:45	06:15	19:04-19:21/17	06:45	07:16	06:52	07:18
	17:04	17:41	18:12	19:44	20:14		20:31	20:20	19:43	18:52		18:05	16:33	16:34
25	07:13	06:38	05:53	06:05	05:32		05:27	05:46	06:16	19:02-19:19/17	06:46	07:17	06:54	07:18
	17:05	17:42	18:13	19:45	20:15		20:31	20:20	19:41	18:50		17:03	16:33	16:34
26	07:12	06:37	05:52	06:03	05:32		05:27	05:47	06:17	19:01-19:18/17	06:47	07:18	06:55	07:19
	17:06	17:43	18:14	19:46	20:16		20:31	20:19	19:40	18:49		17:02	16:32	16:35
27	07:12	06:35	05:50	06:02	05:31		05:27	05:48	06:18	19:00-19:16/16	06:48	07:19	06:56	07:19
	17:07	17:45	18:15	19:47	20:17		20:32	20:18	19:38	18:47		17:01	16:32	16:36
28	07:11	06:34	05:48	06:01	05:30		05:28	05:49	06:19	18:59-19:15/16	06:49	07:20	06:57	07:19
	17:08	17:46	18:16	19:48	20:17		20:32	20:17	19:37	18:45		16:59	16:31	16:36
29	07:10		06:47	05:59	05:30		05:28	05:50	06:20	18:57-19:12/15	06:50	07:21	06:58	07:20
	17:10		19:17	19:49	20:18		20:32	20:16	19:35	18:44		16:58	16:31	16:37
30	07:09		06:45	05:58	05:29		05:28	05:51	06:21	18:56-19:11/15	06:51	07:22	06:59	07:20
	17:11		19:18	19:51	20:19		20:32	20:15	19:33	18:42		16:57	16:31	16:38
31	07:08		06:44		05:29			05:52	06:22	18:56-19:09/13		06:58		07:20
	17:12		19:19		20:20			20:14	19:32			16:56		16:38
Potential sun hours	299	298	370	398	447	451	458	427	375	346	299	289		
Sum of minutes with flicker	0	0	0	190	3	0	0	148	48	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 Albano - real case WTG: AL06 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (7)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June
1	07:20 16:39	07:07 16:33-16:49/16 17:13	06:32 07:32-08:31/59 17:47	06:42 19:20	05:57 19:51	05:28 19:41-19:55/14 20:20
2	07:20 16:40	07:06 16:34-16:51/17 17:14	06:30 07:32-08:31/59 17:48	06:40 19:21	05:55 19:52	05:28 19:41-19:56/15 20:21
3	07:20 16:41	07:05 16:35-16:52/17 17:16	06:29 07:32-08:31/59 17:49	06:39 19:22	05:54 19:54	05:27 19:42-19:57/15 20:22
4	07:21 16:42	07:04 16:37-16:53/16 17:17	06:27 07:31-08:31/60 17:50	06:37 19:23	05:53 19:55	05:27 19:42-19:57/15 20:23
5	07:21 07:46-07:47/1 16:43	07:03 16:39-16:55/16 17:18	06:26 07:31-08:31/60 17:51	06:35 19:24	05:52 19:56	05:27 19:43-19:58/15 20:23
6	07:21 07:45-07:48/3 16:44	07:02 16:41-16:56/15 17:19	06:24 07:31-08:30/59 17:52	06:34 19:25	05:50 19:57	05:26 19:44-19:59/15 20:24
7	07:20 07:45-07:49/4 16:45	07:01 16:44-16:58/14 17:21	06:23 07:30-08:29/59 17:54	06:32 19:26	05:49 19:58	05:26 19:45-20:00/15 20:25
8	07:20 07:45-07:50/5 16:46	07:00 16:47-16:59/12 17:22	06:21 07:31-08:29/58 17:55	06:30 19:27	05:48 19:59	05:26 19:45-20:00/15 20:25
9	07:20 07:45-07:52/7 16:47 16:20-16:21/1	06:59 17:23	06:20 07:30-08:28/58 17:56	06:29 19:29	05:47 20:00	05:26 19:45-20:00/15 20:26
10	07:20 07:46-07:53/7 16:48 16:21-16:23/2	06:58 17:24	06:18 07:31-08:28/57 17:57	06:27 19:30	05:46 19:35-19:37/2 20:01	05:25 19:46-20:01/15 20:26
11	07:20 07:45-07:53/8 16:49 16:20-16:23/3	06:57 17:26	06:16 07:31-08:27/56 17:58	06:26 19:31	05:45 19:35-19:38/3 20:02	05:25 19:47-20:02/15 20:27
12	07:20 07:45-07:54/9 16:50 16:21-16:25/4	06:55 17:27	06:15 07:31-08:25/54 17:59	06:24 19:32	05:44 19:35-19:39/4 20:03	05:25 19:47-20:02/15 20:27
13	07:19 07:46-07:55/9 16:51 16:22-16:26/4	06:54 07:59-08:09/10 17:28	06:13 07:32-08:25/53 18:00	06:23 19:33	05:43 19:36-19:41/5 20:04	05:25 19:48-20:03/15 20:28
14	07:19 07:45-07:55/10 16:52 16:21-16:27/6	06:53 07:53-08:14/21 17:29	06:11 07:32-08:23/51 18:01	06:21 19:34	05:42 19:36-19:41/5 20:05	05:25 19:48-20:03/15 20:28
15	07:19 07:45-07:57/12 16:53 16:22-16:28/6	06:52 07:50-08:17/27 17:30	06:10 07:32-08:22/50 18:02	06:19 19:35	05:41 19:36-19:42/6 20:06	05:25 19:49-20:03/14 20:29
16	07:18 07:43-07:57/14 16:54 16:22-16:29/7	06:50 07:48-08:20/32 17:32	06:08 07:33-08:21/48 18:03	06:18 19:36	05:40 19:35-19:43/8 20:07	05:25 19:49-20:04/15 20:29
17	07:18 07:43-07:58/15 16:55 16:23-16:31/8	06:49 07:45-08:21/36 17:33	06:07 07:34-08:19/45 18:04	06:16 19:37	05:39 19:35-19:44/9 20:08	05:25 19:50-20:04/14 20:29
18	07:17 07:43-07:58/15 16:56 16:23-16:31/8	06:48 07:43-08:23/40 17:34	06:05 07:34-08:16/42 18:05	06:15 19:38	05:38 19:35-19:44/9 20:08	05:25 19:50-20:04/14 20:30
19	07:17 07:43-07:59/16 16:58 16:24-16:33/9	06:46 07:42-08:25/43 17:35	06:03 07:36-08:15/39 18:07	06:13 19:39	05:37 19:35-19:45/10 20:09	05:25 19:50-20:04/14 20:30
20	07:16 07:42-07:58/16 16:59 16:24-16:34/10	06:45 07:40-08:26/46 17:36	06:02 07:37-08:12/35 18:08	06:12 19:40	05:36 19:35-19:46/11 20:10	05:25 19:51-20:06/15 20:30
21	07:16 07:41-07:58/17 17:00 16:24-16:35/11	06:44 07:39-08:27/48 17:38	06:00 07:39-08:09/30 18:09	06:10 19:41	05:35 19:36-19:47/11 20:11	05:26 19:51-20:06/15 20:31
22	07:15 07:42-07:59/17 17:01 16:25-16:37/12	06:42 07:38-08:28/50 17:39	05:58 07:42-08:07/25 18:10	06:09 19:42	05:35 19:36-19:48/12 20:12	05:26 19:51-20:06/15 20:31
23	07:15 07:41-07:59/18 17:02 16:26-16:38/12	06:41 07:37-08:29/52 17:40	05:57 07:45-08:02/17 18:11	06:08 19:43	05:34 19:36-19:48/12 20:13	05:26 19:51-20:05/14 20:31
24	07:14 07:39-07:58/19 17:04 16:26-16:39/13	06:39 07:35-08:29/54 17:41	05:55 18:12	06:06 19:44	05:33 19:37-19:50/13 20:14	05:26 19:51-20:05/14 20:31
25	07:13 07:40-07:59/19 17:05 16:26-16:40/14	06:38 07:35-08:30/55 17:42	05:53 18:13	06:05 19:45	05:32 19:37-19:50/13 20:15	05:26 19:52-20:06/14 20:31
26	07:12 07:41-07:58/17 17:06 16:28-16:42/14	06:36 07:34-08:30/56 17:43	05:52 18:14	06:03 19:46	05:32 19:38-19:51/13 20:16	05:27 19:51-20:06/15 20:31
27	07:12 07:42-07:57/15 17:07 16:28-16:43/15	06:35 07:34-08:31/57 17:45	05:50 18:15	06:02 19:47	05:31 19:39-19:52/13 20:17	05:27 19:51-20:06/15 20:31
28	07:11 07:44-07:56/12 17:08 16:29-16:44/15	06:33 07:33-08:31/58 17:46	05:48 18:16	06:01 19:48	05:30 19:39-19:52/13 20:17	05:28 19:52-20:06/14 20:31
29	07:10 07:46-07:54/8 17:10 16:30-16:46/16		06:47 19:17	05:59 19:49	05:30 19:40-19:54/14 20:18	05:28 19:51-20:06/15 20:31
30	07:09 16:31-16:47/16 17:11		06:45 19:18	05:58 19:50	05:29 19:40-19:54/14 20:19	05:28 19:52-20:06/14 20:31
31	07:08 16:32-16:48/16 17:12		06:43 19:19		05:29 19:41-19:55/14 20:20	
Potential sun hours	299	298	370	398	447	451
Sum of minutes with flicker	515	808	1133	0	214	440

