

COMUNI DI BELCASTRO E CUTRO

Provincia di Catanzaro e Crotone



Progetto parco eolico "Cantorato"

Elaborato: CA_R0_Shadow Flickering	RELAZIONE SHADOW FLIKERING
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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 "Cantorato" al fine di verificare che l'alternanza ciclica dell'ombra non arrechi danni alla salute su un possibile ricettore.

2. DESCRIZIONE DEL PROGETTO

L'impianto eolico presenta una potenza nominale totale in immissione pari a 124 MWp ed è costituito da n. 20 aerogeneratori di potenza nominale pari a 6.2 MWp, per un totale di 124 MWp, con altezza torre pari a 115 m e rotore pari a 170 m.

L'impianto interessa il Comune di Belcastro dove ricadono 11 aerogeneratori e il Comune di Cutro ove ricadano 9 aerogeneratori.

2.1 Caratteristiche tecniche dell'aerogeneratore

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

Per il presente progetto una delle possibili macchine che potrebbe essere installata è il modello Siemens Gamesa SG 170, di potenza nominale pari a 6.2 MW, altezza torre all'hub pari a 115 m e diametro del rotore 170 m (Figura 2.1.1).

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

Il rotore è a passo variabile in resina epossidica rinforzata con fibra di vetro di diametro pari a 170 m, posto sopravvento al sostegno, con mozzo rigido in acciaio. Altre caratteristiche principali sono riassunte nella Tabella 2.1.1.

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

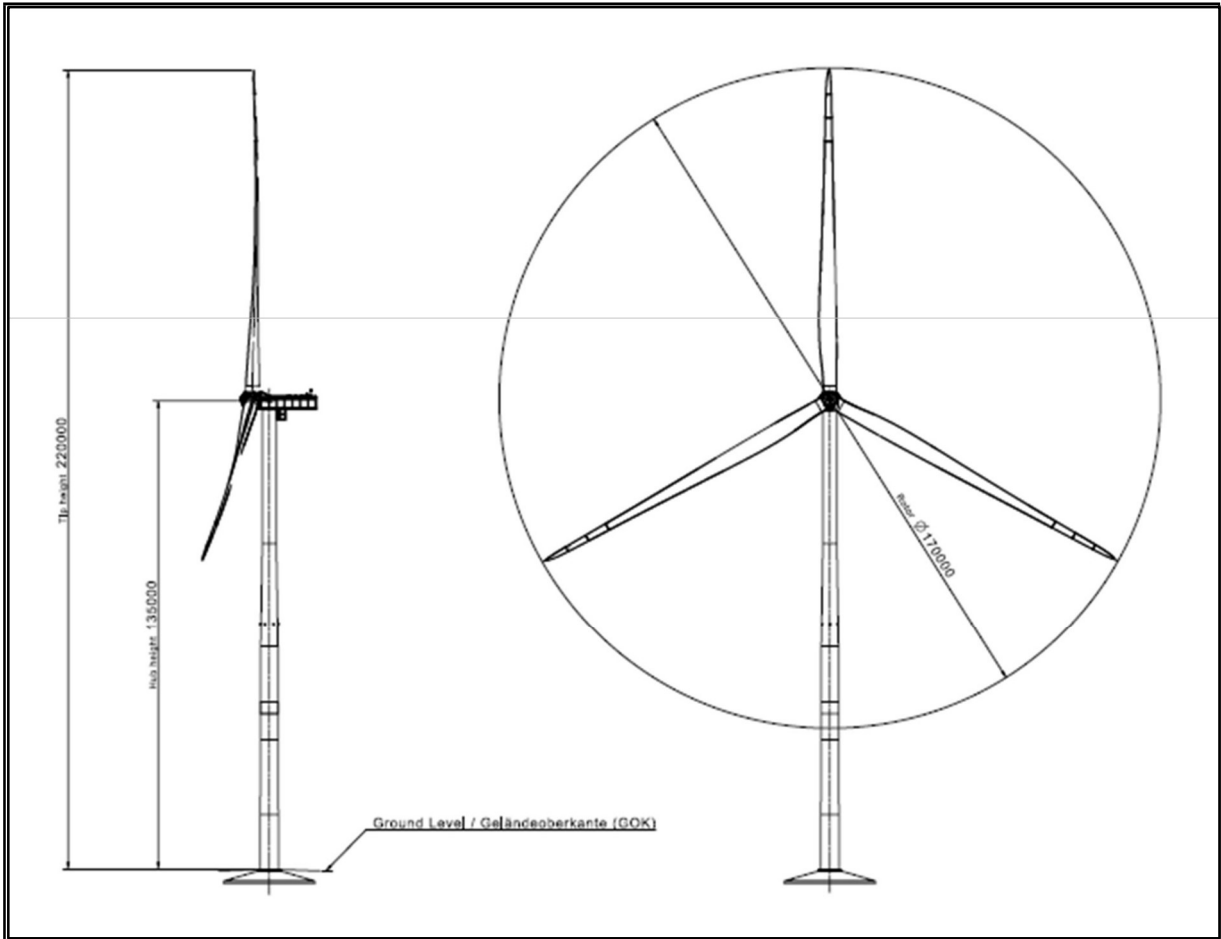


Figura 2.1.1: Profilo aerogeneratore SG170 HH115 – 6.2MW

Technical Specifications	
Rotor	
Type	3-bladed, horizontal axis
Position	Upwind
Diameter	170 m
Swept area	22,698 m ²
Power regulation	Pitch & torque regulation with variable speed
Rotor tilt	6 degrees
Blade	
Type	Self-supporting
Blade length	83.5 m
Max chord	4.5 m
Aerodynamic profile	Siemens Gamesa proprietary airfoils
Material	G (Glassfiber) – CRP (Carbon Reinforced Plastic)
Surface gloss	Semi-gloss, < 30 / ISO2813
Surface color	Light grey, RAL 7035 or White, RAL 9018
Aerodynamic Brake	
Type	Full span pitching
Activation	Active, hydraulic
Load-Supporting Parts	
Hub	Nodular cast iron
Main shaft	Nodular cast iron
Nacelle bed frame	Nodular cast iron
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
Grid Terminals (LV)	
Baseline nominal power ..	6.0 MW / 6.2 MW
Voltage	690 V
Frequency	50 Hz or 60 Hz
Yaw System	
Type	Active
Yaw bearing	Externally geared
Yaw drive	Electric gear motors
Yaw brake	Active friction brake
Controller	
Type	Siemens Integrated Control System (SICS)
SCADA system	SGRE SCADA
Tower	
Type	Tubular steel / Hybrid
Hub height	100 m to 165 m and site- specific
Corrosion protection	Painted
Surface gloss	Semi-gloss, <30 / ISO-2813
Color	Light grey, RAL 7035 or White, RAL 9018
Operational Data	
Cut-in wind speed	3 m/s
Rated wind speed	11.0 m/s (steady wind without turbulence, as defined by IEC61400-1)
Cut-out wind speed	25 m/s
Restart wind speed	22 m/s
Weight	
Modular approach	Different modules depending on restriction

Tabella 2.1.1: Specifiche tecniche aerogeneratore

3. CARATTERISTICHE PRINCIPALI DEL PARCO EOLICO

L'impianto eolico sarà costituito da 20 aerogeneratori la cui posizione è stata stabilita a seguito di valutazioni che riguardano diversi aspetti quali l'esposizione a tutti i settori della rosa dei venti, la morfologia del territorio, la distanza da fabbricati e strade esistenti ed utilizzate da un elevato numero di veicoli, distanza dal centro abitato e da beni monumentali presenti nell'area oltre agli aspetti legati alla sicurezza e volti a minimizzare l'impatto sull'ambiente:

- ottemperare alle previsioni della normativa vigente e delle linee guida sia nazionali che regionali;

- minimizzare l'impatto visivo;
- migliorare in sistema viario esistente al fine di migliorare l'accessibilità ai terreni per lo sviluppo dell'agricoltura e dell'allevamento di animali;
- disposizione delle macchine ad una distanza reciproca minima pari ad almeno 450 m, atta a minimizzare l'effetto scia, l'effetto selva e l'impatto sull'avifauna;
- condizioni di massima sicurezza, sia in fase di installazione che di esercizio.

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

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

WTG	Comune	D rotore	H tot	Hhub	Coordinate UTM-WGS84 T33	
		m	m	m	E[m]	N[m]
CA1	Belcastro	170	200	115	664006	4313697
CA2	Belcastro	170	200	115	663481	4313528
CA3	Belcastro	170	200	115	662183	4313215
CA4	Belcastro	170	200	115	662232	4314284
CA5	Belcastro	170	200	115	661739	4314189
CA6	Belcastro	170	200	115	661083	4315322
CA7	Belcastro	170	200	115	662067	4315296
CA8	Belcastro	170	200	115	662918	4315134
CA9	Belcastro	170	200	115	662256	4316035
CA10	Belcastro	170	200	115	660762	4316208
CA11	Belcastro	170	200	115	659920	4316121
CU1	Cutro	170	200	115	670825	4318817
CU2	Cutro	170	200	115	669204	4318864
CU3	Cutro	170	200	115	669144	4317997
CU4	Cutro	170	200	115	669766	4317463
CU5	Cutro	170	200	115	669611	4316577
CU6	Cutro	170	200	115	670671	4316197
CU7	Cutro	170	200	115	671250	4316649
CU8	Cutro	170	200	115	668403	4316968
CU9	Cutro	170	200	115	670472	4317143

Tabella 3.1: Localizzazione planimetrica degli aerogeneratori di progetto

4. FENOMENO DI SHADOW FLICKERING

Le turbine eoliche, come altre strutture fortemente sviluppate in altezza, proiettano un'ombra sulle aree adiacenti in presenza della luce solare diretta. Il cosiddetto fenomeno del "flickering" indica l'effetto di lampeggiamento che si verifica quando le pale del rotore in movimento "tagliano" la luce solare in maniera intermittente. Tale variazione alternata di intensità luminosa, a lungo andare, può provocare fastidio agli occupanti delle abitazioni le cui finestre risultano esposte al fenomeno stesso.

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

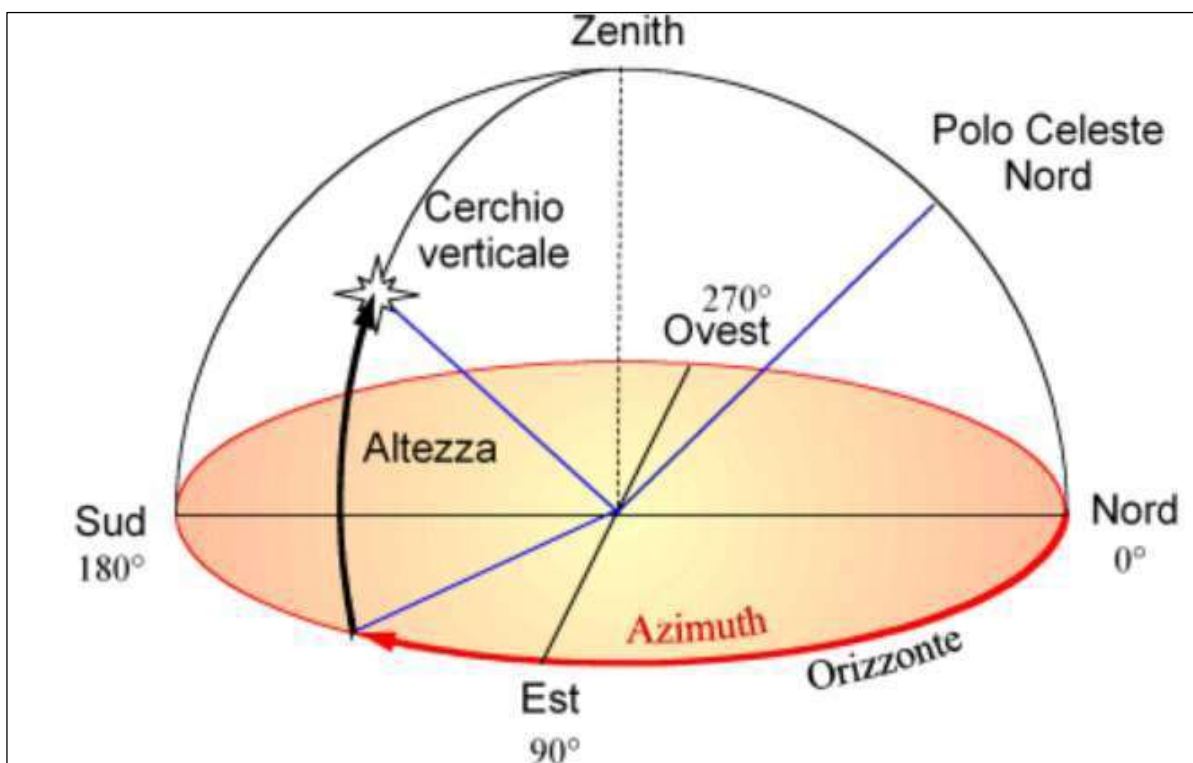


Figura 4.2: Coordinate azimuth ed altezza per identificare la posizione del sole

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

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

5. RIFERIMENTI NORMATIVI

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

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

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

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

annue, parametro considerato di qualità a livello internazionale.

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

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

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

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

6. IPOTESI E METODO DI CALCOLO

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

Nell'analisi condotta sono stati considerati 20 aerogeneratori di nuova realizzazione e relativi al progetto del Parco Eolico Cantorato.

Gli aerogeneratori di progetto hanno un'altezza al mozzo di 115 m, diametro del rotore di 170 m, potenza nominale di 6,2 MWp e 8,8 giri al minuto (RPM).

La verifica è stata effettuata in corrispondenza di 8 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
	E	N						
R11 CA03	661536.60	4313522.34	<u>Belcastro</u>	<u>CA03</u>	706	<u>22</u>	<u>178</u>	<u>F03</u>
R13 CA03	661739.02	4313253.05	<u>Belcastro</u>	<u>CA03</u>	439	<u>23</u>	<u>589</u>	<u>ENTE URB</u>
R14 CA03	661748.01	4313229.56	<u>Belcastro</u>	CA03	428	<u>23</u>	<u>590</u>	<u>ENTE URB</u>

Ricettore	Coordinate UTM WGS 84, 33°		Comune	WTG più vicina	Distanza WTG più vicina	Foglio	Particella	Stato accatastamento
	E	N						
R15 CA03	661768.45	4313244.17	Belcastro	CA03	407	23	857	ENTE URB
R24 CA03	661768.02	4313046.97	Belcastro	CA03	439	23	788	A03
R37 CA03	662025.75	4312692.58	Belcastro	CA03	534	23	807	A03
R32 CU5	668906.27	4316568.14	Cutro	CU8	641	28	495	F02
R37 CU5	670202.63	4316245.62	Cutro	CU6	465	36	268	A03

Tabella 6.1: Ricettori oggetto di verifica

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

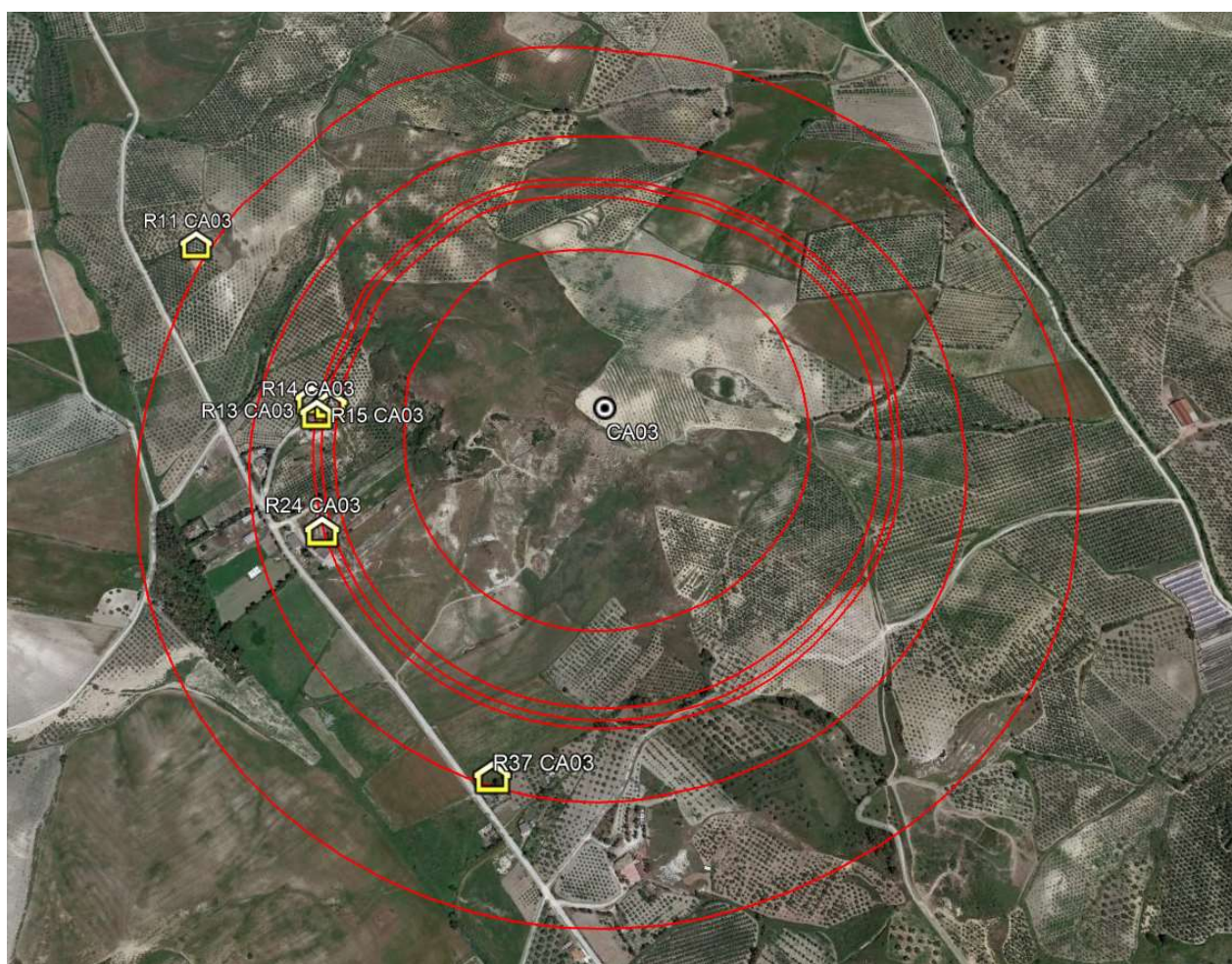


Figura 6.1.1.: Localizzazione dei ricettori rispetto all'aerogeneratore CA03 Comune di Belcastro

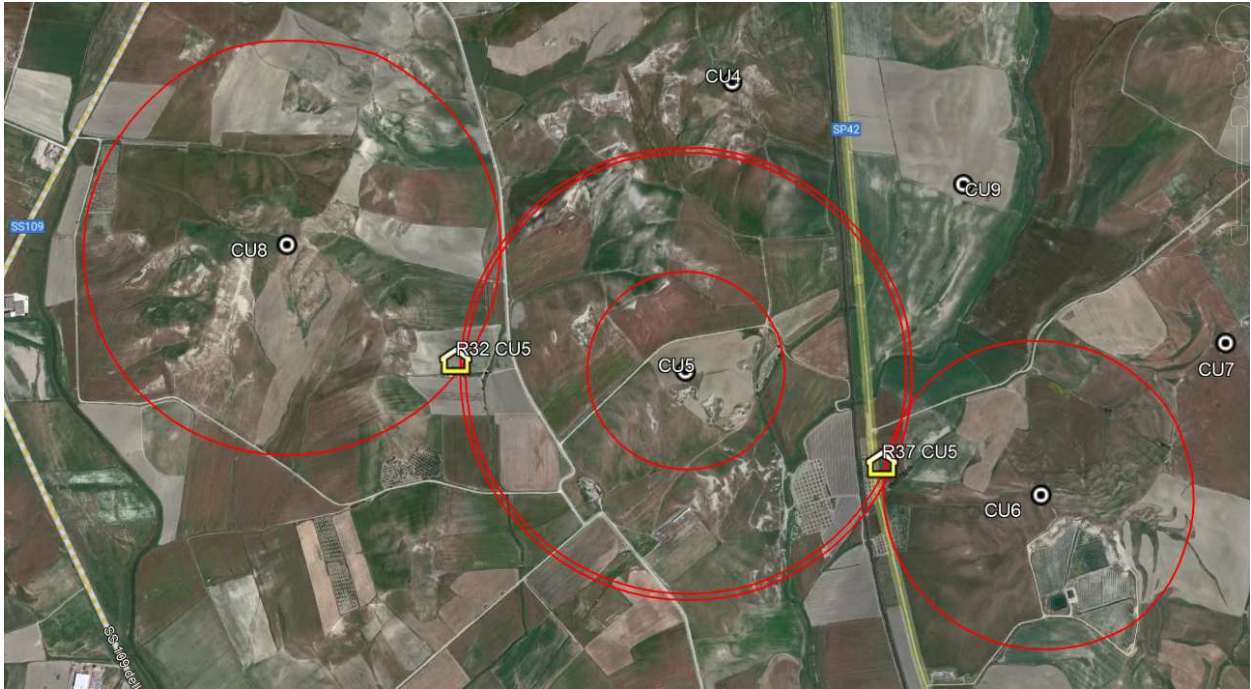


Figura 6.1.2.: Localizzazione dei ricettori rispetto agli aerogeneratori CU5, CU6, CU8 Comune di Cutro

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.