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 Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 15:20/4.0.531

SHADOW - Calendar per WTG

Calculation: WF Albano - real case WTG: AL06 - Siemens Gamesa SG 6.0-170 6000 170.0 !0! hub: 135,0 m (TOT: 220,0 m) (7)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	July	August	September	October	November	December
1	05:29 19:51-20:06/15 20:31	05:52 19:46-19:49/3 20:13	06:23 19:30	06:52 08:10-09:05/55 18:40	06:26 16:54	07:00 07:27-07:35/8 16:30 16:02-16:05/3
2	05:29 19:51-20:06/15 20:31	05:53 19:46-19:48/2 20:12	06:24 19:29	06:53 08:10-09:05/55 18:39	06:27 16:23-16:25/2 16:53	07:01 07:28-07:35/7 16:30 16:03-16:05/2
3	05:30 19:51-20:06/15 20:31	05:54 19:46-19:47/1 20:11	06:25 19:27	06:54 08:09-09:05/56 18:37	06:28 16:15-16:28/13 16:52	07:02 07:29-07:35/6 16:30 16:03-16:05/2
4	05:30 19:51-20:06/15 20:31	05:55 20:09	06:25 19:25	06:55 08:08-09:06/58 18:35	06:29 16:13-16:27/14 16:51	07:03 07:30-07:35/5 16:30
5	05:31 19:50-20:05/15 20:31	05:56 20:08	06:26 19:24	06:56 08:07-09:06/59 18:34	06:30 16:10-16:26/16 16:50	07:04 07:30-07:34/4 16:29
6	05:31 19:50-20:05/15 20:30	05:57 20:07	06:27 19:22	06:57 08:07-09:06/59 18:32	06:31 16:08-16:25/17 16:48	07:05 07:31-07:34/3 16:29
7	05:32 19:50-20:05/15 20:30	05:58 20:06	06:28 19:20	06:58 08:06-09:06/60 18:30	06:33 16:07-16:23/16 16:47	07:06 07:32-07:33/1 16:29
8	05:33 19:50-20:05/15 20:30	05:59 20:05	06:29 19:19	06:59 08:06-09:06/60 18:29	06:34 16:06-16:23/17 16:46	07:07 16:29
9	05:33 19:50-20:05/15 20:29	06:00 20:03	06:30 19:17	07:00 08:06-09:05/59 18:27	06:35 16:05-16:21/16 16:45	07:08 16:29
10	05:34 19:49-20:04/15 20:29	06:01 20:02	06:31 19:16	07:01 08:05-09:05/60 18:26	06:36 16:03-16:20/17 16:44	07:08 16:29
11	05:35 19:49-20:04/15 20:29	06:02 20:01	06:32 19:14	07:02 08:05-09:05/60 18:24	06:37 16:02-16:19/17 16:43	07:09 16:29
12	05:35 19:49-20:04/15 20:28	06:03 20:00	06:33 19:12	07:03 08:05-09:04/59 18:22	06:38 16:02-16:19/17 16:42	07:10 16:29
13	05:36 19:48-20:02/14 20:28	06:04 19:58	06:34 19:10	07:04 08:06-09:05/59 18:21	06:40 07:18-07:26/8 16:41 16:02-16:17/15	07:11 16:30
14	05:37 19:48-20:02/14 20:27	06:05 19:57	06:35 19:09	07:05 08:06-09:04/58 18:19	06:41 07:16-07:28/12 16:40 16:01-16:16/15	07:12 16:30
15	05:38 19:48-20:02/14 20:27	06:06 19:56	06:36 19:07	07:06 08:06-09:03/57 18:18	06:42 07:15-07:30/15 16:40 16:00-16:15/15	07:12 16:30
16	05:38 19:48-20:02/14 20:26	06:07 19:54	06:37 19:05	07:08 08:07-09:02/55 18:16	06:43 07:14-07:31/17 16:39 16:01-16:15/14	07:13 16:30
17	05:39 19:47-20:00/13 20:25	06:08 19:53	06:38 19:04	07:09 08:07-09:01/54 18:15	06:44 07:13-07:32/19 16:38 16:00-16:14/14	07:14 16:31
18	05:40 19:47-20:00/13 20:25	06:09 19:51	06:39 19:02	07:10 08:07-09:00/53 18:13	06:45 07:13-07:32/19 16:37 16:00-16:13/13	07:14 16:31
19	05:41 19:47-20:00/13 20:24	06:10 19:50	06:40 19:00	07:11 08:08-08:59/51 18:12	06:47 07:16-07:34/18 16:36 16:00-16:12/12	07:15 16:31
20	05:42 19:47-19:59/12 20:23	06:11 19:49	06:41 08:32-08:47/15 18:59	07:12 08:08-08:58/50 18:10	06:48 07:17-07:34/17 16:36 16:00-16:12/12	07:16 16:32
21	05:42 19:47-19:59/12 20:23	06:12 19:47	06:42 08:28-08:51/23 18:57	07:13 08:10-08:58/48 18:09	06:49 07:17-07:34/17 16:35 16:00-16:11/11	07:16 16:32
22	05:43 19:46-19:57/11 20:22	06:13 19:46	06:43 08:25-08:54/29 18:55	07:14 08:11-08:56/45 18:08	06:50 07:18-07:34/16 16:34 16:00-16:10/10	07:17 16:33
23	05:44 19:46-19:57/11 20:21	06:14 19:44	06:44 08:22-08:56/34 18:54	07:15 08:12-08:54/42 18:06	06:51 07:19-07:35/16 16:34 16:00-16:09/9	07:17 16:33
24	05:45 19:46-19:56/10 20:20	06:15 19:43	06:45 08:20-08:58/38 18:52	07:16 08:14-08:53/39 18:05	06:52 07:21-07:36/15 16:33 16:00-16:08/8	07:18 16:34
25	05:46 19:46-19:55/9 20:19	06:16 19:41	06:46 08:18-08:59/41 18:50	06:17 07:15-07:50/35 17:03	06:53 07:21-07:36/15 16:33 16:01-16:09/8	07:18 16:34
26	05:47 19:46-19:55/9 20:19	06:17 19:40	06:47 08:17-09:01/44 18:49	06:19 07:18-07:49/31 17:02	06:55 07:22-07:36/14 16:32 16:01-16:08/7	07:19 16:35
27	05:48 19:46-19:54/8 20:18	06:18 19:38	06:48 08:15-09:02/47 18:47	06:20 07:20-07:46/26 17:01	06:56 07:24-07:36/12 16:32 16:01-16:07/6	07:19 16:36
28	05:49 19:46-19:53/7 20:17	06:19 19:37	06:49 08:14-09:03/49 18:45	06:21 07:23-07:42/19 16:59	06:57 07:25-07:35/10 16:31 16:02-16:07/5	07:19 16:36
29	05:50 19:46-19:52/6 20:16	06:20 19:35	06:50 08:13-09:03/50 18:44	06:22 07:30-07:35/5 16:58	06:58 07:26-07:35/9 16:31 16:02-16:06/4	07:20 16:37
30	05:50 19:45-19:51/6 20:15	06:21 19:33	06:51 08:11-09:04/53 18:42	06:23 16:57	06:59 07:26-07:35/9 16:31 16:02-16:06/4	07:20 16:38
31	05:51 19:45-19:50/5 20:14	06:22 19:32	 	06:24 16:55	 	07:20 16:38
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	381	6	423	1427	602	41

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 Albano - real case WTG: AL07 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (8)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June
1	07:20 08:52-09:09/17 16:39	07:07 16:37-16:49/12 17:13	06:32 16:58-17:26/28 17:47	06:42 19:20	05:57 19:28-19:29/1	05:28 20:20
2	07:20 08:53-09:08/15 16:40	07:06 16:37-16:51/14 17:14	06:30 17:07-17:26/19 17:48	06:40 19:21	05:55 19:52	05:28 20:21
3	07:20 08:54-09:08/14 16:41	07:05 16:37-16:52/15 17:16	06:29 17:08-17:28/20 17:49	06:39 19:22	05:54 19:53	05:27 20:22
4	07:21 08:56-09:07/11 16:42	07:04 16:37-16:54/17 17:17	06:27 17:08-17:29/21 17:50	06:37 19:23	05:53 19:55	05:27 20:23
5	07:21 08:59-09:05/6 16:43	07:03 16:37-16:55/18 17:18	06:26 17:10-17:31/21 17:51	06:35 19:24	05:52 19:56	05:27 20:23
6	07:21 16:44	07:02 16:37-16:56/19 17:19	06:24 17:10-17:31/21 17:52	06:34 19:25	05:50 19:57	05:26 20:24
7	07:20 16:45	07:01 16:37-16:58/21 17:21	06:23 17:11-17:32/21 17:54	06:32 19:26	05:49 19:58	05:26 20:25
8	07:20 16:46	07:00 16:37-16:59/22 17:22	06:21 17:13-17:34/21 17:55	06:30 19:27	05:48 19:59	05:26 20:25
9	07:20 16:47	06:59 16:36-17:00/24 17:23	06:19 17:14-17:35/21 17:56	06:29 19:29	05:47 20:00	05:26 20:26
10	07:20 16:48	06:58 16:36-17:01/25 17:24	06:18 17:14-17:35/21 17:57	06:27 19:30	05:46 20:01	05:25 20:26
11	07:20 16:49	06:57 16:37-17:03/26 17:26	06:16 17:16-17:37/21 17:58	06:26 19:31	05:45 20:02	05:25 20:27
12	07:20 16:50	06:55 16:37-17:04/27 17:27	06:15 17:17-17:38/21 17:59	06:24 19:32	05:44 20:03	05:25 20:27
13	07:19 16:51	06:54 16:37-17:05/28 17:28	06:13 17:19-17:40/21 18:00	06:23 19:33	05:43 20:04	05:25 20:28
14	07:19 16:52	06:53 16:37-17:07/30 17:29	06:11 17:20-17:40/20 18:01	06:21 19:34	05:42 20:05	05:25 20:28
15	07:19 16:53	06:52 16:38-17:08/30 17:30	06:10 17:22-17:41/19 18:02	06:19 19:35	05:41 20:06	05:25 20:29
16	07:18 16:54	06:50 16:39-17:10/31 17:32	06:08 17:26-17:43/17 18:03	06:18 19:36	05:40 20:07	05:25 20:29
17	07:18 16:55	06:49 16:39-17:10/31 17:33	06:07 18:04	06:16 19:37	05:39 20:08	05:25 20:29
18	07:17 16:56	06:48 16:40-17:12/32 17:34	06:05 18:05	06:15 19:38	05:38 20:08	05:25 20:30
19	07:17 16:57	06:46 16:40-17:13/33 17:35	06:03 18:07	06:13 19:39	05:37 20:09	05:25 20:30
20	07:16 16:59	06:45 16:41-17:14/33 17:36	06:02 18:08	06:12 19:17-19:18/1 19:40	05:36 20:10	05:25 20:30
21	07:16 17:00	06:44 16:42-17:16/34 17:38	06:00 18:09	06:10 19:17-19:19/2 19:41	05:35 20:11	05:26 20:31
22	07:15 17:01	06:42 16:43-17:17/34 17:39	05:58 18:10	06:09 19:17-19:20/3 19:42	05:35 20:12	05:26 20:31
23	07:14 17:02	06:41 16:44-17:18/34 17:40	05:57 18:11	06:08 19:17-19:21/4 19:43	05:34 20:13	05:26 20:31
24	07:14 17:04	06:39 16:45-17:19/34 17:41	05:55 18:12	06:06 19:18-19:22/4 19:44	05:33 20:14	05:26 20:31
25	07:13 17:05	06:38 16:47-17:21/34 17:42	05:53 18:13	06:05 19:19-19:23/4 19:45	05:32 20:15	05:27 20:31
26	07:12 17:06	16:40-16:42/2 06:36 16:48-17:22/34 17:43	05:52 18:14	06:03 19:19-19:24/5 19:46	05:32 20:16	05:27 20:31
27	07:12 17:07	16:39-16:43/4 06:35 16:51-17:23/32 17:45	05:50 18:15	06:02 19:21-19:25/4 19:47	05:31 20:16	05:27 20:31
28	07:11 17:08	16:39-16:44/5 06:33 16:53-17:24/31 17:46	05:48 18:16	06:01 19:22-19:26/4 19:48	05:30 20:17	05:28 20:31
29	07:10 17:10	16:38-16:46/8	06:47 19:17	05:59 19:23-19:26/3 19:49	05:30 20:18	05:28 20:31
30	07:09 17:11	16:38-16:47/9	06:45 19:18	05:58 19:25-19:28/3 19:50	05:29 20:19	05:28 20:31
31	07:08 17:12	16:37-16:48/11	06:43 19:19		05:29 20:20	
Potential sun hours	299	298	370	398	447	451
Sum of minutes with flicker	102	75	333	37	1	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 Albano - real case WTG: AL07 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (8)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	344	195	169	252	319	406	690	1.529	870	728	1.215	7.531