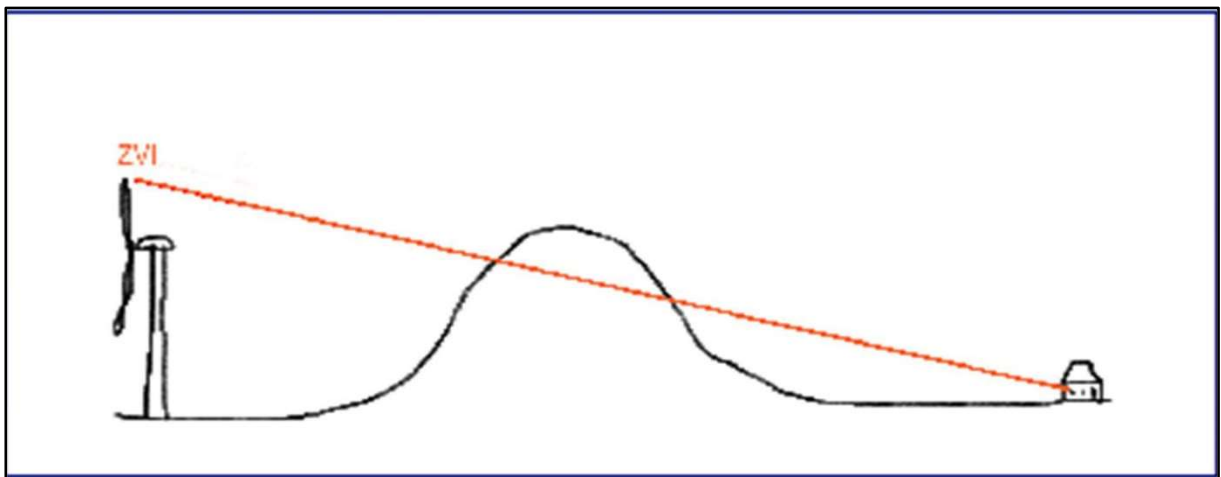


Figura 6.2: Impatto della ZVI, l'orografia del territorio può rendere non visibile l'aerogeneratore al ricettore

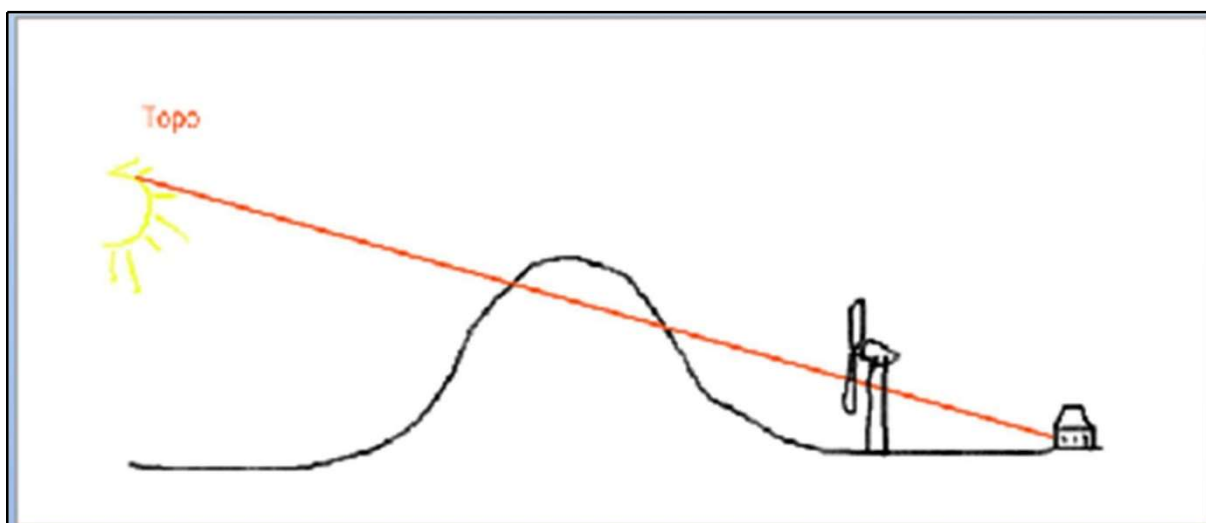


Figura 6.3: Impatto dell'orografia del territorio sull'ombreggiamento

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

- l'impianto eolico sempre in funzione durante le ore di sole;
- altezza minima del sole sull'orizzonte pari a 3°;
- 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 (expected values), si è impiegato il valore di eliofania, che tiene in conto del numero medio di ore di cielo libero da nubi durante il giorno, e le ore di funzionamento degli aerogeneratori in presenza del sole.

Per l'area in esame, è stato considerato il valore, come da fonte della stazione meteorologica di Crotone-Isola di Capo Rizzuto, come riportato nella tabella seguente:

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
<u>PROB. MEDIA</u> <u>ELIOFANIA</u>	<u>4,16</u>	<u>4,62</u>	<u>5,58</u>	<u>6,71</u>	<u>8,1</u>	<u>9,27</u>	<u>10</u>	<u>9,47</u>	<u>7,89</u>	<u>5,95</u>	<u>5,05</u>	<u>4,11</u>

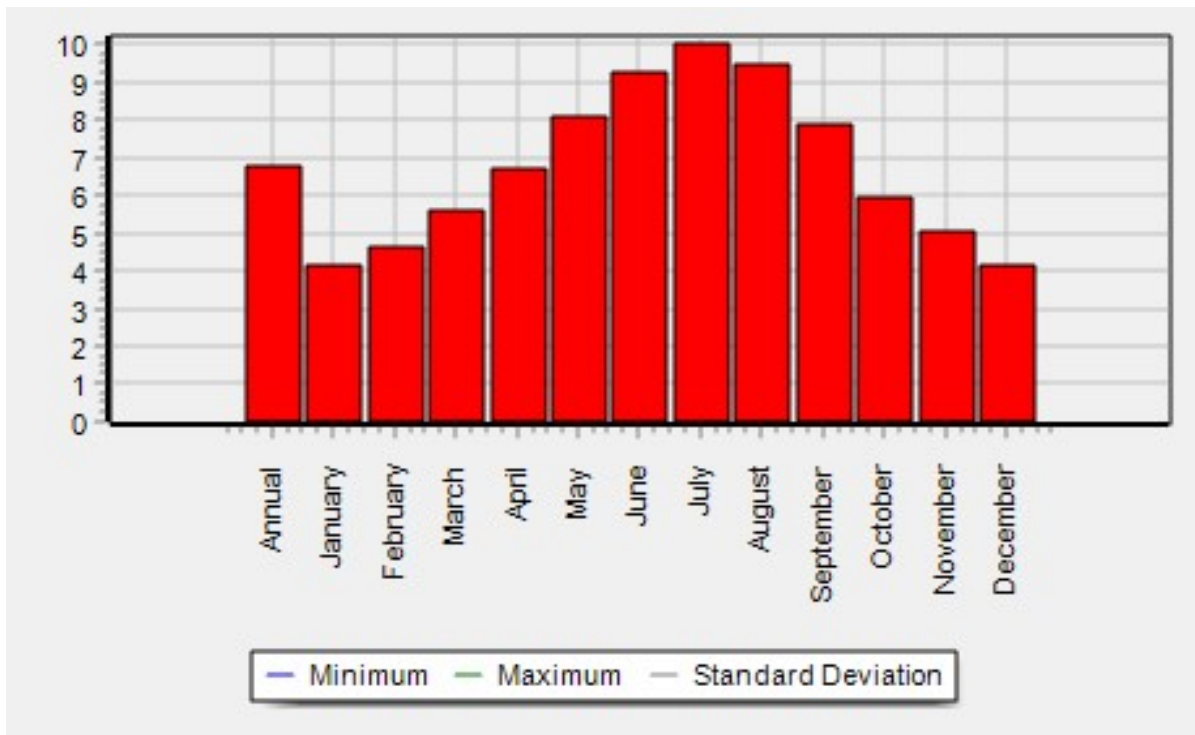
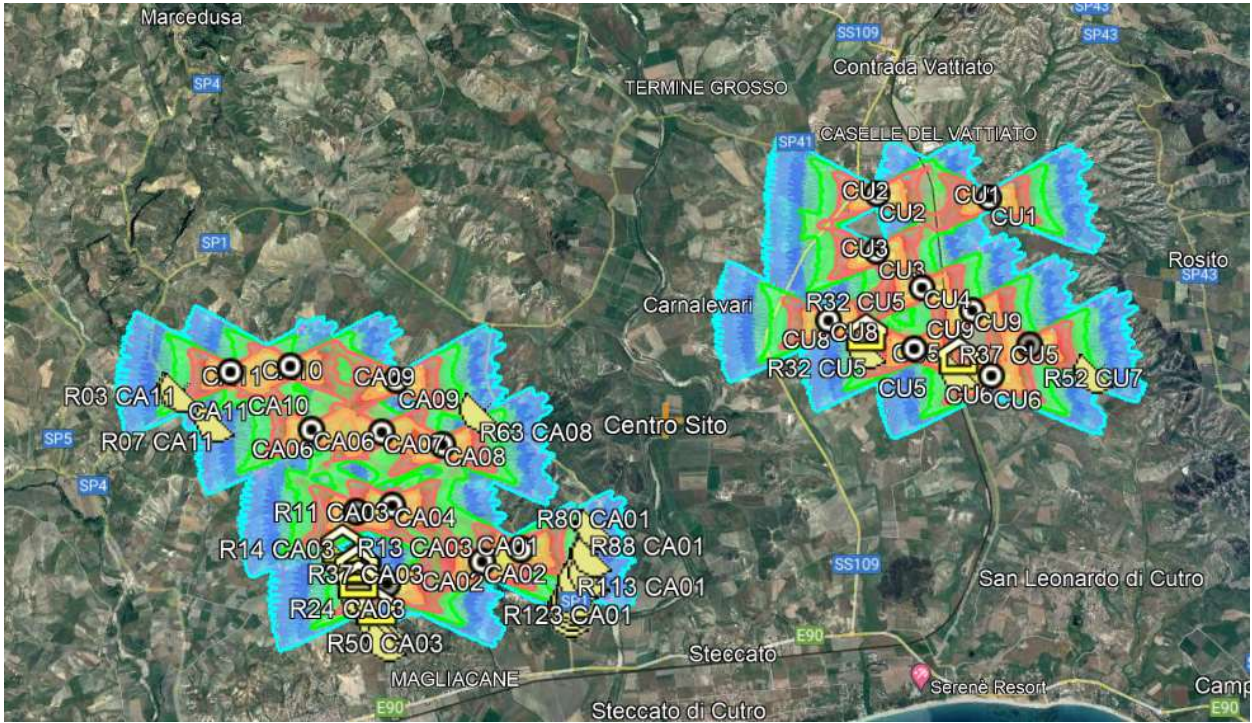


Tabella 6.2: Probabilità medie di eliofania e tabella

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

7. CONCLUSIONI

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



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)
R11 CA03	46:43	23:59
R13 CA03	94:56	58:37
R14 CA03	85:14	52:58
R15 CA03	104:19	64:55
R24 CA03	00:00	00:00
R37 CA03	00:00	00:00
R32 CA05	34:28	19:59
R37 CA05	87:52	53:44

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

A seguito di quanto descritto nei paragrafi precedenti si può concludere che, pur considerando una stima cautelativa in quanto non si è tenuto conto degli effetti mitigativi dovuti al piano di rotazione delle pale non sempre ortogonale alla direttrice sole-finestra e all'eventuale presenza di ostacoli e/o vegetazione interposti tra il sole e la finestra, il fenomeno dello shadow flickering superiore alle 24 ore si verifica

esclusivamente su quattro abitazioni (vedi tabella 7.1), incidendo in maniera molto limitata, in quanto il valore atteso è per tutti i recettori inferiore a 65 ore l'anno.

In particolare, per 3 ricettori esaminati la stima delle ore d'ombra intermittente per anno è largamente inferiore a 24 ore/anno, per due addirittura zero. Per i restanti recettori, benchè i valori siano maggiori alle 30 ore/anno, possiamo affermare che l'impatto dello shadow flickering sia trascurabile in quanto si è ipotizzato in questo caso anche un funzionamento continuo dell'impianto.

Le immagini seguenti riportano i ricettori impattati.



Figura 7.2: Vista del ricettore R32 CU5



Figura 7.3: Vista del ricettore R37 CU5



Figura 7.4: Vista del ricettori R13CA03-R14 CA03-R15 CA03



Figura 7.5: Vista del ricettore R11 CA03

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. ALLEGATI:

- ALL. 1 SHADOW – MAIN RESULT WORST CONDITION – ELABORAZIONE MEDIANTE IL SOFTWARE WINDPRO 4.4;
- ALL.2 SHADOW – MAIN RESULT REAL CONDITION – ELABORAZIONE MEDIANTE IL SOFTWARE WINDPRO 4.4.

SHADOW - Main Result

Calculation: CANTORATO

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

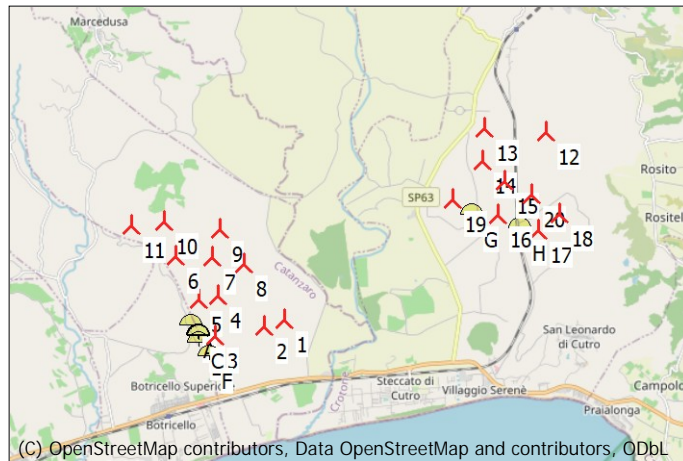
The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

Topographic shadow included in calculation

All coordinates are in

Geo [deg]-WGS84



Scale 1:200.000

▲ New WTG

👤 Shadow receptor

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]
16,892793° E	38,956897° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 2	Yes	2	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,886697° E	38,955473° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 3	Yes	3	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,871658° E	38,952895° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 4	Yes	4	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,872469° E	38,962514° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 5	Yes	5	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,866759° E	38,961749° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 6	Yes	6	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,859458° E	38,972075° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 7	Yes	7	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,870805° E	38,971659° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 8	Yes	8	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,880585° E	38,970042° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 9	Yes	9	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,873161° E	38,978280° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 10	Yes	10	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,855963° E	38,980114° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 11	Yes	11	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,846227° E	38,979484° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 12	Yes	12	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,972728° E	39,001705° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 13	Yes	13	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,954031° E	39,002444° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 14	Yes	14	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,953123° E	38,994647° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 15	Yes	15	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,960169° E	38,989717° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 16	Yes	16	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,958160° E	38,981768° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 17	Yes	17	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,970296° E	38,978140° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 18	Yes	18	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,977090° E	38,982097° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 19	Yes	19	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,944318° E	38,985522° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 20	Yes	20	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,968236° E	38,986698° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes	Yes		Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8

Shadow receptor-Input

No.	Longitude	Latitude	Z	Width	Height	Elevation	Degrees from	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l.	south cw	window		(ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]	[°]		[m]
A	16,864260° E	38,955780° N	9,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
B	16,866544° E	38,953319° N	3,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
C	16,866636° E	38,953101° N	8,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
D	16,866870° E	38,953233° N	3,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
E	16,866824° E	38,951450° N	6,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
F	16,869704° E	38,948214° N	3,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
G	16,950023° E	38,981823° N	3,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
H	16,964897° E	38,978663° N	3,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0

SHADOW - Main Result

Calculation: CANTORATO

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]
A	46:43	89	0:50
B	94:56	148	1:09
C	85:14	137	1:09
D	104:19	141	1:12
E	0:00	0	0:00
F	0:00	0	0:00
G	34:28	89	0:43
H	87:52	122	1:07

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

No.	Name	Worst case [h/year]
1	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (1)	0:00
2	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (2)	5:04
3	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (3)	156:58
4	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (4)	0:00
5	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (5)	0:00
6	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (6)	0:00
7	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (7)	0:00
8	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (8)	0:00
9	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (9)	0:00
10	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (10)	0:00
11	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (11)	0:00
12	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (12)	0:00
13	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (13)	0:00
14	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (14)	0:00
15	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (15)	0:00
16	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (16)	26:39
17	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (17)	95:41
18	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (18)	0:00
19	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (19)	0:00
20	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (20)	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: CANTORATO Shadow receptor: B - Shadow Receptor: 2,0 x 2,0 Azimuth: 0,0° Slope: 90,0° (2) Assumptions for shadow calculations

Reference year for calendar

2023

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

Calendar table with columns for months (January-December) and rows for days (1-31), containing sun rise/set times, shadow start/end times, and potential sun hours.

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

Matrix layout table with columns for Day in month, Sun rise/set, Sun set, Minutes with flicker, First/Last time with flicker, and (WTG causing flicker first/last time).