	July	August	September	October	November	December
1	05:29 20:31	05:52 20:13	06:23 19:30	06:52 17:57-18:18/21 18:40	06:26 16:06-16:31/25 16:54	07:00 16:30
2	05:29 20:31	05:53 20:12	06:24 19:29	06:53 17:55-18:16/21 18:39	06:27 16:06-16:29/23 16:53	07:01 16:30
3	05:30 20:31	05:54 20:11	06:25 19:27	06:54 17:54-18:15/21 18:37	06:28 16:06-16:28/22 16:52	07:02 16:30
4	05:30 20:31	05:55 20:09	06:25 19:25	06:55 17:52-18:13/21 18:35	06:29 16:07-16:27/20 16:51	07:03 16:30
5	05:31 20:31	05:56 20:08	06:26 19:24	06:56 17:51-18:11/20 18:34	06:30 16:07-16:26/19 16:50	07:04 16:29
6	05:31 20:30	05:57 20:07	06:27 19:22	06:57 17:49-18:09/20 18:32	06:31 16:06-16:25/19 16:48	07:05 16:29
7	05:32 20:30	05:58 20:06	06:28 19:20	06:58 17:47-18:08/21 18:30	06:33 16:07-16:23/16 16:47	07:06 08:45-08:51/6 16:29
8	05:33 20:30	05:59 20:05	06:29 19:19	06:59 17:45-18:06/21 18:29	06:34 16:08-16:23/15 16:46	07:07 08:43-08:54/11 16:29
9	05:33 20:29	06:00 20:03	06:30 19:17	07:00 17:43-18:04/21 18:27	06:35 16:08-16:22/14 16:45	07:08 08:43-08:56/13 16:29
10	05:34 20:29	06:01 20:02	06:31 19:15	07:01 17:42-18:03/21 18:26	06:36 16:08-16:20/12 16:44	07:08 08:42-08:57/15 16:29
11	05:35 20:29	06:02 20:01	06:32 19:14	07:02 17:41-18:01/20 18:24	06:37 16:08-16:19/11 16:43	07:09 08:42-08:59/17 16:29
12	05:35 20:28	06:03 19:35-19:36/1 20:00	06:33 19:12	07:03 17:35-17:59/24 18:22	06:38 16:10-16:19/9 16:42	07:10 08:42-09:00/18 16:29
13	05:36 20:28	06:04 19:32-19:35/3 19:58	06:34 19:10	07:04 17:28-17:58/30 18:21	06:40 16:10-16:17/7 16:41	07:11 08:41-09:00/19 16:30
14	05:37 20:27	06:05 19:30-19:34/4 19:57	06:35 19:09	07:05 17:26-17:57/31 18:19	06:41 16:11-16:16/5 16:40	07:12 08:41-09:01/20 16:30
15	05:38 20:27	06:06 19:28-19:33/5 19:56	06:36 19:07	07:06 17:23-17:55/32 18:18	06:42 16:11-16:15/4 16:40	07:12 08:42-09:03/21 16:30
16	05:38 20:26	06:07 19:27-19:31/4 19:54	06:37 19:05	07:08 17:20-17:54/34 18:16	06:43 16:13-16:15/2 16:39	07:13 08:42-09:04/22 16:30
17	05:39 20:25	06:08 19:26-19:30/4 19:53	06:38 19:04	07:09 17:18-17:52/34 18:15	06:44 16:38	07:14 08:42-09:04/22 16:31
18	05:40 20:25	06:09 19:25-19:29/4 19:51	06:39 19:02	07:10 17:16-17:50/34 18:13	06:45 16:37	07:14 08:42-09:05/23 16:31
19	05:41 20:24	06:10 19:24-19:27/3 19:50	06:40 19:00	07:11 17:15-17:49/34 18:12	06:47 16:36	07:15 08:42-09:05/23 16:31
20	05:42 20:23	06:11 19:23-19:26/3 19:49	06:41 18:59	07:12 17:13-17:47/34 18:10	06:48 16:36	07:16 08:43-09:06/23 16:32
21	05:42 20:23	06:12 19:22-19:25/3 19:47	06:42 18:57	07:13 17:13-17:46/33 18:09	06:49 16:35	07:16 08:43-09:06/23 16:32
22	05:43 20:22	06:13 19:21-19:23/2 19:46	06:43 18:55	07:14 17:11-17:45/34 18:08	06:50 16:34	07:17 08:44-09:07/23 16:33
23	05:44 20:21	06:14 19:21-19:22/1 19:44	06:44 18:54	07:15 17:10-17:43/33 18:06	06:51 16:33	07:17 08:44-09:07/23 16:33
24	05:45 20:20	06:15 19:20-19:21/1 19:43	06:45 18:52	07:16 17:09-17:41/32 18:05	06:52 16:33	07:18 08:45-09:08/23 16:34
25	05:46 20:19	06:16 19:19-19:20/1 19:41	06:46 18:50	06:17 16:08-16:40/32 17:03	06:53 16:33	07:18 08:45-09:08/23 16:34
26	05:47 20:19	06:17 19:18-19:19/1 19:40	06:47 18:49	06:19 16:08-16:39/31 17:02	06:55 16:32	07:19 08:46-09:08/22 16:35
27	05:48 20:18	06:18 19:17-19:18/1 19:38	06:48 18:47	06:20 16:08-16:38/30 17:01	06:56 16:32	07:19 08:47-09:09/22 16:36
28	05:49 20:17	06:19 19:16-19:17/1 19:37	06:49 18:45	06:21 16:07-16:36/29 16:59	06:57 16:31	07:19 08:47-09:09/22 16:36
29	05:50 20:16	06:20 19:15-19:16/1 19:35	06:50 18:44	06:22 16:07-16:34/27 16:58	06:58 16:31	07:20 08:48-09:09/21 16:37
30	05:50 20:15	06:21 19:14-19:15/1 19:33	06:51 18:42	06:23 16:06-16:33/27 16:57	06:59 16:31	07:20 08:49-09:08/19 16:38
31	05:51 20:14	06:22 19:13-19:14/1 19:32	06:52 18:41	06:24 16:07-16:32/25 16:55	06:59 16:31	07:20 08:50-09:08/18 16:38
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	0	38	73	848	223	492