SHADOW - Calendar

Calculation: CANTORATO Shadow receptor: E - Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (5)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:09 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:29 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	05:53 19:44	05:27 20:11	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
4	07:10 16:40	06:56 17:14	06:21 17:45	06:33 19:16	05:51 19:45	05:27 20:11	05:30 20:20	05:53 20:01	06:21 19:19	06:48 18:31	06:19 16:49	06:52 16:29
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:17	05:50 19:46	05:26 20:12	05:30 20:20	05:54 20:00	06:22 19:18	06:49 18:30	06:20 16:48	06:53 16:29
6	07:10 16:42	06:54 17:16	06:18 17:47	06:30 19:17	05:49 19:47	05:26 20:13	05:31 20:20	05:54 19:59	06:22 19:16	06:50 18:28	06:22 16:47	06:54 16:28
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	05:48 19:47	05:26 20:13	05:31 20:19	05:55 19:57	06:23 19:15	06:51 18:27	06:23 16:46	06:54 16:28
8	07:10 16:44	06:52 17:18	06:16 17:49	06:27 19:19	05:47 19:48	05:25 20:14	05:32 20:19	05:56 19:56	06:24 19:13	06:52 18:25	06:24 16:45	06:55 16:28
9	07:10 16:45	06:51 17:19	06:14 17:50	06:26 19:20	05:46 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:53 18:24	06:25 16:44	06:56 16:28
10	07:10 16:46	06:50 17:20	06:13 17:51	06:24 19:21	05:45 19:50	05:25 20:15	05:33 20:19	05:58 19:54	06:26 19:10	06:53 18:22	06:26 16:43	06:57 16:28
11	07:09 16:47	06:49 17:22	06:11 17:52	06:23 19:22	05:44 19:51	05:25 20:15	05:34 20:18	05:59 19:53	06:27 19:08	06:54 18:21	06:27 16:42	06:58 16:28
12	07:09 16:48	06:48 17:23	06:09 17:53	06:21 19:23	05:43 19:52	05:25 20:16	05:34 20:18	06:00 19:52	06:28 19:07	06:55 18:19	06:28 16:41	06:59 16:29
13	07:09 16:49	06:47 17:24	06:08 17:54	06:20 19:24	05:42 19:53	05:25 20:16	05:35 20:17	06:01 19:50	06:29 19:05	06:56 18:18	06:29 16:40	07:00 16:29
14	07:09 16:50	06:45 17:25	06:06 17:55	06:18 19:25	05:41 19:54	05:25 20:17	05:36 20:17	06:02 19:49	06:30 19:03	06:57 18:16	06:30 16:39	07:00 16:29
15	07:09 16:51	06:44 17:26	06:05 17:56	06:17 19:26	05:40 19:55	05:25 20:17	05:36 20:16	06:03 19:48	06:30 19:02	06:58 18:15	06:32 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:39 19:56	05:25 20:18	05:37 20:16	06:03 19:47	06:31 19:00	06:59 18:13	06:33 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	05:38 19:57	05:25 20:18	05:38 20:15	06:04 19:45	06:32 18:59	07:00 18:12	06:34 16:37	07:02 16:30
18	07:07 16:54	06:41 17:30	06:00 17:59	06:12 19:29	05:37 19:58	05:25 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:36	07:03 16:30
19	07:07 16:55	06:39 17:31	05:59 18:00	06:11 19:30	05:36 19:59	05:25 20:19	05:39 20:14	06:06 19:43	06:34 18:55	07:02 18:09	06:36 16:35	07:04 16:30
20	07:07 16:56	06:38 17:32	05:57 18:01	06:10 19:31	05:35 19:59	05:25 20:19	05:40 20:14	06:07 19:41	06:35 18:54	07:03 18:08	06:37 16:35	07:04 16:31
21	07:06 16:57	06:37 17:33	05:55 18:02	06:08 19:32	05:35 20:00	05:25 20:19	05:41 20:13	06:08 19:40	06:36 18:52	07:04 18:06	06:38 16:34	07:05 16:31
22	07:06 16:59	06:35 17:34	05:54 18:03	06:07 19:33	05:34 20:01	05:25 20:20	05:42 20:12	06:09 19:38	06:37 18:51	07:06 18:05	06:39 16:33	07:05 16:32
23	07:05 17:00	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:20	05:42 20:12	06:10 19:37	06:38 18:49	07:07 18:04	06:40 16:33	07:06 16:32
24	07:04 17:01	06:33 17:36	05:51 18:05	06:04 19:35	05:32 20:03	05:26 20:20	05:43 20:11	06:11 19:36	06:39 18:47	07:08 18:02	06:41 16:32	07:06 16:33
25	07:04 17:02	06:31 17:37	05:49 18:06	06:03 19:36	05:32 20:04	05:26 20:20	05:44 20:10	06:12 19:34	06:39 18:46	07:09 18:01	06:42 16:32	07:07 16:33
26	07:03 17:03	06:30 17:38	06:48 19:07	06:01 19:37	05:31 20:05	05:26 20:20	05:45 20:09	06:13 19:33	06:40 18:44	07:10 18:00	06:44 16:31	07:07 16:34
27	07:03 17:04	06:29 17:39	06:46 19:08	06:00 19:38	05:30 20:05	05:27 20:20	05:46 20:08	06:13 19:31	06:41 18:43	07:11 17:58	06:45 16:31	07:08 16:34
28	07:02 17:05	06:27 17:41	06:44 19:09	05:59 19:39	05:30 20:06	05:27 20:20	05:47 20:07	06:14 19:30	06:42 18:41	07:12 17:57	06:46 16:30	07:08 16:35
29	07:01 17:07		06:43 19:10	05:58 19:40	05:29 20:07	05:27 20:20	05:47 20:07	06:15 19:28	06:43 18:39	06:13 16:56	06:47 16:30	07:08 16:36
30	07:00 17:08		06:41 19:11	05:56 19:41	05:29 20:08	05:28 20:20	05:48 20:06	06:16 19:27	06:44 18:38	06:14 16:55	06:48 16:30	07:09 16:36
31	06:59 17:09		06:40 19:12		05:28 20:08		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
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: CANTORATO Shadow receptor: F - Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (6)
Assumptions for shadow calculations

Reference year for calendar 2023
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

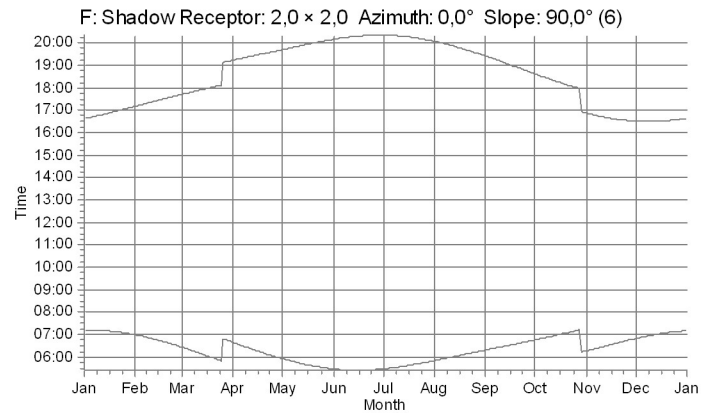
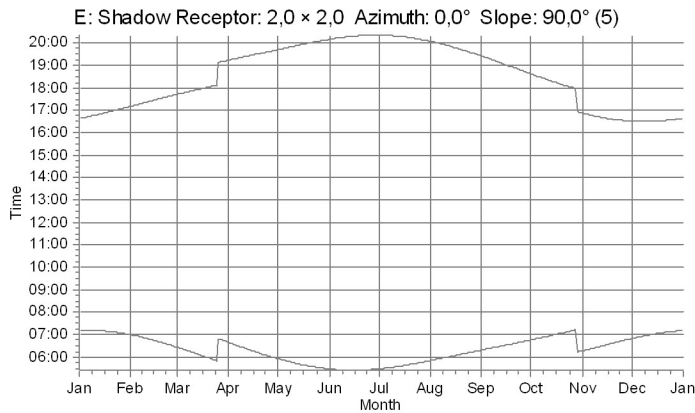
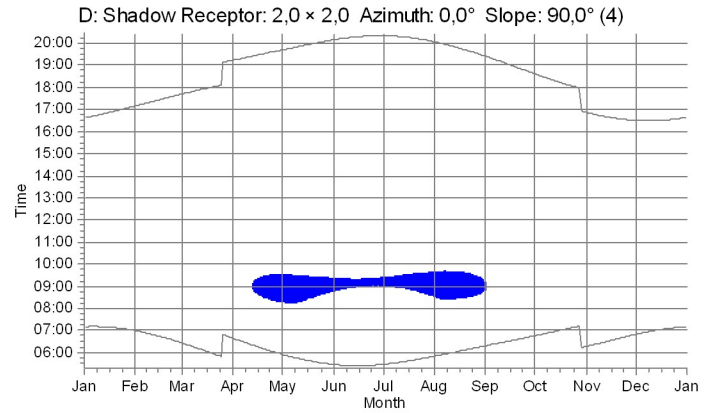
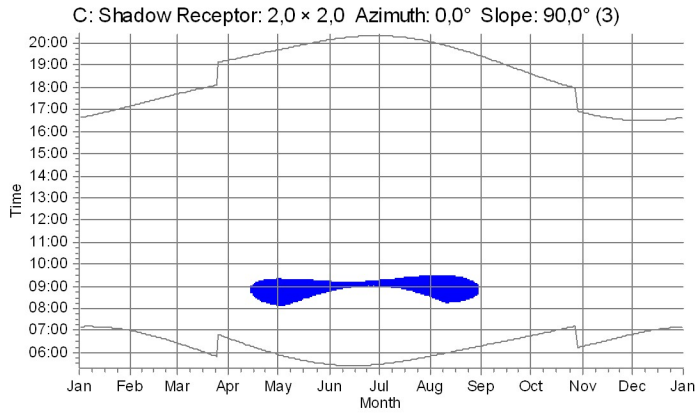
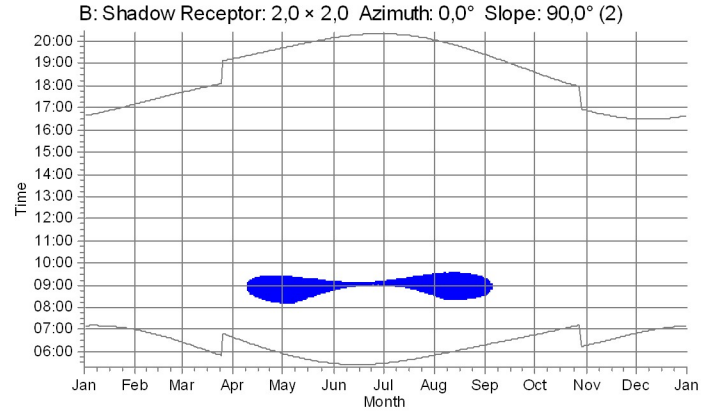
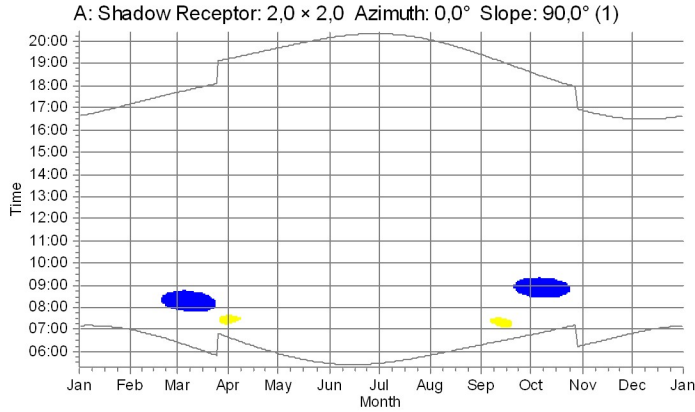
	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:09 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:29 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	05:53 19:44	05:27 20:11	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
4	07:10 16:40	06:56 17:14	06:21 17:45	06:33 19:16	05:51 19:45	05:27 20:11	05:30 20:20	05:53 20:01	06:21 19:19	06:48 18:31	06:19 16:49	06:52 16:29
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:17	05:50 19:46	05:26 20:12	05:30 20:20	05:54 20:00	06:22 19:18	06:49 18:30	06:20 16:48	06:53 16:29
6	07:10 16:42	06:54 17:16	06:18 17:47	06:30 19:17	05:49 19:46	05:26 20:13	05:31 20:20	05:54 19:59	06:22 19:16	06:50 18:28	06:22 16:47	06:53 16:28
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	05:48 19:47	05:26 20:13	05:31 20:19	05:55 19:57	06:23 19:15	06:51 18:27	06:23 16:46	06:54 16:28
8	07:10 16:44	06:52 17:18	06:16 17:49	06:27 19:19	05:47 19:48	05:25 20:14	05:32 20:19	05:56 19:56	06:24 19:13	06:52 18:25	06:24 16:45	06:55 16:28
9	07:10 16:45	06:51 17:19	06:14 17:50	06:26 19:20	05:46 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:53 18:24	06:25 16:44	06:56 16:28
10	07:10 16:46	06:50 17:20	06:12 17:51	06:24 19:21	05:45 19:50	05:25 20:15	05:33 20:19	05:58 19:54	06:26 19:10	06:53 18:22	06:26 16:43	06:57 16:28
11	07:09 16:47	06:49 17:22	06:11 17:52	06:23 19:22	05:44 19:51	05:25 20:15	05:34 20:18	05:59 19:53	06:27 19:08	06:54 18:21	06:27 16:42	06:58 16:28
12	07:09 16:48	06:48 17:23	06:09 17:53	06:21 19:23	05:43 19:52	05:25 20:16	05:34 20:18	06:00 19:52	06:28 19:07	06:55 18:19	06:28 16:41	06:59 16:29
13	07:09 16:49	06:47 17:24	06:08 17:54	06:20 19:24	05:42 19:53	05:25 20:16	05:35 20:17	06:01 19:50	06:29 19:05	06:56 18:18	06:29 16:40	06:59 16:29
14	07:09 16:50	06:45 17:25	06:06 17:55	06:18 19:25	05:41 19:54	05:25 20:17	05:36 20:17	06:02 19:49	06:30 19:03	06:57 18:16	06:30 16:39	07:00 16:29
15	07:09 16:51	06:44 17:26	06:05 17:56	06:17 19:26	05:40 19:55	05:25 20:17	05:36 20:16	06:03 19:48	06:30 19:02	06:58 18:15	06:32 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:39 19:56	05:25 20:18	05:37 20:16	06:03 19:47	06:31 19:00	06:59 18:13	06:33 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	05:38 19:57	05:25 20:18	05:38 20:15	06:04 19:45	06:32 18:59	07:00 18:12	06:34 16:37	07:02 16:30
18	07:07 16:54	06:41 17:30	06:00 17:59	06:12 19:29	05:37 19:58	05:25 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:36	07:03 16:30
19	07:07 16:55	06:39 17:31	05:59 18:00	06:11 19:30	05:36 19:59	05:25 20:19	05:39 20:14	06:06 19:43	06:34 18:55	07:02 18:09	06:36 16:35	07:04 16:30
20	07:07 16:56	06:38 17:32	05:57 18:01	06:10 19:31	05:35 19:59	05:25 20:19	05:40 20:14	06:07 19:41	06:35 18:54	07:03 18:08	06:37 16:35	07:04 16:31
21	07:06 16:57	06:37 17:33	05:55 18:02	06:08 19:32	05:35 20:00	05:25 20:19	05:41 20:13	06:08 19:40	06:36 18:52	07:04 18:06	06:38 16:34	07:05 16:31
22	07:06 16:59	06:35 17:34	05:54 18:03	06:07 19:33	05:34 20:01	05:25 20:19	05:42 20:12	06:09 19:38	06:37 18:51	07:05 18:05	06:39 16:33	07:05 16:32
23	07:05 17:00	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:20	05:42 20:11	06:10 19:37	06:38 18:49	07:07 18:04	06:40 16:33	07:06 16:32
24	07:04 17:01	06:33 17:36	05:51 18:05	06:04 19:35	05:32 20:03	05:26 20:20	05:43 20:11	06:11 19:36	06:39 18:47	07:08 18:02	06:41 16:32	07:06 16:33
25	07:04 17:02	06:31 17:37	05:49 18:06	06:03 19:36	05:32 20:04	05:26 20:20	05:44 20:10	06:12 19:34	06:39 18:46	07:09 18:01	06:42 16:32	07:07 16:33
26	07:03 17:03	06:30 17:38	06:48 19:07	06:01 19:37	05:31 20:05	05:26 20:20	05:45 20:09	06:13 19:33	06:40 18:44	07:10 18:00	06:44 16:31	07:07 16:34
27	07:02 17:04	06:29 17:39	06:46 19:08	06:00 19:38	05:30 20:05	05:27 20:20	05:46 20:08	06:13 19:31	06:41 18:43	07:11 17:58	06:45 16:31	07:08 16:34
28	07:02 17:05	06:27 17:41	06:44 19:09	05:59 19:39	05:30 20:06	05:27 20:20	05:47 20:07	06:14 19:30	06:42 18:41	07:12 17:57	06:46 16:30	07:08 16:35
29	07:01 17:07		06:43 19:10	05:58 19:40	05:29 20:07	05:27 20:20	05:47 20:07	06:15 19:28	06:43 18:39	06:13 16:56	06:47 16:30	07:08 16:36
30	07:00 17:08		06:41 19:11	05:56 19:41	05:29 20:08	05:28 20:20	05:48 20:06	06:16 19:27	06:44 18:38	06:14 16:55	06:48 16:30	07:09 16:36
31	06:59 17:09		06:40 19:12		05:28 20:08		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	295
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, graphical

Calculation: CANTORATO



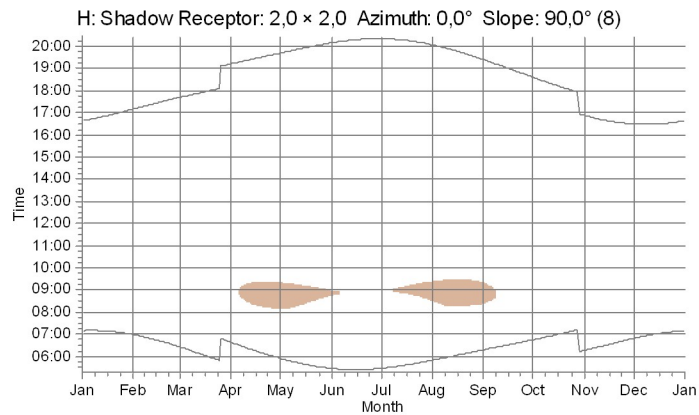
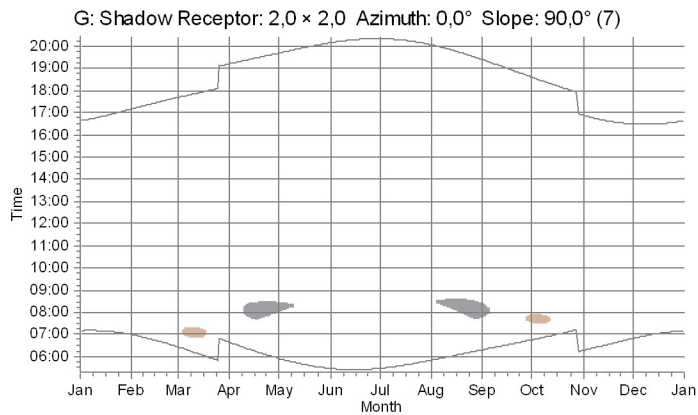
WTGs

2: Siemens Gamesa SG 6.2-170 6200 170.0 IOI hub: 115,0 m (TOT: 200,0 m) (2)

3: Siemens Gamesa SG 6.2-170 6200 170.0 IOI hub: 115,0 m (TOT: 200,0 m) (3)

SHADOW - Calendar, graphical

Calculation: CANTORATO



WTGs

16: Siemens Gamesa SG 6.2-170 6200 170.0 I0I hub: 115,0 m (TOT: 200,0 m) (16)

17: Siemens Gamesa SG 6.2-170 6200 170.0 I0I hub: 115,0 m (TOT: 200,0 m) (17)

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 1 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (1)

Assumptions for shadow calculations

Reference year for calendar 2023

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	07:09 16:38	06:59 17:10	06:26 17:41	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:09 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:28 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:39	06:57 17:12	06:23 17:44	06:35 19:15	05:52 19:44	05:27 20:10	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
4	07:10 16:40	06:56 17:13	06:21 17:45	06:33 19:15	05:51 19:45	05:27 20:11	05:29 20:20	05:53 20:01	06:21 19:19	06:48 18:31	06:19 16:49	06:52 16:29
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:16	05:50 19:45	05:26 20:12	05:30 20:20	05:53 20:00	06:21 19:18	06:49 18:30	06:20 16:48	06:52 16:28
6	07:10 16:42	06:54 17:16	06:18 17:47	06:30 19:17	05:49 19:46	05:26 20:12	05:30 20:20	05:54 19:58	06:22 19:16	06:50 18:28	06:21 16:46	06:53 16:28
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	05:48 19:47	05:26 20:13	05:31 20:19	05:55 19:57	06:23 19:14	06:51 18:27	06:23 16:45	06:54 16:28
8	07:10 16:44	06:52 17:18	06:15 17:49	06:27 19:19	05:47 19:48	05:25 20:14	05:32 20:19	05:56 19:56	06:24 19:13	06:51 18:25	06:24 16:44	06:55 16:28
9	07:10 16:45	06:51 17:19	06:14 17:50	06:26 19:20	05:46 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:52 18:24	06:25 16:43	06:56 16:28
10	07:10 16:46	06:50 17:20	06:12 17:51	06:24 19:21	05:45 19:50	05:25 20:15	05:33 20:18	05:58 19:54	06:26 19:10	06:53 18:22	06:26 16:42	06:57 16:28
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12	07:09 16:48	06:48 17:23	06:09 17:53	06:21 19:23	05:42 19:52	05:25 20:16	05:34 20:18	06:00 19:51	06:28 19:07	06:55 18:19	06:28 16:41	06:59 16:28
13	07:09 16:49	06:46 17:24	06:08 17:54	06:20 19:24	05:42 19:53	05:25 20:16	05:35 20:17	06:01 19:50	06:29 19:05	06:56 18:18	06:29 16:40	06:59 16:29
14	07:09 16:50	06:45 17:25	06:06 17:55	06:18 19:25	05:41 19:54	05:25 20:17	05:35 20:17	06:02 19:49	06:29 19:03	06:57 18:16	06:30 16:39	07:00 16:29
15	07:08 16:51	06:44 17:26	06:05 17:56	06:17 19:26	05:40 19:55	05:24 20:17	05:36 20:16	06:02 19:48	06:30 19:02	06:58 18:15	06:31 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:39 19:56	05:25 20:18	05:37 20:16	06:03 19:46	06:31 19:00	06:59 18:13	06:33 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	05:38 19:57	05:25 20:18	05:38 20:15	06:04 19:45	06:32 18:59	07:00 18:12	06:34 16:37	07:02 16:29
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 19:29	05:37 19:58	05:25 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:36	07:03 16:30
19	07:07 16:55	06:39 17:31	05:58 18:00	06:11 19:30	05:36 19:58	05:25 20:19	05:39 20:14	06:06 19:42	06:34 18:55	07:02 18:09	06:36 16:35	07:04 16:30
20	07:07 16:56	06:38 17:32	05:57 18:01	06:10 19:31	05:35 19:59	05:25 20:19	05:40 20:13	06:07 19:41	06:35 18:54	07:03 18:08	06:37 16:34	07:04 16:31
21	07:06 16:57	06:37 17:33	05:55 18:02	06:08 19:32	05:34 20:00	05:25 20:19	05:41 20:13	06:08 19:40	06:36 18:52	07:04 18:06	06:38 16:34	07:05 16:31
22	07:06 16:58	06:35 17:34	05:54 18:03	06:07 19:33	05:34 20:01	05:25 20:19	05:41 20:12	06:09 19:38	06:37 18:51	07:05 18:05	06:39 16:33	07:05 16:31
23	07:05 17:00	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:20	05:42 20:11	06:10 19:37	06:38 18:49	07:06 18:03	06:40 16:33	07:06 16:32
24	07:04 17:01	06:33 17:36	05:51 18:05	06:04 19:35	05:32 20:03	05:26 20:20	05:43 20:11	06:11 19:36	06:38 18:47	07:07 18:02	06:41 16:32	07:06 16:32
25	07:04 17:02	06:31 17:37	05:49 18:06	06:03 19:36	05:32 20:04	05:26 20:20	05:44 20:10	06:12 19:34	06:39 18:46	07:09 18:01	06:42 16:32	07:07 16:33
26	07:03 17:03	06:30 17:38	05:47 19:07	06:01 19:37	05:31 20:04	05:26 20:20	05:45 20:09	06:12 19:33	06:40 18:44	07:10 17:59	06:43 16:31	07:07 16:34
27	07:02 17:04	06:28 17:39	05:46 19:08	06:00 19:38	05:30 20:05	05:26 20:20	05:46 20:08	06:13 19:31	06:41 18:42	07:11 17:58	06:45 16:31	07:08 16:34
28	07:02 17:05	06:27 17:40	05:44 19:09	05:59 19:39	05:30 20:06	05:27 20:20	05:46 20:07	06:14 19:30	06:42 18:41	07:12 17:57	06:46 16:30	07:08 16:35
29	07:01 17:06	06:26 19:10	05:43 19:40	05:57 20:07	05:29 20:20	05:27 20:20	05:47 20:06	06:15 19:28	06:43 18:39	07:13 16:56	06:47 16:30	07:08 16:35
30	07:00 17:08	06:25 19:11	05:42 19:41	05:56 20:08	05:29 20:20	05:28 20:20	05:48 20:06	06:16 19:27	06:44 18:38	07:14 16:54	06:48 16:30	07:09 16:36
31	06:59 17:09	06:24 19:12	05:41 19:42	05:55 20:09	05:28 20:20	05:28 20:20	05:49 20:05	06:17 19:25	06:45 16:53	07:15 16:53	06:49 16:30	07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 2 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (2)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	07:17-07:35/18 19:42	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52
2	07:09 16:39	06:58 17:11	06:24 17:43	06:37 19:14	07:19-07:35/16 19:43	05:54 19:43	05:27 20:10	05:28 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	07:21-07:34/13 19:44	05:52 19:44	05:27 20:10	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50
4	07:10 16:40	06:56 17:13	06:21 17:45	06:33 19:15	07:23-07:34/11 19:45	05:51 19:45	05:27 20:11	05:29 20:20	05:53 20:01	06:21 19:19	06:48 18:31	06:19 16:49
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:16	07:24-07:32/8 19:46	05:50 19:46	05:26 20:12	05:30 20:20	05:53 20:00	06:21 19:18	06:49 18:30	06:20 16:48
6	07:10 16:42	06:54 17:16	06:18 17:47	06:30 19:17	07:25-07:31/6 19:47	05:49 19:47	05:26 20:12	05:30 20:20	05:54 19:58	06:22 19:16	06:50 18:28	06:21 16:47
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	07:27-07:29/2 19:48	05:48 19:48	05:26 20:13	05:31 20:19	05:55 19:57	06:23 19:14	07:22-07:25/3 18:27	06:51 16:45
8	07:10 16:44	06:52 17:18	06:15 17:49	06:27 19:19	07:28-07:30/1 19:49	05:47 19:49	05:25 20:14	05:32 20:19	05:56 19:56	06:24 19:13	07:20-07:27/7 18:25	06:51 16:44
9	07:10 16:45	06:51 17:19	06:14 17:50	06:26 19:20	07:29-07:31/1 19:50	05:46 19:50	05:25 20:15	05:32 20:18	05:57 19:54	06:25 19:10	07:18-07:27/9 18:24	06:52 16:43
10	07:10 16:46	06:50 17:20	06:12 17:51	06:24 19:21	07:30-07:32/1 19:51	05:45 19:51	05:25 20:16	05:33 20:18	05:58 19:54	06:26 19:10	07:16-07:28/12 18:22	06:53 16:42
11	07:09 16:47	06:49 17:22	06:11 17:52	06:23 19:22	07:31-07:33/1 19:52	05:44 19:52	05:25 20:15	05:33 20:18	05:59 19:53	06:27 19:08	07:13-07:28/15 18:21	06:54 16:42
12	07:09 16:48	06:48 17:23	06:09 17:53	06:21 19:23	07:32-07:34/1 19:53	05:43 19:53	05:25 20:16	05:34 20:18	06:00 19:52	06:28 19:07	07:11-07:28/17 18:19	06:55 16:41
13	07:09 16:49	06:46 17:24	06:08 17:54	06:20 19:24	07:33-07:35/1 19:54	05:42 19:54	05:25 20:17	05:35 20:17	06:01 19:50	06:29 19:05	07:08-07:26/18 18:18	06:56 16:40
14	07:09 16:50	06:45 17:25	06:06 17:55	06:18 19:25	07:34-07:36/1 19:55	05:41 19:55	05:25 20:17	05:35 20:17	06:02 19:49	06:30 19:03	07:07-07:26/19 18:16	06:57 16:39
15	07:08 16:51	06:44 17:26	06:05 17:56	06:17 19:26	07:35-07:37/1 19:56	05:40 19:56	05:25 20:17	05:36 20:16	06:02 19:48	06:30 19:02	07:07-07:25/18 18:15	06:58 16:38
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	07:36-07:38/1 19:57	05:39 19:57	05:25 20:18	05:37 20:16	06:03 19:46	06:31 19:00	07:08-07:24/16 18:13	06:59 16:37
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	07:37-07:39/1 19:58	05:38 19:58	05:25 20:18	05:38 20:15	06:04 19:45	06:32 18:59	07:09-07:22/13 18:12	07:00 16:37
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 19:29	07:38-07:40/1 19:59	05:37 19:59	05:25 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:12-07:19/7 18:10	07:01 16:36
19	07:07 16:55	06:39 17:31	05:59 18:00	06:11 19:30	07:39-07:41/1 20:00	05:36 20:00	05:25 20:19	05:39 20:14	06:06 19:42	06:34 18:55	07:07-07:25/18 18:09	07:02 16:35
20	07:07 16:56	06:38 17:32	05:57 18:01	06:10 19:31	07:40-07:42/1 20:01	05:35 20:01	05:25 20:19	05:40 20:14	06:07 19:41	06:35 18:54	07:03-07:21/16 18:08	07:03 16:34
21	07:06 16:57	06:37 17:33	05:55 18:02	06:08 19:32	07:41-07:43/1 20:02	05:35 20:02	05:25 20:19	05:41 20:13	06:08 19:40	06:36 18:52	07:04-07:22/15 18:06	06:38 16:34
22	07:06 16:58	06:35 17:34	05:54 18:03	06:07 19:33	07:42-07:44/1 20:03	05:34 20:03	05:25 20:19	05:41 20:12	06:09 19:38	06:37 18:51	07:05-07:23/14 18:05	06:39 16:33
23	07:05 17:00	06:34 17:35	05:52 18:04	06:05 19:34	07:43-07:45/1 20:04	05:33 20:04	05:25 20:20	05:42 20:11	06:10 19:37	06:38 18:49	07:06-07:24/13 18:03	06:40 16:33
24	07:04 17:01	06:33 17:36	05:51 18:05	06:04 19:35	07:44-07:46/1 20:05	05:32 20:05	05:26 20:20	05:43 20:11	06:11 19:36	06:39 18:47	07:07-07:25/18 18:02	06:41 16:32
25	07:04 17:02	06:31 17:37	05:49 18:06	06:03 19:36	07:45-07:47/1 20:06	05:32 20:06	05:26 20:20	05:44 20:10	06:12 19:34	06:39 18:46	07:08-07:26/17 18:01	06:42 16:32
26	07:03 17:03	06:30 17:38	06:48 19:07	06:01 19:37	07:46-07:48/1 20:07	05:31 20:07	05:26 20:20	05:45 20:09	06:12 19:33	06:40 18:44	07:09-07:27/15 17:59	06:43 16:31
27	07:02 17:04	06:29 17:39	06:46 19:08	06:00 19:38	07:47-07:49/1 20:08	05:30 20:08	05:27 20:20	05:46 20:08	06:13 19:31	06:41 18:43	07:10-07:28/14 17:58	06:45 16:31
28	07:02 17:05	06:27 17:40	06:44 19:09	05:59 19:39	07:48-07:50/1 20:09	05:30 20:09	05:27 20:20	05:46 20:07	06:14 19:30	06:42 18:41	07:11-07:29/13 17:57	06:46 16:30
29	07:01 17:06	06:26 17:41	06:43 19:10	05:57 19:40	07:49-07:51/1 20:10	05:29 20:10	05:27 20:20	05:47 20:07	06:15 19:28	06:43 18:39	07:12-07:30/12 17:56	06:47 16:30
30	07:00 17:08	06:25 17:42	06:41 19:11	05:56 19:41	07:50-07:52/1 20:11	05:28 20:11	05:28 20:20	05:48 20:06	06:16 19:27	06:44 18:38	07:13-07:31/11 17:55	06:48 16:30
31	06:59 17:09	06:24 17:43	06:40 19:12	05:55 19:42	07:51-07:53/1 20:12	05:27 20:12	05:28 20:20	05:49 20:05	06:17 19:25	06:45 18:37	07:14-07:32/10 17:54	06:49 16:29
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	76	74	0	0	0	0	154	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: CANTORATO WTG: 3 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (3)
Assumptions for shadow calculations

Reference year for calendar 2023

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	07:09 16:38	06:59 17:10	06:26 07:57-08:42/45 17:42	06:38 19:13	05:55 08:11-09:30/79 19:42	05:28 08:49-09:20/31 20:09
2	07:09 16:39	06:58 17:11	06:24 07:56-08:43/47 17:43	06:37 19:14	05:54 08:11-09:30/79 19:43	05:27 08:50-09:19/29 20:10
3	07:10 16:40	06:57 17:12	06:23 07:56-08:43/47 17:44	06:35 19:15	05:53 08:09-09:29/80 19:44	05:27 08:51-09:19/28 20:11
4	07:10 16:40	06:56 17:13	06:21 07:55-08:43/48 17:45	06:33 19:16	05:51 08:10-09:29/79 19:45	05:27 08:52-09:19/27 20:11
5	07:10 16:41	06:55 17:15	06:20 07:55-08:44/49 17:46	06:32 19:17	05:50 08:12-09:29/77 19:46	05:26 08:54-09:20/26 20:12
6	07:10 16:42	06:54 17:16	06:18 07:54-08:43/49 17:47	06:30 19:17	05:49 08:13-09:29/76 19:47	05:26 08:54-09:19/25 20:13
7	07:10 16:43	06:53 17:17	06:17 07:54-08:43/49 17:48	06:29 19:18	05:48 08:15-09:28/73 19:47	05:26 08:55-09:19/24 20:13
8	07:10 16:44	06:52 17:18	06:15 07:53-08:42/49 17:49	06:27 19:19	05:47 08:16-09:28/72 19:48	05:25 08:56-09:19/23 20:14
9	07:10 16:45	06:51 17:19	06:14 07:52-08:42/50 17:50	06:26 19:20	05:46 08:18-09:28/70 19:49	05:25 08:57-09:19/22 20:14
10	07:10 16:46	06:50 17:20	06:12 07:52-08:41/49 17:51	06:24 08:48-09:07/19 19:21	05:45 08:19-09:28/69 19:50	05:25 08:58-09:19/21 20:15
11	07:09 16:47	06:49 17:22	06:11 07:52-08:40/48 17:52	06:23 08:43-09:11/28 19:22	05:44 08:21-09:27/66 19:51	05:25 08:58-09:18/20 20:15
12	07:09 16:48	06:48 17:23	06:09 07:52-08:40/48 17:53	06:21 08:39-09:14/35 19:23	05:43 08:22-09:27/65 19:52	05:25 08:58-09:18/20 20:16
13	07:09 16:49	06:47 17:24	06:08 07:52-08:39/47 17:54	06:20 08:37-09:16/39 19:24	05:42 08:24-09:26/62 19:53	05:25 08:59-09:18/19 20:16
14	07:09 16:50	06:45 17:25	06:06 07:53-08:38/45 17:55	06:18 08:34-09:18/44 19:25	05:41 08:25-09:26/61 19:54	05:25 09:00-09:18/18 20:17
15	07:09 16:51	06:44 17:26	06:05 07:53-08:37/44 17:56	06:17 08:32-09:19/47 19:26	05:40 08:27-09:25/58 19:55	05:25 09:00-09:18/18 20:17
16	07:08 16:52	06:43 17:27	06:03 07:54-08:36/42 17:57	06:15 08:30-09:21/51 19:27	05:39 08:29-09:26/57 19:56	05:25 09:01-09:18/17 20:18
17	07:08 16:53	06:42 17:28	06:02 07:54-08:34/40 17:58	06:14 08:28-09:21/53 19:28	05:38 08:30-09:25/55 19:57	05:25 09:01-09:18/17 20:18
18	07:07 16:54	06:41 17:30	06:00 07:54-08:32/38 17:59	06:12 08:27-09:23/56 19:29	05:37 08:31-09:25/54 19:58	05:25 09:02-09:19/17 20:18
19	07:07 16:55	06:39 17:31	05:59 07:56-08:31/35 18:00	06:11 08:25-09:24/59 19:30	05:36 08:32-09:24/52 19:59	05:25 09:03-09:19/16 20:19
20	07:07 16:56	06:38 08:17-08:25/8 17:32	05:57 07:57-08:28/31 18:01	06:10 08:24-09:26/62 19:31	05:35 08:34-09:23/49 19:59	05:25 09:03-09:19/16 20:19
21	07:06 16:57	06:37 08:12-08:31/19 17:33	05:55 07:59-08:26/27 18:02	06:08 08:23-09:27/64 19:32	05:35 08:36-09:24/48 20:00	05:25 09:03-09:19/16 20:19
22	07:06 16:59	06:35 08:08-08:33/25 17:34	05:54 08:00-08:23/23 18:03	06:07 08:21-09:27/66 19:33	05:34 08:37-09:23/46 20:01	05:25 09:03-09:19/16 20:20
23	07:05 17:00	06:34 08:06-08:36/30 17:35	05:52 08:03-08:18/15 18:04	06:05 08:20-09:28/68 19:34	05:33 08:38-09:22/44 20:02	05:25 09:03-09:19/16 20:20
24	07:04 17:01	06:33 08:04-08:38/34 17:36	05:51 08:04-08:38/34 18:05	06:04 08:19-09:29/70 19:35	05:32 08:40-09:23/43 20:03	05:26 09:04-09:20/16 20:20
25	07:04 17:02	06:31 08:02-08:39/37 17:37	05:49 08:06-08:39/37 18:06	06:03 08:17-09:29/72 19:36	05:32 08:41-09:22/41 20:04	05:26 09:04-09:20/16 20:20
26	07:03 17:03	06:30 08:01-08:40/39 17:38	06:48 08:01-08:40/39 19:07	06:01 08:16-09:29/73 19:37	05:31 08:42-09:22/40 20:05	05:26 09:03-09:20/17 20:20
27	07:02 17:04	06:29 07:59-08:40/41 17:39	06:46 08:02-08:40/41 19:08	06:00 08:15-09:30/75 19:38	05:30 08:43-09:21/38 20:05	05:27 09:04-09:21/17 20:20
28	07:02 17:05	06:27 07:58-08:42/44 17:40	06:44 08:03-08:42/44 19:09	05:59 08:13-09:29/76 19:39	05:30 08:45-09:22/37 20:06	05:27 09:04-09:21/17 20:20
29	07:01 17:07	06:26 07:57-08:41/43 17:41	06:43 08:02-08:41/43 19:10	05:57 08:13-09:29/76 19:40	05:29 08:46-09:21/35 20:07	05:27 09:03-09:21/18 20:20
30	07:00 17:08	06:25 07:56-08:40/41 17:42	06:41 08:01-08:40/41 19:11	05:56 08:12-09:30/78 19:41	05:29 08:47-09:21/34 20:08	05:28 09:04-09:22/18 20:20
31	06:59 17:09	06:24 07:55-08:39/41 17:43	06:40 08:00-08:39/41 19:12	05:55 08:11-09:30/79 19:42	05:28 08:48-09:20/32 20:08	05:28 09:04-09:22/18 20:20
Potential sun hours	303	299	369	395	442	445
Sum of minutes with flicker	0	277	965	1211	1771	601