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 Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 15:20/4.0.531

SHADOW - Calendar per WTG

Calculation: WF Albano - real case WTG: AL08 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (9)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	January	February	March	April	May	June
1	07:20 16:11-16:13/2 16:39	07:07 16:41-16:49/8 17:13	06:32 16:15-17:20/65 17:47	06:42 19:20	05:57 19:51	05:28 20:20
2	07:20 16:13-16:15/2 16:40	07:06 16:41-16:51/10 17:15	06:30 16:15-17:19/64 17:48	06:40 19:21	05:55 19:52	05:28 20:21
3	07:20 16:13-16:16/3 16:41	07:05 16:37-16:52/15 17:16	06:29 16:16-17:19/63 17:49	06:39 19:22	05:54 19:53	05:27 20:22
4	07:20 16:13-16:16/3 16:42	07:04 16:34-16:54/20 17:17	06:27 16:16-17:18/62 17:50	06:37 19:23	05:53 19:55	05:27 20:23
5	07:21 16:14-16:17/3 16:43	07:03 16:32-16:55/23 17:18	06:26 16:17-17:18/61 17:51	06:35 19:24	05:52 19:56	05:27 20:23
6	07:20 16:15-16:18/3 16:44	07:02 16:30-16:56/26 17:19	06:24 16:17-17:17/60 17:52	06:34 19:25	05:50 19:57	05:26 20:24
7	07:20 16:16-16:19/3 16:45	07:01 16:28-16:58/30 17:21	06:23 16:17-17:16/59 17:54	06:32 19:26	05:49 19:58	05:26 20:25
8	07:20 16:18-16:20/2 16:46	07:00 16:27-16:59/32 17:22	06:21 16:18-17:15/57 17:55	06:30 19:27	05:48 19:59	05:26 20:25
9	07:20 16:19-16:21/2 16:47	06:59 16:25-17:00/35 17:23	06:19 16:19-17:14/55 17:56	06:29 19:29	05:47 20:00	05:26 20:26
10	07:20 16:21-16:23/2 16:48	06:58 16:24-17:01/37 17:24	06:18 16:20-17:13/53 17:57	06:27 19:30	05:46 20:01	05:25 20:26
11	07:20 16:22-16:23/1 16:49	06:57 16:23-17:03/40 17:26	06:16 16:21-17:11/50 17:58	06:26 19:31	05:45 20:02	05:25 20:27
12	07:20 16:24-16:25/1 16:50	06:55 16:22-17:04/42 17:27	06:15 16:22-17:09/47 17:59	06:24 19:32	05:44 20:03	05:25 20:27
13	07:19 16:51	06:54 16:20-17:05/45 17:28	06:13 16:24-17:08/44 18:00	06:23 19:33	05:43 20:04	05:25 20:28
14	07:19 16:52	06:53 16:20-17:07/47 17:29	06:11 16:25-17:06/41 18:01	06:21 19:34	05:42 20:05	05:25 20:28
15	07:19 16:53	06:52 16:19-17:08/49 17:30	06:10 07:06-07:07/1 18:02	06:19 19:35	05:41 20:06	05:25 20:29
16	07:18 16:54	06:50 16:19-17:10/51 17:32	06:08 07:05-07:10/5 18:03	06:18 19:36	05:40 20:07	05:25 20:29
17	07:18 16:55	06:49 16:18-17:10/52 17:33	06:07 07:03-07:11/8 18:04	06:16 19:37	05:39 20:07	05:25 20:29
18	07:17 16:57	06:48 16:18-17:12/54 17:34	06:05 07:02-07:11/9 18:05	06:15 19:38	05:38 20:08	05:25 20:30
19	07:17 16:58	06:46 16:16-17:13/57 17:35	06:03 07:01-07:12/11 18:07	06:13 19:39	05:37 20:09	05:25 20:30
20	07:16 16:59	06:45 16:16-17:14/58 17:36	06:02 06:59-07:12/13 18:08	06:12 19:40	05:36 20:10	05:25 20:30
21	07:16 17:00	06:44 16:16-17:16/60 17:38	06:00 06:57-07:12/15 18:09	06:10 19:41	05:35 20:11	05:26 20:31
22	07:15 17:01	06:42 16:15-17:17/62 17:39	05:58 06:56-07:12/16 18:10	06:09 19:42	05:35 20:12	05:26 20:31
23	07:14 17:02	06:41 16:16-17:18/62 17:40	05:57 06:54-07:11/17 18:11	06:08 19:43	05:34 20:13	05:26 20:31
24	07:14 17:04	06:39 16:15-17:19/64 17:41	05:55 06:52-07:09/17 18:12	06:06 19:44	05:33 20:14	05:26 20:31
25	07:13 17:05	06:38 16:15-17:21/66 17:42	05:53 06:54-07:08/14 18:13	06:05 19:45	05:32 20:15	05:27 20:31
26	07:12 17:06	06:36 16:15-17:21/66 17:43	05:52 06:55-07:06/11 18:14	06:03 19:46	05:32 20:16	05:27 20:31
27	07:12 17:07	06:35 16:15-17:21/66 17:45	05:50 06:59-07:02/3 18:15	06:02 19:47	05:31 20:16	05:27 20:31
28	07:11 17:08	06:33 16:15-17:20/65 17:46	05:48 18:16	06:01 19:48	05:30 20:17	05:28 20:31
29	07:10 17:10	16:43-16:46/3	06:47 19:17	05:59 19:49	05:30 20:18	05:28 20:31
30	07:09 17:11	16:43-16:47/4	06:45 19:18	05:58 19:50	05:29 20:19	05:28 20:31
31	07:08 17:12	16:42-16:48/6	06:43 19:19		05:29 20:20	
Potential sun hours	299	298	370	398	447	451
Sum of minutes with flicker	40	1242	1032	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 Albano - real case WTG: AL08 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (9)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

	July	August	September	October	November	December
1	05:29 20:31	05:52 20:13	06:23 19:30	06:52 17:02-17:48/46 18:40	06:25 15:54-16:31/37 16:54	07:00 16:04-16:05/1 16:30
2	05:29 20:31	05:53 20:12	06:24 19:29	06:53 17:00-17:49/49 18:39	06:27 15:55-16:29/34 16:53	07:01 16:03-16:05/2 16:30
3	05:30 20:31	05:54 20:11	06:25 19:27	06:54 16:58-17:50/52 18:37	06:28 15:56-16:28/32 16:52	07:02 16:02-16:05/3 16:30
4	05:30 20:31	05:55 20:09	06:26 19:25	06:55 16:57-17:51/54 18:35	06:29 15:58-16:27/29 16:51	07:03 16:02-16:04/2 16:30
5	05:31 20:31	05:56 20:08	06:26 19:24	06:56 16:55-17:51/56 18:34	06:30 16:00-16:26/26 16:50	07:04 16:01-16:04/3 16:30
6	05:32 20:30	05:57 20:07	06:27 19:22	06:57 16:54-17:52/58 18:32	06:31 16:02-16:25/23 16:48	07:05 16:01-16:04/3 16:29
7	05:32 20:30	05:58 20:06	06:28 19:20	06:58 16:53-17:52/59 18:30	06:33 16:04-16:23/19 16:47	07:06 16:01-16:04/3 16:29
8	05:33 20:30	05:59 20:05	06:29 19:19	06:59 16:52-17:53/61 18:29	06:34 16:08-16:23/15 16:46	07:07 16:01-16:04/3 16:29
9	05:33 20:29	06:00 20:03	06:30 19:17	07:00 16:51-17:53/62 18:27	06:35 16:12-16:22/10 16:45	07:08 16:01-16:04/3 16:29
10	05:34 20:29	06:01 20:02	06:31 19:16	07:01 16:50-17:53/63 18:26	06:36 16:12-16:20/8 16:44	07:08 16:02-16:04/2 16:29
11	05:35 20:29	06:02 20:01	06:32 19:14	07:02 16:49-17:53/64 18:24	06:37 16:13-16:19/6 16:43	07:09 16:02-16:04/2 16:29
12	05:35 20:28	06:03 20:00	06:33 19:12	07:03 16:48-17:53/65 18:23	06:38 16:15-16:19/4 16:42	07:10 16:02-16:05/3 16:29
13	05:36 20:28	06:04 19:58	06:34 19:10	07:04 16:48-17:53/65 18:21	06:40 16:15-16:18/3 16:41	07:11 16:02-16:04/2 16:30
14	05:37 20:27	06:05 19:57	06:35 19:09	07:05 16:48-17:54/66 18:19	06:41 16:40 16:40	07:12 16:02-16:04/2 16:30
15	05:38 20:27	06:06 19:56	06:36 19:07	07:06 16:48-17:53/65 18:18	06:42 16:40 16:40	07:12 16:03-16:05/2 16:30
16	05:38 20:26	06:07 19:54	06:37 19:05	07:08 16:47-17:53/66 18:16	06:43 16:39 16:39	07:13 16:03-16:04/1 16:30
17	05:39 20:25	06:08 19:53	06:38 07:44-07:54/10 19:04	07:09 16:47-17:52/65 18:15	06:44 16:38 16:38	07:14 16:03-16:05/2 16:31
18	05:40 20:25	06:09 19:51	06:39 07:41-07:55/14 19:02	07:10 16:46-17:50/64 18:13	06:45 16:37 16:37	07:14 16:04-16:06/2 16:31
19	05:41 20:24	06:10 19:50	06:40 07:40-07:56/16 19:00	07:11 16:46-17:49/63 18:12	06:47 16:36 16:36	07:15 16:04-16:05/1 16:31
20	05:42 20:23	06:11 19:49	06:41 07:40-07:57/17 18:59	07:12 16:46-17:47/61 18:10	06:48 16:36 16:36	07:16 16:05-16:06/1 16:32
21	05:42 20:23	06:12 19:47	06:42 07:41-07:57/16 18:57	07:13 16:47-17:46/59 18:09	06:49 16:35 16:35	07:16 16:05-16:06/1 16:32
22	05:43 20:22	06:13 19:46	06:43 07:42-07:57/15 18:55	07:14 16:47-17:45/58 18:08	06:50 16:34 16:34	07:17 16:06-16:07/1 16:33
23	05:44 20:21	06:14 19:44	06:44 07:43-07:57/14 18:54	07:15 16:47-17:43/56 18:06	06:51 16:34 16:34	07:17 16:06-16:07/1 16:33
24	05:45 20:20	06:15 19:43	06:45 07:44-07:56/12 18:52	07:16 16:47-17:41/54 18:05	06:52 16:33 16:33	07:18 16:07-16:08/1 16:34
25	05:46 20:19	06:16 19:41	06:46 07:45-07:55/10 18:50	06:17 15:48-16:40/52 17:03	06:53 16:33 16:33	07:18 16:07-16:09/2 16:34
26	05:47 20:19	06:17 19:40	06:47 07:46-07:54/8 18:49	06:19 15:49-16:39/50 17:02	06:55 16:32 16:32	07:19 16:07-16:09/2 16:35
27	05:48 20:18	06:18 19:38	06:48 07:46-07:52/6 18:47	06:20 15:49-16:38/49 17:01	06:56 16:32 16:32	07:19 16:09-16:10/1 16:36
28	05:49 20:17	06:19 19:37	06:49 07:47-07:50/3 18:45	06:21 15:50-16:36/46 16:59	06:57 16:31 16:31	07:19 16:09-16:11/2 16:36
29	05:50 20:16	06:20 19:35	06:50 17:06-17:46/40 18:44	06:22 15:50-16:34/44 16:58	06:58 16:31 16:31	07:19 16:09-16:11/2 16:37
30	05:51 20:15	06:21 19:33	06:51 17:04-17:47/43 18:42	06:23 15:51-16:33/42 16:57	06:59 16:31 16:31	07:20 16:10-16:12/2 16:38
31	05:51 20:14	06:22 19:32		06:24 15:53-16:32/39 16:55		07:20 16:10-16:12/2 16:38
Potential sun hours	458	427	375	346	299	289
Sum of minutes with flicker	0	0	325	1753	246	60

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 Albano_shadow flickering

Licensed user:

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

Gaetano DOronzio / info@gecodor.it
Calculated:

18/03/2024 15:20/4.0.531

SHADOW - Calendar per WTG

Calculation: WF Albano - real case WTG: AL09 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 220,0 m) (10)
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70 6,70