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: CANTORATO WTG: 3 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (3)

Assumptions for shadow calculations

Reference year for calendar 2023

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	05:28 09:03-09:22/19 20:20	05:50 08:35-09:37/62 20:04	06:18 08:37-09:15/38 19:24	06:45 08:32-09:17/45 18:36	06:16 16:52	06:49 16:29
2	05:29 09:03-09:23/20 20:20	05:51 08:33-09:37/64 20:03	06:19 08:40-09:12/32 19:22	06:46 08:31-09:18/47 18:35	06:17 16:51	06:50 16:29
3	05:29 09:03-09:23/20 20:20	05:52 08:31-09:37/66 20:02	06:20 08:44-09:08/24 19:21	06:47 08:30-09:18/48 18:33	06:18 16:50	06:51 16:29
4	05:30 09:03-09:24/21 20:20	05:53 08:30-09:38/68 20:01	06:21 08:50-09:02/12 19:19	06:48 08:30-09:18/48 18:31	06:19 16:49	06:52 16:29
5	05:30 09:02-09:24/22 20:20	05:54 08:28-09:38/70 20:00	06:22 09:18 19:18	06:49 08:29-09:18/49 18:30	06:20 16:48	06:53 16:29
6	05:31 09:02-09:25/23 20:20	05:54 08:27-09:38/71 19:59	06:22 09:16 19:16	06:50 08:29-09:19/50 18:28	06:22 16:47	06:53 16:28
7	05:31 09:01-09:25/24 20:19	05:55 08:25-09:39/74 19:57	06:23 09:15 19:15	06:51 08:29-09:18/49 18:27	06:23 16:46	06:54 16:28
8	05:32 09:01-09:26/25 20:19	05:56 08:23-09:38/75 19:56	06:24 09:13 19:13	06:52 08:29-09:18/49 18:25	06:24 16:45	06:55 16:28
9	05:32 08:59-09:26/27 20:19	05:57 08:21-09:38/77 19:55	06:25 09:11 19:11	06:53 08:29-09:18/49 18:24	06:25 16:44	06:56 16:28
10	05:33 08:59-09:26/27 20:19	05:58 08:19-09:38/79 19:54	06:26 09:10 19:10	06:53 08:29-09:18/49 18:22	06:26 16:43	06:57 16:28
11	05:34 08:59-09:27/28 20:18	05:59 08:18-09:38/80 19:53	06:27 09:08 19:08	06:54 08:29-09:17/48 18:21	06:27 16:42	06:58 16:28
12	05:34 08:58-09:27/29 20:18	06:00 08:19-09:38/79 19:52	06:28 09:07 19:07	06:55 08:29-09:17/48 18:19	06:28 16:41	06:59 16:28
13	05:35 08:57-09:28/31 20:17	06:01 08:20-09:38/78 19:50	06:29 09:05 19:05	06:56 08:29-09:16/47 18:18	06:29 16:40	06:59 16:29
14	05:36 08:57-09:29/32 20:17	06:02 08:20-09:38/78 19:49	06:30 09:03 19:03	06:57 08:30-09:15/45 18:16	06:30 16:39	07:00 16:29
15	05:36 08:55-09:29/34 20:16	06:03 08:21-09:38/77 19:48	06:30 09:02 19:02	06:58 08:30-09:14/44 18:15	06:32 16:38	07:01 16:29
16	05:37 08:55-09:30/35 20:16	06:03 08:20-09:36/76 19:47	06:31 09:00 19:00	06:59 08:31-09:13/42 18:13	06:33 16:37	07:02 16:29
17	05:38 08:54-09:31/37 20:15	06:04 08:21-09:36/75 19:45	06:32 08:59 18:59	07:00 08:32-09:11/39 18:12	06:34 16:37	07:02 16:30
18	05:38 08:52-09:30/38 20:15	06:05 08:22-09:36/74 19:44	06:33 08:57 18:57	07:01 08:33-09:10/37 18:10	06:35 16:36	07:03 16:30
19	05:39 08:51-09:31/40 20:14	06:06 08:23-09:35/72 19:43	06:34 08:55 18:55	07:02 08:34-09:08/34 18:09	06:36 16:35	07:04 16:30
20	05:40 08:51-09:32/41 20:14	06:07 08:24-09:34/70 19:41	06:35 08:54 18:54	07:03 08:37-09:07/30 18:08	06:37 16:35	07:04 16:31
21	05:41 08:50-09:33/43 20:13	06:08 08:25-09:34/69 19:40	06:36 08:55-08:58/3 18:52	07:04 08:39-09:05/26 18:06	06:38 16:34	07:05 16:31
22	05:42 08:48-09:32/44 20:12	06:09 08:26-09:33/67 19:38	06:37 08:48-09:05/17 18:51	07:05 08:42-09:02/20 18:05	06:39 16:33	07:05 16:32
23	05:42 08:47-09:33/46 20:11	06:10 08:26-09:31/65 19:37	06:38 08:45-09:08/23 18:49	07:07 08:46-08:57/11 18:04	06:40 16:33	07:06 16:32
24	05:43 08:46-09:34/48 20:11	06:11 08:27-09:30/63 19:36	06:39 08:42-09:10/28 18:47	07:08 08:42-09:02/20 18:02	06:41 16:32	07:06 16:33
25	05:44 08:45-09:34/49 20:10	06:12 08:28-09:28/60 19:34	06:39 08:40-09:12/32 18:46	07:09 08:37-09:07/30 18:01	06:42 16:32	07:07 16:33
26	05:45 08:44-09:35/51 20:09	06:13 08:29-09:27/58 19:33	06:40 08:38-09:14/36 18:44	07:10 08:38-09:07/30 18:00	06:44 16:31	07:07 16:34
27	05:46 08:41-09:35/54 20:08	06:13 08:30-09:25/55 19:31	06:41 08:37-09:15/38 18:43	07:11 08:37-09:07/30 17:58	06:45 16:31	07:08 16:34
28	05:47 08:40-09:35/55 20:07	06:14 08:31-09:23/52 19:30	06:42 08:36-09:16/40 18:41	07:12 08:36-09:07/30 17:57	06:46 16:30	07:08 16:35
29	05:47 08:39-09:36/57 20:07	06:15 08:33-09:22/49 19:28	06:43 08:35-09:17/42 18:39	07:13 08:35-09:07/30 17:56	06:47 16:30	07:08 16:36
30	05:48 08:38-09:36/58 20:06	06:16 08:33-09:19/46 19:27	06:44 08:33-09:17/44 18:38	07:14 08:33-09:07/30 17:55	06:48 16:30	07:09 16:36
31	05:49 08:36-09:37/61 20:05	06:17 08:35-09:17/42 19:25		06:15 16:53		07:09 16:37
Potential sun hours	453	425	375	348	303	294
Sum of minutes with flicker	1139	2091	409	954	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: CANTORATO WTG: 4 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (4)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:09 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:29 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	05:53 19:44	05:27 20:11	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
4	07:10 16:40	06:56 17:13	06:21 17:45	06:33 19:16	05:51 19:45	05:27 20:11	05:29 20:20	05:53 20:01	06:21 19:19	06:48 18:31	06:19 16:49	06:52 16:29
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:17	05:50 19:46	05:26 20:12	05:30 20:20	05:53 20:00	06:22 19:18	06:49 18:30	06:20 16:48	06:53 16:28
6	07:10 16:42	06:54 17:16	06:18 17:47	06:30 19:17	05:49 19:47	05:26 20:13	05:31 20:20	05:54 19:59	06:22 19:16	06:50 18:28	06:22 16:47	06:54 16:28
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	05:48 19:47	05:26 20:13	05:31 20:19	05:55 19:57	06:23 19:15	06:51 18:27	06:23 16:46	06:54 16:28
8	07:10 16:44	06:52 17:18	06:16 17:49	06:27 19:19	05:47 19:48	05:25 20:14	05:32 20:19	05:56 19:56	06:24 19:13	06:52 18:25	06:24 16:44	06:55 16:28
9	07:10 16:45	06:51 17:19	06:14 17:50	06:26 19:20	05:46 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:53 18:24	06:25 16:44	06:56 16:28
10	07:10 16:46	06:50 17:20	06:12 17:51	06:24 19:21	05:45 19:50	05:25 20:15	05:33 20:19	05:58 19:54	06:26 19:10	06:53 18:22	06:26 16:43	06:57 16:28
11	07:09 16:47	06:49 17:22	06:11 17:52	06:23 19:22	05:44 19:51	05:25 20:15	05:33 20:18	05:59 19:53	06:27 19:08	06:54 18:21	06:27 16:42	06:58 16:28
12	07:09 16:48	06:48 17:23	06:09 17:53	06:21 19:23	05:43 19:52	05:25 20:16	05:34 20:18	06:00 19:52	06:28 19:07	06:55 18:19	06:28 16:41	06:59 16:28
13	07:09 16:49	06:47 17:24	06:08 17:54	06:20 19:24	05:42 19:53	05:25 20:16	05:35 20:17	06:01 19:50	06:29 19:05	06:56 18:18	06:29 16:40	07:00 16:29
14	07:09 16:50	06:45 17:25	06:06 17:55	06:18 19:25	05:41 19:54	05:25 20:17	05:35 20:17	06:02 19:49	06:30 19:03	06:57 18:16	06:30 16:39	07:00 16:29
15	07:09 16:51	06:44 17:26	06:05 17:56	06:17 19:26	05:40 19:55	05:25 20:17	05:36 20:16	06:03 19:48	06:30 19:02	06:58 18:15	06:32 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:39 19:56	05:25 20:18	05:37 20:16	06:03 19:47	06:31 19:00	06:59 18:13	06:33 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	05:38 19:57	05:25 20:18	05:38 20:15	06:04 19:45	06:32 18:59	07:00 18:12	06:34 16:37	07:02 16:30
18	07:07 16:54	06:41 17:30	06:00 17:59	06:12 19:29	05:37 19:58	05:25 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:36	07:03 16:30
19	07:07 16:55	06:39 17:31	05:59 18:00	06:11 19:30	05:36 19:59	05:25 20:19	05:39 20:14	06:06 19:43	06:34 18:55	07:02 18:09	06:36 16:35	07:04 16:30
20	07:07 16:56	06:38 17:32	05:57 18:01	06:10 19:31	05:35 19:59	05:25 20:19	05:40 20:14	06:07 19:41	06:35 18:54	07:03 18:08	06:37 16:34	07:04 16:31
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23	07:05 17:00	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:20	05:42 20:12	06:10 19:37	06:38 18:49	07:07 18:03	06:40 16:33	07:06 16:32
24	07:04 17:01	06:33 17:36	05:51 18:05	06:04 19:35	05:32 20:03	05:26 20:20	05:43 20:11	06:11 19:36	06:39 18:47	07:08 18:02	06:41 16:32	07:06 16:32
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30	07:00 17:08	06:25 19:11	06:42 19:41	05:56 19:41	05:29 20:08	05:28 20:20	05:48 20:06	06:16 19:27	06:44 18:38	07:14 16:55	06:48 16:30	07:09 16:36
31	06:59 17:09	06:24 19:12	06:41 19:42	05:55 19:42	05:28 20:08	05:28 20:20	05:49 20:05	06:17 19:25	06:45 18:37	07:15 16:53	06:49 16:30	07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 5 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (5)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:10 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:29 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	05:53 19:44	05:27 20:11	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
4	07:10 16:40	06:56 17:13	06:21 17:45	06:33 19:16	05:51 19:45	05:27 20:11	05:29 20:20	05:53 20:01	06:21 19:19	06:48 18:31	06:19 16:49	06:52 16:29
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:17	05:50 19:46	05:26 20:12	05:30 20:20	05:54 20:00	06:22 19:18	06:49 18:30	06:20 16:48	06:53 16:29
6	07:10 16:42	06:54 17:16	06:19 17:47	06:30 19:18	05:49 19:47	05:26 20:13	05:31 20:20	05:54 19:59	06:22 19:16	06:50 18:28	06:22 16:47	06:54 16:28
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	05:48 19:47	05:26 20:13	05:31 20:19	05:55 19:57	06:23 19:15	06:51 18:27	06:23 16:46	06:54 16:28
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9	07:10 16:45	06:51 17:19	06:14 17:50	06:26 19:20	05:46 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:53 18:24	06:25 16:44	06:56 16:28
10	07:10 16:46	06:50 17:20	06:13 17:51	06:24 19:21	05:45 19:50	05:25 20:15	05:33 20:19	05:58 19:54	06:26 19:10	06:54 18:22	06:26 16:43	06:57 16:28
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12	07:09 16:48	06:48 17:23	06:09 17:53	06:21 19:23	05:43 19:52	05:25 20:16	05:34 20:18	06:00 19:52	06:28 19:07	06:55 18:19	06:28 16:41	06:59 16:28
13	07:09 16:49	06:47 17:24	06:08 17:54	06:20 19:24	05:42 19:53	05:25 20:16	05:35 20:17	06:01 19:50	06:29 19:05	06:56 18:18	06:29 16:40	07:00 16:29
14	07:09 16:50	06:45 17:25	06:06 17:55	06:18 19:25	05:41 19:54	05:25 20:17	05:36 20:17	06:02 19:49	06:30 19:03	06:57 18:16	06:30 16:39	07:00 16:29
15	07:09 16:51	06:44 17:26	06:05 17:56	06:17 19:26	05:40 19:55	05:25 20:17	05:36 20:16	06:03 19:48	06:30 19:02	06:58 18:15	06:32 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:39 19:56	05:25 20:18	05:37 20:16	06:03 19:47	06:31 19:00	06:59 18:13	06:33 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	05:38 19:57	05:25 20:18	05:38 20:15	06:04 19:45	06:32 18:59	07:00 18:12	06:34 16:37	07:02 16:30
18	07:08 16:54	06:41 17:30	06:00 17:59	06:12 19:29	05:37 19:58	05:25 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:36	07:03 16:30
19	07:07 16:55	06:39 17:31	05:59 18:00	06:11 19:30	05:36 19:59	05:25 20:19	05:39 20:14	06:06 19:43	06:34 18:55	07:02 18:09	06:36 16:35	07:04 16:30
20	07:07 16:56	06:38 17:32	05:57 18:01	06:10 19:31	05:35 20:00	05:25 20:19	05:40 20:14	06:07 19:41	06:35 18:54	07:03 18:08	06:37 16:35	07:04 16:31
21	07:06 16:57	06:37 17:33	05:55 18:02	06:08 19:32	05:35 20:00	05:25 20:19	05:41 20:13	06:08 19:40	06:36 18:52	07:04 18:06	06:38 16:34	07:05 16:31
22	07:06 16:59	06:35 17:34	05:54 18:03	06:07 19:33	05:34 20:01	05:25 20:20	05:42 20:12	06:09 19:38	06:37 18:51	07:06 18:05	06:39 16:33	07:06 16:31
23	07:05 17:00	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:20	05:42 20:12	06:10 19:37	06:38 18:49	07:07 18:04	06:40 16:33	07:06 16:32
24	07:04 17:01	06:33 17:36	05:51 18:05	06:04 19:35	05:32 20:03	05:26 20:20	05:43 20:11	06:11 19:36	06:39 18:47	07:08 18:02	06:41 16:32	07:07 16:33
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28	07:02 17:05	06:27 17:41	06:44 19:09	05:59 19:39	05:30 20:06	05:27 20:20	05:47 20:08	06:14 19:30	06:42 18:41	07:12 17:57	06:46 16:30	07:08 16:35
29	07:01 17:07		06:43 19:10	05:58 19:40	05:29 20:07	05:27 20:20	05:47 20:07	06:15 19:28	06:43 18:39	06:13 16:56	06:47 16:30	07:08 16:36
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31	06:59 17:09		06:40 19:12		05:28 20:08		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 6 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (6)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:10 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:29 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	05:53 19:44	05:27 20:11	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
4	07:10 16:40	06:56 17:13	06:21 17:45	06:34 19:16	05:51 19:45	05:27 20:11	05:29 20:20	05:53 20:01	06:21 19:19	06:48 18:32	06:19 16:49	06:52 16:29
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:17	05:50 19:46	05:26 20:12	05:30 20:20	05:54 20:00	06:22 19:18	06:49 18:30	06:21 16:48	06:53 16:29
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7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:19	05:48 19:48	05:26 20:13	05:31 20:20	05:55 19:58	06:23 19:15	06:51 18:27	06:23 16:46	06:55 16:28
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15	07:09 16:51	06:44 17:26	06:05 17:56	06:17 19:26	05:40 19:55	05:25 20:17	05:36 20:17	06:03 19:48	06:30 19:02	06:58 18:15	06:32 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:39 19:56	05:25 20:18	05:37 20:16	06:03 19:47	06:31 19:00	06:59 18:13	06:33 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	05:38 19:57	05:25 20:18	05:38 20:15	06:04 19:45	06:32 18:59	07:00 18:12	06:34 16:37	07:03 16:30
18	07:08 16:54	06:41 17:30	06:00 17:59	06:12 19:29	05:37 19:58	05:25 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:36	07:03 16:30
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21	07:06 16:57	06:37 17:33	05:55 18:02	06:08 19:32	05:35 20:00	05:25 20:19	05:41 20:13	06:08 19:40	06:36 18:52	07:05 18:06	06:38 16:34	07:05 16:31
22	07:06 16:59	06:35 17:34	05:54 18:03	06:07 19:33	05:34 20:01	05:25 20:20	05:42 20:12	06:09 19:39	06:37 18:51	07:06 18:05	06:39 16:33	07:06 16:31
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24	07:05 17:01	06:33 17:36	05:51 18:05	06:04 19:35	05:32 20:03	05:26 20:20	05:43 20:11	06:11 19:36	06:39 18:47	07:08 18:02	06:41 16:32	07:07 16:33
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31	07:00 17:09		06:40 19:12		05:28 20:09		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 7 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (7)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:10 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:28 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	05:53 19:44	05:27 20:11	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
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Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 8 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (8)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
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Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 9 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (9)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
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24	07:04 17:01	06:33 17:36	05:51 18:05	06:04 19:35	05:32 20:03	05:26 20:20	05:43 20:11	06:11 19:36	06:39 18:47	07:08 18:02	06:41 16:32	07:07 16:32
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26	07:03 17:03	06:30 17:38	06:48 19:07	06:01 19:37	05:31 20:05	05:26 20:20	05:45 20:09	06:13 19:33	06:40 18:44	07:10 18:00	06:44 16:31	07:07 16:34
27	07:03 17:04	06:29 17:39	06:46 19:08	06:00 19:38	05:30 20:05	05:26 20:20	05:46 20:08	06:13 19:31	06:41 18:43	07:11 17:58	06:45 16:31	07:08 16:34
28	07:02 17:05	06:27 17:40	06:44 19:09	05:59 19:39	05:30 20:06	05:27 20:20	05:46 20:08	06:14 19:30	06:42 18:41	07:12 17:57	06:46 16:30	07:08 16:35
29	07:01 17:06	06:26 19:10	06:43 19:40	05:57 20:07	05:29 20:20	05:27 20:20	05:47 20:07	06:15 19:28	06:43 18:39	07:13 16:56	06:47 16:30	07:08 16:35
30	07:00 17:08	06:25 19:11	06:42 19:41	05:56 20:08	05:29 20:20	05:28 20:20	05:48 20:06	06:16 19:27	06:44 18:38	07:14 16:54	06:48 16:30	07:09 16:36
31	06:59 17:09	06:24 19:12	06:41 19:42	05:55 20:09	05:28 20:20	05:28 20:20	05:49 20:05	06:17 19:25	06:45 16:53	07:15 16:53	06:49 16:30	07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 10 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (10)
Assumptions for shadow calculations