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
814 344 195 169 252 319 406 690 1.529 870 728 1.215 7.531

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

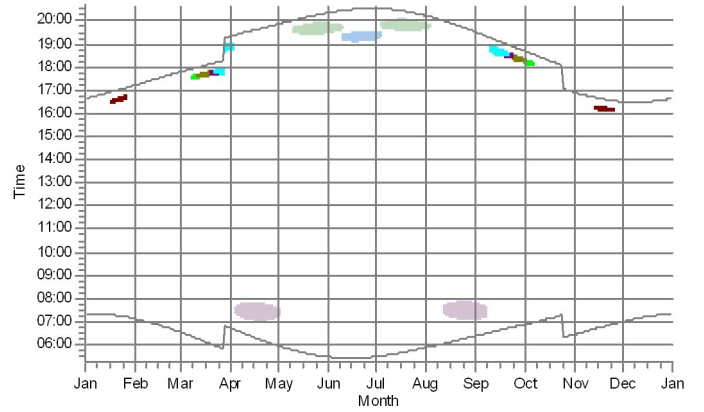
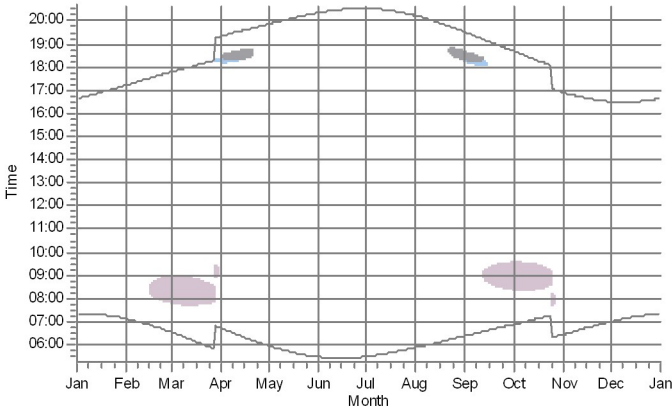
Table layout: For each day in each month the following matrix apply

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

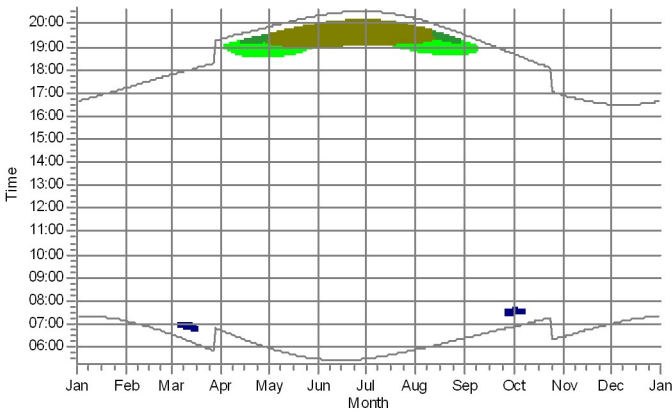
SHADOW - Calendar per WTG, graphical

Calculation: WF Albano - real case

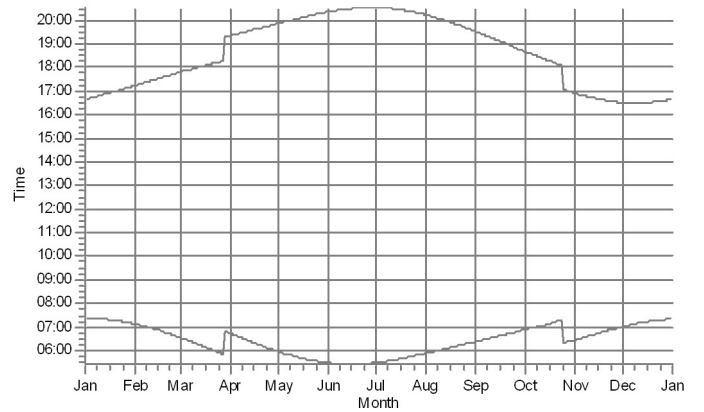
AL01: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22) AL02: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22)



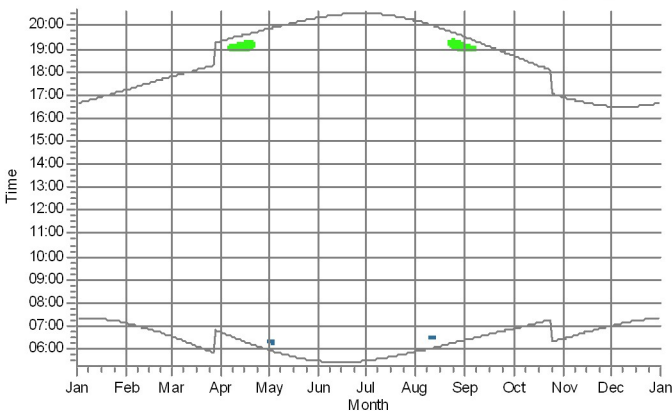
AL03: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22)



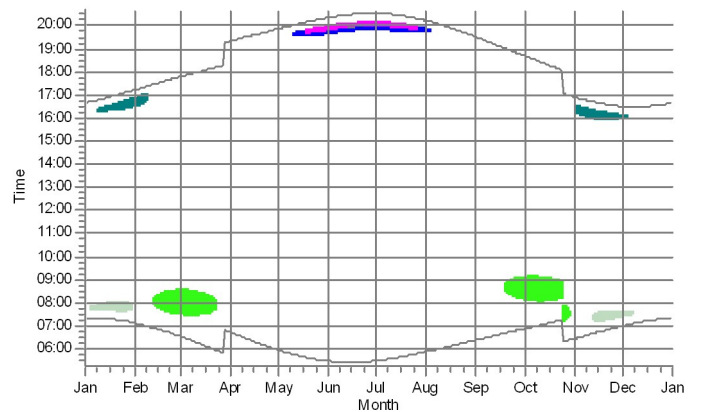
AL04: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22)





















AL05: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22)



AL06: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22)



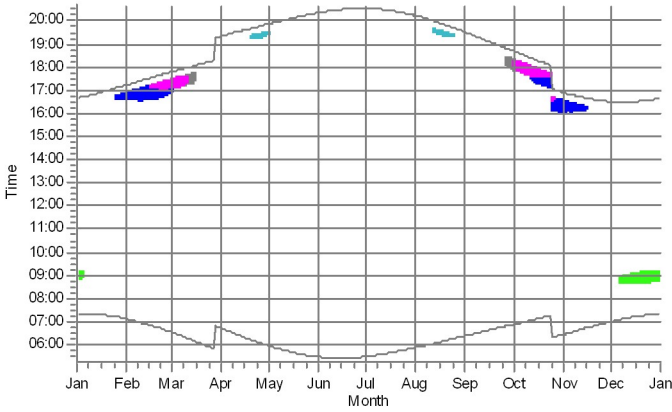
Shadow receptors

 R12: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (3)	 R30: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (9)	 R43: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (15)
 R17: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (4)	 R31: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (10)	 R44: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (16)
 R18: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (5)	 R33: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (11)	 R49: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (18)
 R19: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (6)	 R35: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (12)	 R78: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (22)
 R20: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (7)	 R36a: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (13)	 R88: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (25)
 R26: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (8)	 R41: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (14)	 R95: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (27)