Reference year for calendar 2023

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	07:09	06:59	06:26	06:38	05:55	05:28	05:28	05:50	06:18	06:45	06:16	06:49
	16:38	17:10	17:42	19:13	19:42	20:09	20:20	20:04	19:24	18:36	16:52	16:29
2	07:10	06:58	06:24	06:37	05:54	05:27	05:29	05:51	06:19	06:46	06:17	06:50
	16:39	17:11	17:43	19:14	19:43	20:10	20:20	20:03	19:22	18:35	16:51	16:29
3	07:10	06:57	06:23	06:35	05:53	05:27	05:29	05:52	06:20	06:47	06:18	06:51
	16:40	17:12	17:44	19:15	19:44	20:11	20:20	20:02	19:21	18:33	16:50	16:29
4	07:10	06:56	06:22	06:34	05:51	05:27	05:29	05:53	06:21	06:48	06:19	06:52
	16:40	17:13	17:45	19:16	19:45	20:11	20:20	20:01	19:19	18:32	16:49	16:29
5	07:10	06:55	06:20	06:32	05:50	05:26	05:30	05:54	06:22	06:49	06:21	06:53
	16:41	17:15	17:46	19:17	19:46	20:12	20:20	20:00	19:18	18:30	16:48	16:29
6	07:10	06:54	06:19	06:30	05:49	05:26	05:31	05:54	06:22	06:50	06:22	06:54
	16:42	17:16	17:47	19:18	19:47	20:13	20:20	19:59	19:16	18:28	16:47	16:28
7	07:10	06:53	06:17	06:29	05:48	05:26	05:31	05:55	06:23	06:51	06:23	06:55
	16:43	17:17	17:48	19:19	19:48	20:13	20:20	19:58	19:15	18:27	16:46	16:28
8	07:10	06:52	06:16	06:27	05:47	05:25	05:32	05:56	06:24	06:52	06:24	06:55
	16:44	17:18	17:49	19:19	19:49	20:14	20:19	19:56	19:13	18:25	16:45	16:28
9	07:10	06:51	06:14	06:26	05:46	05:25	05:32	05:57	06:25	06:53	06:25	06:56
	16:45	17:19	17:50	19:20	19:49	20:14	20:19	19:55	19:11	18:24	16:44	16:28
10	07:10	06:50	06:13	06:24	05:45	05:25	05:33	05:58	06:26	06:54	06:26	06:57
	16:46	17:20	17:51	19:21	19:50	20:15	20:19	19:54	19:10	18:22	16:43	16:28
11	07:10	06:49	06:11	06:23	05:44	05:25	05:34	05:59	06:27	06:55	06:27	06:58
	16:47	17:22	17:52	19:22	19:51	20:16	20:18	19:53	19:08	18:21	16:42	16:28
12	07:09	06:48	06:10	06:21	05:43	05:25	05:34	06:00	06:28	06:56	06:28	06:59
	16:48	17:23	17:53	19:23	19:52	20:16	20:18	19:52	19:07	18:19	16:41	16:28
13	07:09	06:47	06:08	06:20	05:42	05:25	05:35	06:01	06:29	06:56	06:29	07:00
	16:49	17:24	17:54	19:24	19:53	20:17	20:18	19:50	19:05	18:18	16:40	16:29
14	07:09	06:45	06:06	06:18	05:41	05:25	05:36	06:02	06:30	06:57	06:31	07:00
	16:50	17:25	17:55	19:25	19:54	20:17	20:17	19:49	19:04	18:16	16:39	16:29
15	07:09	06:44	06:05	06:17	05:40	05:25	05:36	06:03	06:31	06:58	06:32	07:01
	16:51	17:26	17:56	19:26	19:55	20:17	20:17	19:48	19:02	18:15	16:38	16:29
16	07:08	06:43	06:03	06:15	05:39	05:25	05:37	06:03	06:31	06:59	06:33	07:02
	16:52	17:27	17:57	19:27	19:56	20:18	20:16	19:47	19:00	18:13	16:37	16:29
17	07:08	06:42	06:02	06:14	05:38	05:25	05:38	06:04	06:32	07:00	06:34	07:03
	16:53	17:28	17:58	19:28	19:57	20:18	20:16	19:45	18:59	18:12	16:37	16:30
18	07:08	06:41	06:00	06:12	05:37	05:25	05:38	06:05	06:33	07:01	06:35	07:03
	16:54	17:30	17:59	19:29	19:58	20:19	20:15	19:44	18:57	18:10	16:36	16:30
19	07:07	06:39	05:59	06:11	05:36	05:25	05:39	06:06	06:34	07:03	06:36	07:04
	16:55	17:31	18:00	19:30	19:59	20:19	20:14	19:43	18:56	18:09	16:35	16:30
20	07:07	06:38	05:57	06:10	05:35	05:25	05:40	06:07	06:35	07:04	06:37	07:04
	16:56	17:32	18:01	19:31	20:00	20:19	20:14	19:41	18:54	18:08	16:35	16:31
21	07:06	06:37	05:56	06:08	05:35	05:25	05:41	06:08	06:36	07:05	06:38	07:05
	16:57	17:33	18:02	19:32	20:00	20:19	20:13	19:40	18:52	18:06	16:34	16:31
22	07:06	06:35	05:54	06:07	05:34	05:25	05:42	06:09	06:37	07:06	06:39	07:06
	16:59	17:34	18:03	19:33	20:01	20:20	20:12	19:39	18:51	18:05	16:33	16:31
23	07:05	06:34	05:52	06:05	05:33	05:25	05:42	06:10	06:38	07:07	06:40	07:06
	17:00	17:35	18:04	19:34	20:02	20:20	20:12	19:37	18:49	18:04	16:33	16:32
24	07:05	06:33	05:51	06:04	05:32	05:26	05:43	06:11	06:39	07:08	06:42	07:07
	17:01	17:36	18:05	19:35	20:03	20:20	20:11	19:36	18:47	18:02	16:32	16:32
25	07:04	06:31	05:49	06:03	05:32	05:26	05:44	06:12	06:40	07:09	06:43	07:07
	17:02	17:37	18:06	19:36	20:04	20:20	20:10	19:34	18:46	18:01	16:32	16:33
26	07:03	06:30	06:48	06:01	05:31	05:26	05:45	06:13	06:40	07:10	06:44	07:07
	17:03	17:38	19:07	19:37	20:05	20:20	20:09	19:33	18:44	18:00	16:31	16:34
27	07:03	06:29	06:46	06:00	05:30	05:27	05:46	06:13	06:41	07:11	06:45	07:08
	17:04	17:39	19:08	19:38	20:05	20:20	20:08	19:31	18:43	17:58	16:31	16:34
28	07:02	06:27	06:44	05:59	05:30	05:27	05:47	06:14	06:42	07:12	06:46	07:08
	17:05	17:41	19:09	19:39	20:06	20:20	20:08	19:30	18:41	17:57	16:30	16:35
29	07:01		06:43	05:58	05:29	05:27	05:47	06:15	06:43	06:13	06:47	07:09
	17:07		19:10	19:40	20:07	20:20	20:07	19:28	18:39	16:56	16:30	16:36
30	07:00		06:41	05:56	05:29	05:28	05:48	06:16	06:44	06:14	06:48	07:09
	17:08		19:11	19:41	20:08	20:20	20:06	19:27	18:38	16:55	16:30	16:36
31	07:00		06:40		05:28		05:49	06:17		06:15		07:09
	17:09		19:12		20:09		20:05	19:25		16:53		16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 11 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (11)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:10 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:29 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	05:53 19:44	05:27 20:11	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
4	07:10 16:40	06:56 17:14	06:22 17:45	06:34 19:16	05:51 19:45	05:27 20:11	05:30 20:20	05:53 20:01	06:21 19:19	06:48 18:32	06:19 16:49	06:52 16:29
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:17	05:50 19:46	05:26 20:12	05:30 20:20	05:54 20:00	06:22 19:18	06:49 18:30	06:21 16:48	06:53 16:29
6	07:10 16:42	06:54 17:16	06:19 17:47	06:30 19:18	05:49 19:47	05:26 20:13	05:31 20:20	05:54 19:59	06:22 19:16	06:50 18:28	06:22 16:47	06:54 16:28
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:19	05:48 19:48	05:26 20:13	05:31 20:20	05:55 19:58	06:23 19:15	06:51 18:27	06:23 16:46	06:55 16:28
8	07:10 16:44	06:52 17:18	06:16 17:49	06:27 19:20	05:47 19:49	05:25 20:14	05:32 20:19	05:56 19:56	06:24 19:13	06:52 18:25	06:24 16:45	06:55 16:28
9	07:10 16:45	06:51 17:19	06:14 17:50	06:26 19:20	05:46 19:50	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:12	06:53 18:24	06:25 16:44	06:56 16:28
10	07:10 16:46	06:50 17:20	06:13 17:51	06:24 19:21	05:45 19:50	05:25 20:15	05:33 20:19	05:58 19:54	06:26 19:10	06:54 18:22	06:26 16:43	06:57 16:28
11	07:10 16:47	06:49 17:22	06:11 17:52	06:23 19:22	05:44 19:51	05:25 20:16	05:34 20:18	05:59 19:53	06:27 19:08	06:55 18:21	06:27 16:42	06:58 16:28
12	07:09 16:48	06:48 17:23	06:10 17:53	06:21 19:23	05:43 19:52	05:25 20:16	05:34 20:18	06:00 19:52	06:28 19:07	06:56 18:19	06:28 16:41	06:59 16:29
13	07:09 16:49	06:47 17:24	06:08 17:54	06:20 19:24	05:42 19:53	05:25 20:17	05:35 20:18	06:01 19:50	06:29 19:05	06:57 18:18	06:29 16:40	07:00 16:29
14	07:09 16:50	06:46 17:25	06:06 17:55	06:18 19:25	05:41 19:54	05:25 20:17	05:36 20:17	06:02 19:49	06:30 19:04	06:58 18:16	06:31 16:39	07:00 16:29
15	07:09 16:51	06:44 17:26	06:05 17:56	06:17 19:26	05:40 19:55	05:25 20:17	05:36 20:17	06:03 19:48	06:31 19:02	06:59 18:15	06:32 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:39 19:56	05:25 20:18	05:37 20:16	06:04 19:47	06:31 19:00	07:00 18:13	06:33 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	05:38 19:57	05:25 20:18	05:38 20:16	06:04 19:45	06:32 18:59	07:01 18:12	06:34 16:37	07:03 16:30
18	07:08 16:54	06:41 17:30	06:00 17:59	06:13 19:29	05:37 19:58	05:25 20:19	05:38 20:15	06:05 19:44	06:33 18:57	07:02 18:10	06:35 16:36	07:03 16:30
19	07:07 16:55	06:39 17:31	05:59 18:00	06:11 19:30	05:36 19:59	05:25 20:19	05:39 20:14	06:06 19:43	06:34 18:56	07:03 18:09	06:36 16:35	07:04 16:30
20	07:07 16:56	06:38 17:32	05:57 18:01	06:10 19:31	05:35 20:00	05:25 20:19	05:40 20:14	06:07 19:41	06:35 18:54	07:04 18:08	06:37 16:35	07:05 16:31
21	07:06 16:57	06:37 17:33	05:56 18:02	06:08 19:32	05:35 20:01	05:25 20:19	05:41 20:13	06:08 19:40	06:36 18:52	07:05 18:06	06:38 16:34	07:05 16:31
22	07:06 16:59	06:36 17:34	05:54 18:03	06:07 19:33	05:34 20:01	05:25 20:20	05:42 20:12	06:09 19:39	06:37 18:51	07:06 18:05	06:39 16:33	07:06 16:32
23	07:05 17:00	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:20	05:42 20:12	06:10 19:37	06:38 18:49	07:07 18:04	06:40 16:33	07:06 16:32
24	07:05 17:01	06:33 17:36	05:51 18:05	06:04 19:35	05:32 20:03	05:26 20:20	05:43 20:11	06:11 19:36	06:39 18:47	07:08 18:02	06:42 16:32	07:07 16:33
25	07:04 17:02	06:31 17:37	05:49 18:06	06:03 19:36	05:32 20:04	05:26 20:20	05:44 20:10	06:12 19:34	06:40 18:46	07:09 18:01	06:43 16:32	07:07 16:33
26	07:03 17:03	06:30 17:38	06:48 19:07	06:01 19:37	05:31 20:05	05:26 20:20	05:45 20:09	06:13 19:33	06:40 18:44	07:10 18:00	06:44 16:31	07:08 16:34
27	07:03 17:04	06:29 17:40	06:46 19:08	06:00 19:38	05:30 20:06	05:27 20:20	05:46 20:08	06:14 19:31	06:41 18:43	07:11 17:58	06:45 16:31	07:08 16:34
28	07:02 17:05	06:27 17:41	06:45 19:09	05:59 19:39	05:30 20:06	05:27 20:20	05:47 20:08	06:14 19:30	06:42 18:41	07:12 17:57	06:46 16:30	07:08 16:35
29	07:01 17:07		06:43 19:10	05:58 19:40	05:29 20:07	05:27 20:21	05:47 20:07	06:15 19:28	06:43 18:39	06:13 16:56	06:47 16:30	07:09 16:36
30	07:00 17:08		06:41 19:11	05:56 19:41	05:29 20:08	05:28 20:21	05:48 20:06	06:16 19:27	06:44 18:38	06:14 16:55	06:48 16:30	07:09 16:36
31	07:00 17:09		06:40 19:12		05:28 20:09		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 12 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (12)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:37	06:58 17:09	06:25 17:41	06:38 19:12	05:54 19:41	05:27 20:09	05:28 20:20	05:49 20:03	06:17 19:23	06:45 18:36	06:16 16:52	06:48 16:29
2	07:09 16:38	06:57 17:11	06:24 17:42	06:36 19:13	05:53 19:42	05:27 20:10	05:28 20:20	05:50 20:02	06:18 19:22	06:46 18:34	06:17 16:50	06:49 16:29
3	07:09 16:39	06:57 17:12	06:23 17:43	06:35 19:14	05:52 19:43	05:26 20:10	05:28 20:20	05:51 20:01	06:19 19:20	06:46 18:33	06:18 16:49	06:50 16:28
4	07:09 16:40	06:56 17:13	06:21 17:44	06:33 19:15	05:51 19:44	05:26 20:11	05:29 20:20	05:52 20:00	06:20 19:19	06:47 18:31	06:19 16:48	06:51 16:28
5	07:10 16:41	06:55 17:14	06:20 17:45	06:31 19:16	05:50 19:45	05:26 20:12	05:29 20:20	05:53 19:59	06:21 19:17	06:48 18:29	06:20 16:47	06:52 16:28
6	07:10 16:42	06:54 17:15	06:18 17:46	06:30 19:17	05:49 19:46	05:25 20:12	05:30 20:19	05:54 19:58	06:22 19:16	06:49 18:28	06:21 16:46	06:53 16:28
7	07:10 16:42	06:53 17:16	06:17 17:47	06:28 19:18	05:47 19:47	05:25 20:13	05:31 20:19	05:55 19:57	06:23 19:14	06:50 18:26	06:22 16:45	06:54 16:28
8	07:10 16:43	06:52 17:18	06:15 17:48	06:27 19:19	05:46 19:48	05:25 20:13	05:31 20:19	05:56 19:56	06:24 19:13	06:51 18:25	06:23 16:44	06:55 16:28
9	07:09 16:44	06:51 17:19	06:14 17:49	06:25 19:20	05:45 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:52 18:23	06:25 16:43	06:56 16:28
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31	06:59 17:08		06:39 19:11		05:28 20:08		05:49 20:04	06:17 19:25		06:15 16:53		07:09 16:36
Potential sun hours	302	299	369	395	442	446	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 13 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (13)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	05:27 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:48 16:29
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22	07:05 16:58	06:35 17:34	05:54 18:03	06:06 19:33	05:33 20:01	05:25 20:19	05:41 20:12	06:09 19:38	06:36 18:50	07:05 18:04	06:39 16:33	07:05 16:31
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Potential sun hours	302	299	369	395	442	446	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 14 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (14)

Assumptions for shadow calculations

- Reference year for calendar 2023
- 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	07:09 16:38	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	05:27 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:48 16:29
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Potential sun hours	302	299	369	395	442	446	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 15 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI hub: 115,0 m (TOT: 200,0 m) (15)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	05:27 20:09	05:28 20:20	05:50 20:03	06:18 19:24	06:45 18:36	06:16 16:52	06:48 16:29
2	07:09 16:38	06:57 17:11	06:24 17:42	06:36 19:13	05:53 19:42	05:27 20:10	05:28 20:20	05:50 20:02	06:18 19:22	06:46 18:34	06:17 16:51	06:49 16:29
3	07:09 16:39	06:57 17:12	06:23 17:43	06:35 19:14	05:52 19:43	05:27 20:10	05:29 20:20	05:51 20:01	06:19 19:20	06:46 18:33	06:18 16:49	06:50 16:28
4	07:09 16:40	06:56 17:13	06:21 17:44	06:33 19:15	05:51 19:44	05:26 20:11	05:29 20:20	05:52 20:00	06:20 19:19	06:47 18:31	06:19 16:48	06:51 16:28
5	07:10 16:41	06:55 17:14	06:20 17:45	06:32 19:16	05:50 19:45	05:26 20:12	05:30 20:20	05:53 19:59	06:21 19:17	06:48 18:30	06:20 16:47	06:52 16:28
6	07:10 16:42	06:54 17:15	06:18 17:46	06:30 19:17	05:49 19:46	05:26 20:12	05:30 20:19	05:54 19:58	06:22 19:16	06:49 18:28	06:21 16:46	06:53 16:28
7	07:10 16:43	06:53 17:17	06:17 17:47	06:28 19:18	05:47 19:47	05:25 20:13	05:31 20:19	05:55 19:57	06:23 19:14	06:50 18:26	06:22 16:45	06:54 16:28
8	07:10 16:43	06:52 17:18	06:15 17:49	06:27 19:19	05:46 19:48	05:25 20:13	05:31 20:19	05:56 19:56	06:24 19:13	06:51 18:25	06:23 16:44	06:55 16:28
9	07:09 16:44	06:51 17:19	06:14 17:50	06:25 19:20	05:45 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:52 18:23	06:25 16:43	06:56 16:28
10	07:09 16:45	06:50 17:20	06:12 17:51	06:24 19:21	05:44 19:50	05:25 20:15	05:32 20:18	05:58 19:54	06:26 19:10	06:53 18:22	06:26 16:42	06:57 16:28
11	07:09 16:46	06:48 17:21	06:11 17:52	06:22 19:22	05:43 19:51	05:24 20:15	05:33 20:18	05:58 19:53	06:27 19:08	06:54 18:20	06:27 16:41	06:58 16:28
12	07:09 16:47	06:47 17:22	06:09 17:53	06:21 19:23	05:42 19:52	05:24 20:16	05:34 20:18	05:59 19:51	06:27 19:06	06:55 18:19	06:28 16:40	06:58 16:28
13	07:09 16:48	06:46 17:23	06:08 17:54	06:19 19:24	05:41 19:53	05:24 20:16	05:34 20:17	06:00 19:50	06:28 19:05	06:56 18:17	06:29 16:39	06:59 16:28
14	07:09 16:49	06:45 17:25	06:06 17:55	06:18 19:25	05:40 19:54	05:24 20:17	05:35 20:17	06:01 19:49	06:29 19:03	06:57 18:16	06:30 16:39	07:00 16:28
15	07:08 16:50	06:44 17:26	06:04 17:56	06:16 19:26	05:39 19:55	05:24 20:17	05:36 20:16	06:02 19:48	06:30 19:02	06:58 18:14	06:31 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:38 19:56	05:24 20:17	05:36 20:16	06:03 19:46	06:31 19:00	06:59 18:13	06:32 16:37	07:01 16:29
17	07:08 16:53	06:41 17:28	06:01 17:58	06:13 19:28	05:37 19:57	05:24 20:18	05:37 20:15	06:04 19:45	06:32 18:58	07:00 18:11	06:33 16:36	07:02 16:29
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 19:29	05:37 19:57	05:24 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:35	07:03 16:29
19	07:07 16:55	06:39 17:30	05:58 18:00	06:11 19:30	05:36 19:58	05:24 20:18	05:39 20:14	06:06 19:42	06:34 18:55	07:02 18:09	06:36 16:35	07:03 16:30
20	07:06 16:56	06:38 17:31	05:57 18:01	06:09 19:31	05:35 19:59	05:24 20:19	05:40 20:13	06:07 19:41	06:35 18:53	07:03 18:07	06:37 16:34	07:04 16:30
21	07:06 16:57	06:36 17:32	05:55 18:02	06:08 19:32	05:34 20:00	05:25 20:19	05:40 20:13	06:08 19:40	06:35 18:52	07:04 18:06	06:38 16:33	07:05 16:31
22	07:05 16:58	06:35 17:34	05:54 18:03	06:06 19:33	05:33 20:01	05:25 20:19	05:41 20:12	06:09 19:38	06:36 18:50	07:05 18:04	06:39 16:33	07:05 16:31
23	07:05 16:59	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:19	05:42 20:11	06:09 19:37	06:37 18:49	07:06 18:03	06:40 16:32	07:06 16:32
24	07:04 17:00	06:32 17:36	05:50 18:05	06:04 19:35	05:32 20:03	05:25 20:20	05:43 20:10	06:10 19:35	06:38 18:47	07:07 18:02	06:41 16:32	07:06 16:32
25	07:04 17:01	06:31 17:37	05:49 18:06	06:02 19:36	05:31 20:03	05:25 20:20	05:44 20:10	06:11 19:34	06:39 18:45	07:08 18:00	06:42 16:31	07:07 16:33
26	07:03 17:03	06:30 17:38	05:47 19:07	06:01 19:37	05:31 20:04	05:26 20:20	05:44 20:09	06:12 19:32	06:40 18:44	07:09 17:59	06:43 16:31	07:07 16:33
27	07:02 17:04	06:28 17:39	06:46 19:07	06:00 19:38	05:30 20:05	05:26 20:20	05:45 20:08	06:13 19:31	06:41 18:42	07:10 17:58	06:44 16:30	07:07 16:34
28	07:01 17:05	06:27 17:40	06:44 19:08	05:58 19:38	05:29 20:06	05:26 20:20	05:46 20:07	06:14 19:29	06:42 18:41	07:11 17:57	06:45 16:30	07:08 16:34
29	07:01 17:06		06:42 19:09	05:57 19:39	05:29 20:07	05:27 20:20	05:47 20:06	06:15 19:28	06:43 18:39	06:13 16:55	06:46 16:30	07:08 16:35
30	07:00 17:07		06:41 19:10	05:56 19:40	05:28 20:07	05:27 20:20	05:48 20:05	06:16 19:27	06:44 18:37	06:14 16:54	06:47 16:29	07:08 16:36
31	06:59 17:08		06:39 19:11		05:28 20:08		05:49 20:04	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	302	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 16 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI hub: 115,0 m (TOT: 200,0 m) (16)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	08:05-08:25/20 20:09	05:27 20:20	05:28 20:03	05:50 20:03	06:18 19:24	07:51-08:21/30 18:36	06:45 16:52	06:16 16:29
2	07:09 16:38	06:57 17:11	06:24 17:42	06:36 19:13	05:53 19:42	08:06-08:25/19 20:10	05:27 20:20	05:28 20:02	05:50 20:02	06:18 19:22	07:53-08:19/26 18:34	06:46 16:51	06:17 16:29
3	07:09 16:39	06:57 17:12	06:23 17:43	06:35 19:14	05:52 19:43	08:08-08:24/16 20:10	05:27 20:20	05:29 20:01	05:51 20:01	06:19 19:20	07:55-08:15/20 18:33	06:46 16:49	06:18 16:28
4	07:09 16:40	06:56 17:13	06:21 17:44	06:33 19:15	05:51 19:44	08:10-08:24/14 20:11	05:26 20:20	05:29 20:00	05:52 20:00	06:20 19:19	07:59-08:10/11 18:31	06:47 16:48	06:19 16:28
5	07:10 16:41	06:55 17:14	06:20 17:45	06:32 19:16	05:50 19:45	08:12-08:23/11 20:12	05:26 20:20	05:30 19:59	05:53 19:58	08:28-08:30/2 19:17	06:21 18:30	06:48 16:47	06:20 16:28
6	07:10 16:42	06:54 17:15	06:18 17:46	06:30 19:17	05:49 19:46	08:13-08:22/9 20:12	05:26 20:19	05:30 19:58	05:54 19:58	08:26-08:30/4 19:16	06:22 18:28	06:49 16:46	06:21 16:28
7	07:10 16:43	06:53 17:17	06:17 17:47	06:28 19:18	05:48 19:47	08:15-08:22/7 20:13	05:25 20:19	05:31 19:57	05:55 19:57	08:24-08:31/7 19:14	06:23 18:26	06:50 16:45	06:22 16:28
8	07:10 16:44	06:52 17:18	06:15 17:49	06:27 19:19	05:46 19:48	08:16-08:21/5 20:13	05:25 20:19	05:31 19:56	05:56 19:56	08:23-08:31/8 19:13	06:24 18:25	06:51 16:44	06:23 16:28
9	07:09 16:44	06:51 17:19	06:14 17:50	06:25 19:20	05:45 19:49	08:18-08:20/2 20:14	05:25 20:19	05:32 19:55	05:57 19:55	08:21-08:32/11 19:11	06:25 18:23	06:52 16:43	06:25 16:28
10	07:09 16:45	06:50 17:20	06:12 17:51	06:24 19:21	05:44 19:50	07:59-08:15/16 20:15	05:25 20:18	05:32 19:54	05:58 19:54	08:19-08:33/14 19:10	06:26 18:22	06:53 16:42	06:26 16:28
11	07:09 16:46	06:48 17:21	06:11 17:52	06:22 19:22	05:43 19:51	07:56-08:19/23 20:15	05:24 20:18	05:33 19:52	05:59 19:52	08:18-08:33/15 19:08	06:27 18:20	06:54 16:41	06:27 16:28
12	07:09 16:47	06:47 17:22	06:09 17:53	06:21 19:23	05:42 19:52	07:52-08:21/29 20:16	05:24 20:18	05:34 19:51	05:59 19:51	08:16-08:34/18 19:06	06:27 18:19	06:55 16:40	06:28 16:28
13	07:09 16:48	06:46 17:23	06:08 17:54	06:19 19:24	05:41 19:53	07:50-08:23/33 20:16	05:24 20:17	05:34 19:50	06:00 19:49	08:13-08:33/20 19:05	06:28 18:17	06:56 16:39	06:29 16:28
14	07:09 16:49	06:45 17:25	06:06 17:55	06:18 19:25	05:40 19:54	07:48-08:24/36 20:17	05:24 20:17	05:35 19:49	06:01 19:49	08:12-08:33/21 19:03	06:29 18:16	06:57 16:39	06:30 16:28
15	07:08 16:50	06:44 17:26	06:04 17:56	06:16 19:26	05:39 19:55	07:46-08:25/39 20:17	05:24 20:16	05:36 19:48	06:02 19:48	08:10-08:34/24 19:02	06:30 18:14	06:58 16:38	06:31 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:38 19:56	07:44-08:25/41 20:17	05:24 20:16	05:37 19:46	06:03 19:46	08:08-08:34/26 19:00	06:31 18:13	06:59 16:37	06:32 16:29
17	07:08 16:53	06:41 17:28	06:01 17:58	06:14 19:28	05:37 19:57	07:43-08:26/43 20:18	05:24 20:15	05:37 19:45	06:04 19:45	08:06-08:34/28 18:58	06:32 18:11	07:00 16:36	06:33 16:29
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 19:29	05:36 19:57	07:44-08:26/42 20:18	05:24 20:15	05:38 19:44	06:05 19:44	08:04-08:34/30 18:57	06:33 18:10	07:01 16:35	06:35 16:29
19	07:07 16:55	06:39 17:30	05:58 18:00	06:11 19:30	05:36 19:58	07:46-08:27/41 20:18	05:24 20:14	05:39 19:42	06:06 19:42	08:03-08:34/31 18:55	06:34 18:09	07:02 16:35	06:36 16:30
20	07:06 16:56	06:38 17:31	05:57 18:01	06:09 19:31	05:35 19:59	07:48-08:28/40 20:19	05:24 20:13	05:40 19:41	06:07 19:41	08:00-08:33/33 18:53	06:35 18:07	07:03 16:34	06:37 16:30
21	07:06 16:57	06:36 17:32	05:55 18:02	06:08 19:32	05:34 20:00	07:49-08:27/38 20:19	05:25 20:13	05:40 19:40	06:08 19:40	07:58-08:33/35 18:52	06:35 18:06	07:04 16:33	06:38 16:31
22	07:05 16:58	06:35 17:34	05:54 18:03	06:06 19:33	05:33 20:01	07:51-08:28/37 20:19	05:25 20:12	05:41 19:38	06:09 19:38	07:56-08:32/36 18:50	06:36 18:04	07:05 16:33	06:39 16:31
23	07:05 16:59	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	07:52-08:27/35 20:19	05:25 20:11	05:42 19:37	06:09 19:37	07:54-08:32/38 18:49	06:37 18:03	07:06 16:32	06:40 16:32
24	07:04 17:00	06:32 17:36	05:50 18:05	06:04 19:35	05:32 20:03	07:54-08:27/33 20:20	05:25 20:10	05:43 19:35	06:10 19:35	07:52-08:31/39 18:47	06:38 18:02	07:07 16:32	06:41 16:32
25	07:04 17:02	06:31 17:37	05:49 18:06	06:02 19:36	05:31 20:03	07:56-08:28/32 20:20	05:26 20:10	05:44 19:34	06:11 19:34	07:50-08:31/41 18:45	06:39 18:00	07:08 16:31	06:42 16:33
26	07:03 17:03	06:30 17:38	05:47 19:07	06:01 19:37	05:31 20:04	07:58-08:28/30 20:20	05:26 20:09	05:44 19:32	06:12 19:32	07:48-08:30/42 18:44	06:40 17:59	07:09 16:31	06:43 16:33
27	07:02 17:04	06:28 17:39	05:46 19:07	06:00 19:38	05:30 20:05	07:58-08:27/29 20:20	05:26 20:08	05:45 19:31	06:13 19:31	07:46-08:29/43 18:42	06:41 18:42	07:10 17:58	06:44 16:34
28	07:01 17:05	06:27 17:40	05:44 19:08	05:58 19:38	05:29 20:06	08:00-08:27/27 20:20	05:26 20:07	05:46 20:07	06:14 20:07	07:45-08:27/42 18:41	06:42 18:41	07:11 17:57	06:45 16:30
29	07:01 17:06		06:43 19:09	05:57 19:39	05:29 20:07	08:02-08:26/24 20:20	05:27 20:06	05:47 20:06	06:15 20:06	07:46-08:26/40 18:39	06:43 16:55	07:12 16:30	06:46 16:35
30	07:00 17:07		06:41 19:10	05:56 19:40	05:28 20:07	08:04-08:26/22 20:20	05:27 20:05	05:48 20:05	06:16 20:05	07:48-08:25/37 18:37	06:44 16:54	07:13 16:29	06:47 16:36
31	06:59 17:08		06:39 19:11		05:28 20:08			05:49 20:04	06:17 19:25	07:49-08:23/34	06:45 16:53	07:14 16:37	06:48 16:37
Potential sun hours	302	299	369	395	442	445	453	425	375	348	303	294	0
Sum of minutes with flicker	0	0	0	690	103	0	0	719	87	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 17 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (17)
Assumptions for shadow calculations

Reference year for calendar 2023

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	07:09 16:38	06:58 17:10	06:25 17:41	06:38 19:12	05:55 08:12-09:18/66 19:41	05:27 08:48-08:56/8 20:09
2	07:09 16:38	06:57 17:11	06:24 17:42	06:36 19:13	05:53 08:12-09:17/65 19:42	05:27 08:50-08:56/6 20:10
3	07:09 16:39	06:57 17:12	06:23 17:43	06:35 19:14	05:52 08:12-09:17/65 19:43	05:27 08:51-08:55/4 20:10
4	07:09 16:40	06:56 17:13	06:21 07:03-07:09/6 17:44	06:33 19:15	05:51 08:12-09:17/65 19:44	05:26 08:51-08:53/2 20:11
5	07:09 16:41	06:55 17:14	06:20 06:59-07:12/13 17:45	06:32 19:16	05:50 08:12-09:16/64 19:45	05:26 08:52-08:53/1 20:12
6	07:09 16:42	06:54 17:15	06:18 06:58-07:14/16 17:46	06:30 08:52-08:58/6 19:17	05:49 08:13-09:16/63 19:46	05:26 20:12
7	07:09 16:43	06:53 17:17	06:17 06:56-07:14/18 17:47	06:28 08:43-09:05/22 19:18	05:47 08:15-09:15/60 19:47	05:25 20:13
8	07:09 16:43	06:52 17:18	06:15 06:55-07:15/20 17:48	06:27 08:40-09:09/29 19:19	05:46 08:16-09:15/59 19:48	05:25 20:13
9	07:09 16:44	06:51 17:19	06:14 06:54-07:15/21 17:50	06:25 08:36-09:11/35 19:20	05:45 08:18-09:14/56 19:49	05:25 20:14
10	07:09 16:45	06:50 17:20	06:12 06:54-07:16/22 17:51	06:24 08:33-09:14/41 19:21	05:44 08:19-09:13/54 19:50	05:25 20:15
11	07:09 16:46	06:48 17:21	06:11 06:53-07:15/22 17:52	06:22 08:31-09:15/44 19:22	05:43 08:21-09:13/52 19:51	05:24 20:15
12	07:09 16:47	06:47 17:22	06:09 06:53-07:14/21 17:53	06:21 08:29-09:17/48 19:23	05:42 08:22-09:12/50 19:52	05:24 20:16
13	07:09 16:48	06:46 17:23	06:08 06:54-07:14/20 17:54	06:19 08:27-09:17/50 19:24	05:41 08:24-09:11/47 19:53	05:24 20:16
14	07:08 16:49	06:45 17:25	06:06 06:54-07:12/18 17:55	06:18 08:25-09:19/54 19:25	05:40 08:25-09:10/45 19:54	05:24 20:16
15	07:08 16:50	06:44 17:26	06:04 06:55-07:11/16 17:56	06:16 08:24-09:20/56 19:26	05:39 08:26-09:09/43 19:55	05:24 20:17
16	07:08 16:51	06:43 17:27	06:03 06:56-07:09/13 17:57	06:15 08:22-09:20/58 19:27	05:38 08:28-09:09/41 19:56	05:24 20:17
17	07:08 16:53	06:41 17:28	06:01 06:59-07:07/8 17:58	06:13 08:21-09:21/60 19:28	05:37 08:29-09:08/39 19:56	05:24 20:18
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 08:20-09:20/60 19:29	05:37 08:31-09:08/37 19:57	05:24 20:18
19	07:07 16:55	06:39 17:30	05:58 18:00	06:11 08:19-09:21/62 19:30	05:36 08:32-09:07/35 19:58	05:24 20:18
20	07:06 16:56	06:38 17:31	05:57 18:01	06:09 08:19-09:21/62 19:31	05:35 08:34-09:06/32 19:59	05:24 20:19
21	07:06 16:57	06:36 17:32	05:55 18:02	06:08 08:17-09:21/64 19:32	05:34 08:35-09:05/30 20:00	05:25 20:19
22	07:05 16:58	06:35 17:34	05:53 18:03	06:06 08:17-09:21/64 19:33	05:33 08:37-09:05/28 20:01	05:25 20:19
23	07:05 16:59	06:34 17:35	05:52 18:04	06:05 08:15-09:20/65 19:34	05:33 08:38-09:04/26 20:02	05:25 20:19
24	07:04 17:00	06:32 17:36	05:50 18:05	06:04 08:15-09:21/66 19:35	05:32 08:39-09:02/23 20:03	05:25 20:20
25	07:03 17:01	06:31 17:37	05:49 18:05	06:02 08:15-09:21/66 19:36	05:31 08:40-09:02/22 20:03	05:25 20:20
26	07:03 17:03	06:30 17:38	06:47 19:06	06:01 08:14-09:21/67 19:36	05:31 08:41-09:01/20 20:04	05:26 20:20
27	07:02 17:04	06:28 17:39	06:46 19:07	06:00 08:13-09:20/67 19:37	05:30 08:43-09:01/18 20:05	05:26 20:20
28	07:01 17:05	06:27 17:40	06:44 19:08	05:58 08:13-09:19/66 19:38	05:29 08:44-09:00/16 20:06	05:26 20:20
29	07:01 17:06		06:42 19:09	05:57 08:13-09:19/66 19:39	05:29 08:45-08:59/14 20:07	05:27 20:20
30	07:00 17:07		06:41 19:10	05:56 08:13-09:19/66 19:40	05:28 08:46-08:58/12 20:07	05:27 20:20
31	06:59 17:08		06:39 19:11		05:28 08:48-08:57/9 20:08	
Potential sun hours	303	299	369	395	442	445
Sum of minutes with flicker	0	0	234	1344	1256	21

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: CANTORATO WTG: 17 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (17)
Assumptions for shadow calculations