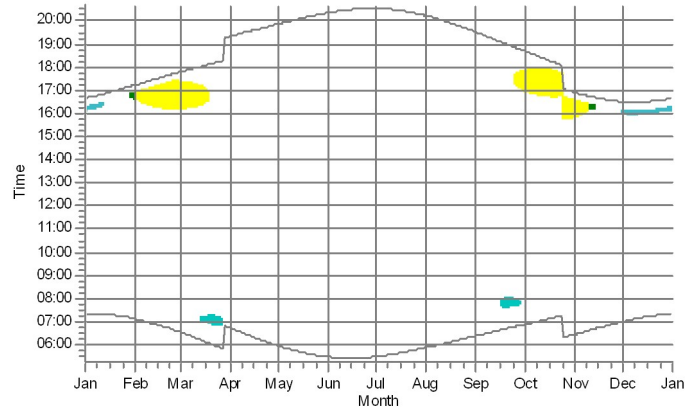
SHADOW - Calendar per WTG, graphical

Calculation: WF Albano - real case

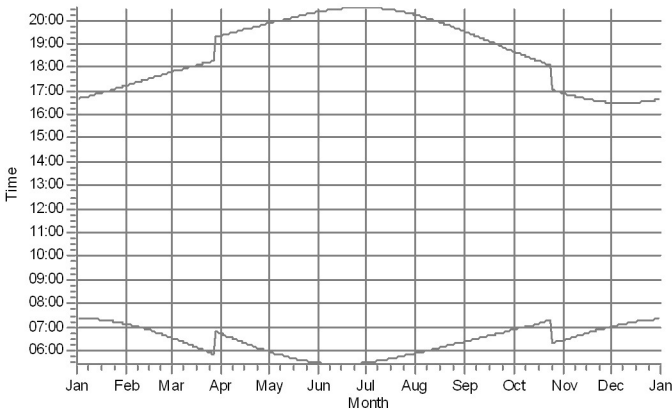
AL07: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22











AL08: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22



AL09: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 135,0 m (TOT: 22

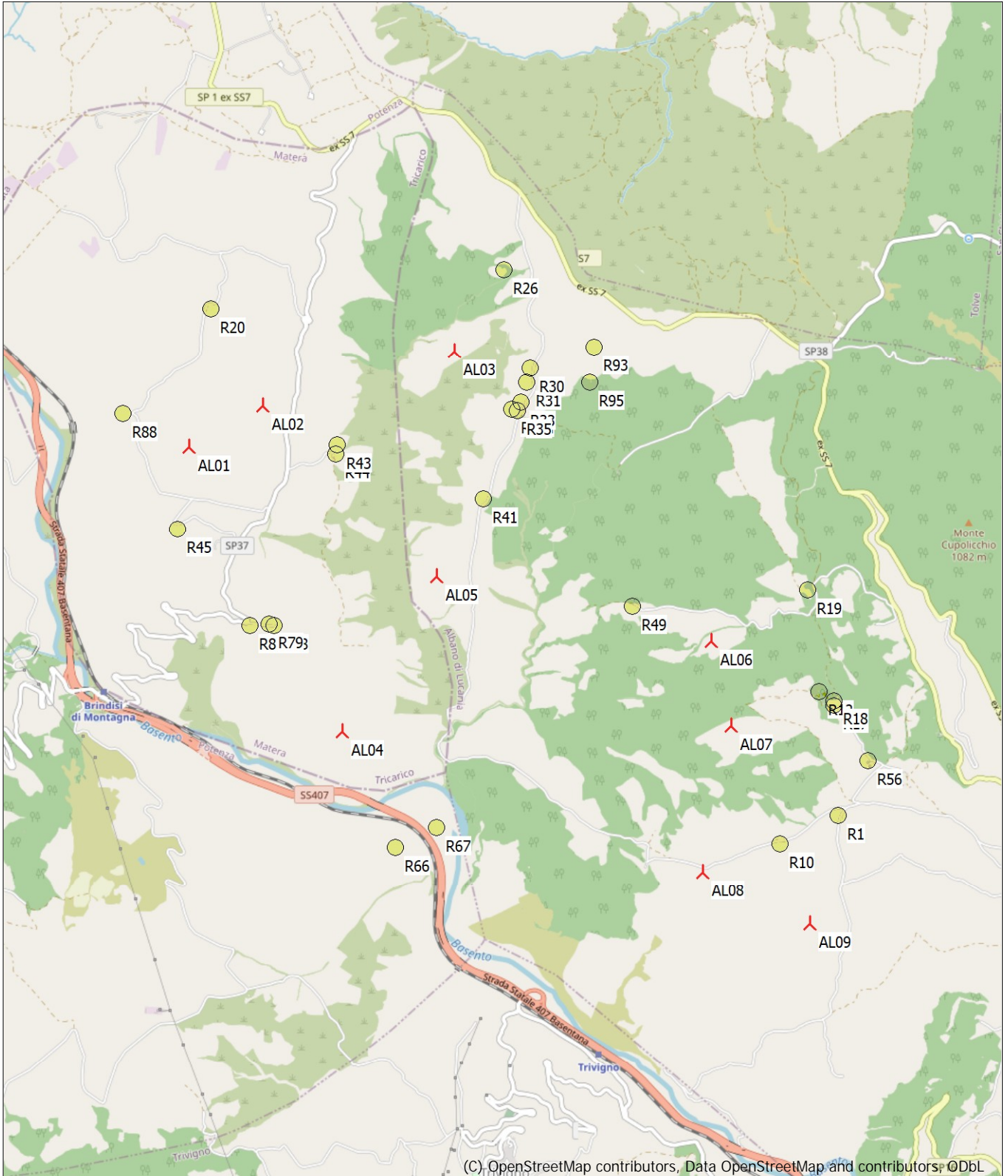


Shadow receptors

- | | | |
|--|---|---|
|  R1: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (1) |  R17: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (4) |  R56: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (19) |
|  R10: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (2) |  R18: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (5) |  R67: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (21) |
|  R12: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (3) |  R49: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (18) | |

SHADOW - Map

Calculation: WF Albano - real case



0 500 1000 1500 2000 m

Map: EMD OpenStreetMap , Print scale 1:40.000, Map center Geo WGS84 East: 15,989059° E North: 40,618056° N

▲ New WTG

● Shadow receptor

Flicker map level: Elevation Grid Data Object: WF Albano_shadow flickering_EMDGrid_0.wpg (1)