Reference year for calendar 2023

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	05:28 20:20	05:50 08:34-09:21/47 20:03	06:18 08:28-09:17/49 19:23	06:45 07:34-07:52/18 18:36	06:16 16:52	06:48 16:29
2	05:28 20:20	05:50 08:33-09:22/49 20:02	06:18 08:29-09:15/46 19:22	06:46 07:33-07:53/20 18:34	06:17 16:51	06:49 16:29
3	05:29 20:20	05:51 08:31-09:23/52 20:01	06:19 08:30-09:12/42 19:20	06:46 07:32-07:53/21 18:33	06:18 16:49	06:50 16:28
4	05:29 20:20	05:52 08:30-09:23/53 20:00	06:20 08:32-09:10/38 19:19	06:47 07:31-07:53/22 18:31	06:19 16:48	06:51 16:28
5	05:30 20:20	05:53 08:27-09:23/56 19:59	06:21 08:34-09:08/34 19:17	06:48 07:31-07:53/22 18:29	06:20 16:47	06:52 16:28
6	05:30 20:19	05:54 08:26-09:24/58 19:58	06:22 08:38-09:04/26 19:16	06:49 07:31-07:52/21 18:28	06:21 16:46	06:53 16:28
7	05:31 20:19	05:55 08:24-09:24/60 19:57	06:23 08:42-08:59/17 19:14	06:50 07:31-07:51/20 18:26	06:22 16:45	06:54 16:28
8	05:31 20:19	05:56 08:23-09:25/62 19:56	06:24 19:13	06:51 07:32-07:50/18 18:25	06:23 16:44	06:55 16:28
9	05:32 20:19	05:57 08:21-09:25/64 19:55	06:25 19:11	06:52 07:33-07:49/16 18:23	06:25 16:43	06:56 16:28
10	05:32 20:18	05:58 08:21-09:26/65 19:54	06:26 19:09	06:53 07:34-07:47/13 18:22	06:26 16:42	06:57 16:28
11	05:33 20:18	05:58 08:21-09:26/65 19:52	06:26 19:08	06:54 07:37-07:44/7 18:20	06:27 16:41	06:58 16:28
12	05:34 20:17	05:59 08:21-09:27/66 19:51	06:27 19:06	06:55 18:19	06:28 16:40	06:58 16:28
13	05:34 20:17	06:00 08:20-09:26/66 19:50	06:28 19:05	06:56 18:17	06:29 16:39	06:59 16:28
14	05:35 20:17	06:01 08:20-09:26/66 19:49	06:29 19:03	06:57 18:16	06:30 16:39	07:00 16:28
15	05:36 20:16	06:02 08:20-09:27/67 19:47	06:30 19:01	06:58 18:14	06:31 16:38	07:01 16:29
16	05:36 20:16	06:03 08:20-09:27/67 19:46	06:31 19:00	06:59 18:13	06:32 16:37	07:01 16:29
17	05:37 20:15	06:04 08:20-09:27/67 19:45	06:32 18:58	07:00 18:11	06:33 16:36	07:02 16:29
18	05:38 20:14	06:05 08:21-09:27/66 19:44	06:33 18:57	07:01 18:10	06:35 16:35	07:03 16:29
19	05:39 20:14	06:06 08:21-09:27/66 19:42	06:34 18:55	07:02 18:09	06:36 16:35	07:03 16:30
20	05:40 20:13	06:07 08:20-09:26/66 19:41	06:35 18:53	07:03 18:07	06:37 16:34	07:04 16:30
21	05:40 20:13	06:08 08:20-09:26/66 19:39	06:35 18:52	07:04 18:06	06:38 16:33	07:05 16:31
22	05:41 20:12	06:08 08:21-09:26/65 19:38	06:36 18:50	07:05 18:04	06:39 16:33	07:05 16:31
23	05:42 20:11	06:09 08:21-09:25/64 19:37	06:37 18:49	07:06 18:03	06:40 16:32	07:06 16:32
24	05:43 20:10	06:10 08:22-09:25/63 19:35	06:38 18:47	07:07 18:02	06:41 16:32	07:06 16:32
25	05:44 20:10	06:11 08:22-09:24/62 19:34	06:39 18:45	07:08 18:00	06:42 16:31	07:07 16:33
26	05:44 20:09	06:12 08:23-09:24/61 19:32	06:40 18:44	07:09 17:59	06:43 16:31	07:07 16:33
27	05:45 20:08	06:13 08:23-09:22/59 19:31	06:41 18:42	07:10 17:58	06:44 16:30	07:07 16:34
28	05:46 20:07	06:14 08:23-09:22/59 19:29	06:42 07:40-07:48/8 18:41	07:11 17:57	06:45 16:30	07:08 16:34
29	05:47 20:06	06:15 08:24-09:21/57 19:28	06:43 07:37-07:50/13 18:39	07:12 16:55	06:46 16:30	07:08 16:35
30	05:48 20:05	06:16 08:25-09:20/55 19:26	06:44 07:35-07:51/16 18:37	07:13 16:54	06:47 16:29	07:08 16:36
31	05:49 20:04	06:17 08:26-09:18/52 19:25		07:14 16:53		07:09 16:37
Potential sun hours	453	425	375	348	303	294
Sum of minutes with flicker	508	1891	289	198	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: CANTORATO WTG: 18 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (18)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:37	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	05:27 20:09	05:28 20:20	05:49 20:03	06:17 19:23	06:45 18:36	06:16 16:52	06:48 16:29
2	07:09 16:38	06:57 17:11	06:24 17:42	06:36 19:13	05:53 19:42	05:27 20:10	05:28 20:20	05:50 20:02	06:18 19:22	06:45 18:34	06:17 16:51	06:49 16:29
3	07:09 16:39	06:56 17:12	06:22 17:43	06:35 19:14	05:52 19:43	05:26 20:10	05:28 20:20	05:51 20:01	06:19 19:20	06:46 18:33	06:18 16:49	06:50 16:28
4	07:09 16:40	06:56 17:13	06:21 17:44	06:33 19:15	05:51 19:44	05:26 20:11	05:29 20:20	05:52 20:00	06:20 19:19	06:47 18:31	06:19 16:48	06:51 16:28
5	07:09 16:41	06:55 17:14	06:20 17:45	06:31 19:16	05:50 19:45	05:26 20:12	05:30 20:19	05:53 19:59	06:21 19:17	06:48 18:29	06:20 16:47	06:52 16:28
6	07:09 16:42	06:54 17:15	06:18 17:46	06:30 19:17	05:49 19:46	05:30 20:12	05:30 20:19	05:54 19:58	06:22 19:16	06:49 18:28	06:21 16:46	06:53 16:28
7	07:09 16:43	06:53 17:16	06:17 17:47	06:28 19:18	05:47 19:47	05:25 20:13	05:31 20:19	05:55 19:57	06:23 19:14	06:50 18:26	06:22 16:45	06:54 16:28
8	07:09 16:43	06:52 17:18	06:15 17:48	06:27 19:19	05:46 19:48	05:25 20:13	05:31 20:19	05:56 19:56	06:24 19:13	06:51 18:25	06:23 16:44	06:55 16:28
9	07:09 16:44	06:51 17:19	06:14 17:49	06:25 19:20	05:45 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:52 18:23	06:24 16:43	06:56 16:28
10	07:09 16:45	06:50 17:20	06:12 17:50	06:24 19:21	05:44 19:50	05:25 20:15	05:32 20:18	05:58 19:54	06:26 19:09	06:53 18:22	06:26 16:42	06:57 16:28
11	07:09 16:46	06:48 17:21	06:11 17:52	06:22 19:22	05:43 19:51	05:24 20:15	05:33 20:18	05:58 19:52	06:26 19:08	06:54 18:20	06:27 16:41	06:58 16:28
12	07:09 16:47	06:47 17:22	06:09 17:53	06:21 19:23	05:42 19:52	05:24 20:16	05:34 20:17	05:59 19:51	06:27 19:06	06:55 18:19	06:28 16:40	06:58 16:28
13	07:09 16:48	06:46 17:23	06:07 17:54	06:19 19:24	05:41 19:53	05:24 20:16	05:34 20:17	06:00 19:50	06:28 19:05	06:56 18:17	06:29 16:39	06:59 16:28
14	07:08 16:49	06:45 17:25	06:06 17:55	06:18 19:25	05:40 19:54	05:24 20:16	05:35 20:17	06:01 19:49	06:29 19:03	06:57 18:16	06:30 16:39	07:00 16:28
15	07:08 16:50	06:44 17:26	06:04 17:56	06:16 19:26	05:39 19:55	05:24 20:17	05:36 20:16	06:02 19:47	06:30 19:01	06:58 18:14	06:31 16:38	07:01 16:29
16	07:08 16:51	06:43 17:27	06:03 17:57	06:15 19:27	05:38 19:56	05:24 20:17	05:36 20:16	06:03 19:46	06:31 19:00	06:59 18:13	06:32 16:37	07:01 16:29
17	07:08 16:53	06:41 17:28	06:01 17:58	06:13 19:28	05:37 19:56	05:24 20:18	05:37 20:15	06:04 19:45	06:32 18:58	07:00 18:11	06:33 16:36	07:02 16:29
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 19:29	05:37 19:57	05:24 20:18	05:38 20:14	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:35	07:03 16:29
19	07:07 16:55	06:39 17:30	05:58 18:00	06:11 19:30	05:36 19:58	05:24 20:18	05:39 20:14	06:06 19:42	06:34 18:55	07:02 18:09	06:36 16:35	07:03 16:30
20	07:06 16:56	06:38 17:31	05:57 18:01	06:09 19:31	05:35 19:59	05:24 20:19	05:39 20:13	06:07 19:41	06:35 18:53	07:03 18:07	06:37 16:34	07:04 16:30
21	07:06 16:57	06:36 17:32	05:55 18:02	06:08 19:32	05:34 20:00	05:25 20:19	05:40 20:13	06:08 19:39	06:35 18:52	07:04 18:06	06:38 16:33	07:05 16:31
22	07:05 16:58	06:35 17:34	05:53 18:03	06:06 19:33	05:33 20:01	05:25 20:19	05:41 20:12	06:08 19:38	06:36 18:50	07:05 18:04	06:39 16:33	07:05 16:31
23	07:05 16:59	06:34 17:35	05:52 18:03	06:05 19:34	05:33 20:02	05:25 20:19	05:42 20:11	06:09 19:37	06:37 18:49	07:06 18:03	06:40 16:32	07:06 16:31
24	07:04 17:00	06:32 17:36	05:50 18:04	06:04 19:35	05:32 20:03	05:25 20:20	05:43 20:10	06:10 19:35	06:38 18:47	07:07 18:02	06:41 16:32	07:06 16:32
25	07:03 17:01	06:31 17:37	05:49 18:05	06:02 19:35	05:31 20:03	05:25 20:20	05:43 20:10	06:11 19:34	06:39 18:45	07:08 18:00	06:42 16:31	07:07 16:33
26	07:03 17:03	06:30 17:38	05:47 19:06	06:01 19:36	05:31 20:04	05:26 20:20	05:44 20:09	06:12 19:32	06:40 18:44	07:09 17:59	06:43 16:31	07:07 16:33
27	07:02 17:04	06:28 17:39	06:46 19:07	06:00 19:37	05:30 20:05	05:26 20:20	05:45 20:08	06:13 19:31	06:41 18:42	07:10 17:58	06:44 16:30	07:07 16:34
28	07:01 17:05	06:27 17:40	06:44 19:08	05:58 19:38	05:29 20:06	05:26 20:20	05:46 20:07	06:14 19:29	06:42 18:41	07:11 17:57	06:45 16:30	07:08 16:34
29	07:01 17:06		06:42 19:09	05:57 19:39	05:29 20:07	05:27 20:20	05:47 20:06	06:15 19:28	06:43 18:39	06:12 16:55	06:46 16:29	07:08 16:35
30	07:00 17:07		06:41 19:10	05:56 19:40	05:28 20:07	05:27 20:20	05:48 20:05	06:16 19:26	06:44 18:37	06:14 16:54	06:47 16:29	07:08 16:36
31	06:59 17:08		06:39 19:11		05:28 20:08		05:49 20:04	06:17 19:25		06:15 16:53		07:09 16:36
Potential sun hours	302	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 19 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI hub: 115,0 m (TOT: 200,0 m) (19)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:38	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	05:27 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:48 16:29
2	07:09 16:38	06:58 17:11	06:24 17:42	06:36 19:13	05:53 19:42	05:27 20:10	05:28 20:20	05:50 20:03	06:19 19:22	06:46 18:34	06:17 16:51	06:49 16:29
3	07:09 16:39	06:57 17:12	06:23 17:43	06:35 19:14	05:52 19:43	05:27 20:10	05:29 20:20	05:51 20:02	06:19 19:21	06:47 18:33	06:18 16:49	06:50 16:28
4	07:10 16:40	06:56 17:13	06:21 17:44	06:33 19:15	05:51 19:44	05:26 20:11	05:29 20:20	05:52 20:00	06:20 19:19	06:47 18:31	06:19 16:48	06:51 16:28
5	07:10 16:41	06:55 17:14	06:20 17:45	06:32 19:16	05:50 19:45	05:26 20:12	05:30 20:20	05:53 19:59	06:21 19:17	06:48 18:30	06:20 16:47	06:52 16:28
6	07:10 16:42	06:54 17:15	06:18 17:47	06:30 19:17	05:49 19:46	05:26 20:12	05:30 20:19	05:54 19:58	06:22 19:16	06:49 18:28	06:21 16:46	06:53 16:28
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	05:48 19:47	05:25 20:13	05:31 20:19	05:55 19:57	06:23 19:14	06:50 18:26	06:22 16:45	06:54 16:28
8	07:10 16:44	06:52 17:18	06:15 17:49	06:27 19:19	05:46 19:48	05:25 20:14	05:31 20:19	05:56 19:56	06:24 19:13	06:51 18:25	06:24 16:44	06:55 16:28
9	07:10 16:45	06:51 17:19	06:14 17:50	06:25 19:20	05:45 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:52 18:23	06:25 16:43	06:56 16:28
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12	07:09 16:47	06:47 17:22	06:09 17:53	06:21 19:23	05:42 19:52	05:24 20:16	05:34 20:18	05:59 19:51	06:27 19:06	06:55 18:19	06:28 16:40	06:59 16:28
13	07:09 16:48	06:46 17:24	06:08 17:54	06:19 19:24	05:41 19:53	05:24 20:16	05:34 20:17	06:00 19:50	06:28 19:05	06:56 18:17	06:29 16:39	06:59 16:28
14	07:09 16:49	06:45 17:25	06:06 17:55	06:18 19:25	05:40 19:54	05:24 20:17	05:35 20:17	06:01 19:49	06:29 19:03	06:57 18:16	06:30 16:39	07:00 16:28
15	07:08 16:51	06:44 17:26	06:05 17:56	06:16 19:26	05:39 19:55	05:24 20:17	05:36 20:16	06:02 19:48	06:30 19:02	06:58 18:14	06:31 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:38 19:56	05:24 20:17	05:37 20:16	06:03 19:46	06:31 19:00	06:59 18:13	06:32 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:01 17:58	06:14 19:28	05:38 19:57	05:24 20:18	05:37 20:15	06:04 19:45	06:32 18:58	07:00 18:12	06:34 16:36	07:02 16:29
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 19:29	05:37 19:57	05:24 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:36	07:03 16:30
19	07:07 16:55	06:39 17:30	05:58 18:00	06:11 19:30	05:36 19:58	05:24 20:19	05:39 20:14	06:06 19:42	06:34 18:55	07:02 18:09	06:36 16:35	07:04 16:30
20	07:06 16:56	06:38 17:31	05:57 18:01	06:09 19:31	05:35 19:59	05:25 20:19	05:40 20:13	06:07 19:41	06:35 18:54	07:03 18:07	06:37 16:34	07:04 16:30
21	07:06 16:57	06:36 17:33	05:55 18:02	06:08 19:32	05:34 20:00	05:25 20:19	05:40 20:13	06:08 19:40	06:36 18:52	07:04 18:06	06:38 16:34	07:05 16:31
22	07:05 16:58	06:35 17:34	05:54 18:03	06:06 19:33	05:33 20:01	05:25 20:19	05:41 20:12	06:09 19:38	06:36 18:50	07:05 18:05	06:39 16:33	07:05 16:31
23	07:05 16:59	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:20	05:42 20:11	06:09 19:37	06:37 18:49	07:06 18:03	06:40 16:32	07:06 16:32
24	07:04 17:00	06:32 17:36	05:50 18:05	06:04 19:35	05:32 20:03	05:25 20:20	05:43 20:11	06:10 19:35	06:38 18:47	07:07 18:02	06:41 16:32	07:06 16:32
25	07:04 17:02	06:31 17:37	05:49 18:06	06:02 19:36	05:31 20:04	05:26 20:20	05:44 20:10	06:11 19:34	06:39 18:45	07:08 18:01	06:42 16:31	07:07 16:33
26	07:03 17:03	06:30 17:38	05:47 19:07	06:01 19:37	05:31 20:04	05:26 20:20	05:44 20:09	06:12 19:32	06:40 18:44	07:09 17:59	06:43 16:31	07:07 16:33
27	07:02 17:04	06:28 17:39	06:46 19:08	06:00 19:38	05:30 20:05	05:26 20:20	05:45 20:08	06:13 19:31	06:41 18:42	07:10 17:58	06:44 16:30	07:08 16:34
28	07:02 17:05	06:27 17:40	06:44 19:09	05:58 19:39	05:29 20:06	05:27 20:20	05:46 20:07	06:14 19:30	06:42 18:41	07:12 17:57	06:45 16:30	07:08 16:35
29	07:01 17:06		06:43 19:09	05:57 19:40	05:29 20:07	05:27 20:20	05:47 20:06	06:15 19:28	06:43 18:39	06:13 16:55	06:46 16:30	07:08 16:35
30	07:00 17:07		06:41 19:10	05:56 19:40	05:28 20:07	05:27 20:20	05:48 20:05	06:16 19:27	06:44 18:37	06:14 16:54	06:47 16:29	07:09 16:36
31	06:59 17:08		06:39 19:11		05:28 20:08		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	302	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO WTG: 20 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (20)
Assumptions for shadow calculations

Reference year for calendar 2023
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	07:09 16:37	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	05:27 20:09	05:28 20:20	05:50 20:03	06:18 19:23	06:45 18:36	06:16 16:52	06:48 16:29
2	07:09 16:38	06:57 17:11	06:24 17:42	06:36 19:13	05:53 19:42	05:27 20:10	05:28 20:20	05:50 20:02	06:18 19:22	06:46 18:34	06:17 16:51	06:49 16:29
3	07:09 16:39	06:57 17:12	06:23 17:43	06:35 19:14	05:52 19:43	05:27 20:10	05:29 20:20	05:51 20:01	06:19 19:20	06:46 18:33	06:18 16:49	06:50 16:28
4	07:09 16:40	06:56 17:13	06:21 17:44	06:33 19:15	05:51 19:44	05:26 20:11	05:29 20:20	05:52 20:00	06:20 19:19	06:47 18:31	06:19 16:48	06:51 16:28
5	07:09 16:41	06:55 17:14	06:20 17:45	06:32 19:16	05:50 19:45	05:26 20:12	05:30 20:20	05:53 19:59	06:21 19:17	06:48 18:29	06:20 16:47	06:52 16:28
6	07:10 16:42	06:54 17:15	06:18 17:46	06:30 19:17	05:49 19:46	05:25 20:12	05:30 20:19	05:54 19:58	06:22 19:16	06:49 18:28	06:21 16:46	06:53 16:28
7	07:10 16:43	06:53 17:17	06:17 17:47	06:28 19:18	05:47 19:47	05:25 20:13	05:31 20:19	05:55 19:57	06:23 19:14	06:50 18:26	06:22 16:45	06:54 16:28
8	07:09 16:43	06:52 17:18	06:15 17:48	06:27 19:19	05:46 19:48	05:25 20:13	05:31 20:19	05:56 19:56	06:24 19:13	06:51 18:25	06:23 16:44	06:55 16:28
9	07:09 16:44	06:51 17:19	06:14 17:50	06:25 19:20	05:45 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:52 18:23	06:25 16:43	06:56 16:28
10	07:09 16:45	06:50 17:20	06:12 17:51	06:24 19:21	05:44 19:50	05:25 20:15	05:32 20:18	05:58 19:54	06:26 19:09	06:53 18:22	06:26 16:42	06:57 16:28
11	07:09 16:46	06:48 17:21	06:11 17:52	06:22 19:22	05:43 19:51	05:24 20:15	05:33 20:18	05:58 19:52	06:26 19:08	06:54 18:20	06:27 16:41	06:58 16:28
12	07:09 16:47	06:47 17:22	06:09 17:53	06:21 19:23	05:42 19:52	05:24 20:16	05:34 20:17	05:59 19:51	06:27 19:06	06:55 18:19	06:28 16:40	06:58 16:28
13	07:09 16:48	06:46 17:23	06:08 17:54	06:19 19:24	05:41 19:53	05:24 20:16	05:34 20:17	06:00 19:50	06:28 19:05	06:56 18:17	06:29 16:39	06:59 16:28
14	07:09 16:49	06:45 17:25	06:06 17:55	06:18 19:25	05:40 19:54	05:24 20:17	05:35 20:17	06:01 19:49	06:29 19:03	06:57 18:16	06:30 16:39	07:00 16:28
15	07:08 16:50	06:44 17:26	06:04 17:56	06:16 19:26	05:39 19:55	05:24 20:17	05:36 20:16	06:02 19:47	06:30 19:01	06:58 18:14	06:31 16:38	07:01 16:29
16	07:08 16:51	06:43 17:27	06:03 17:57	06:15 19:27	05:38 19:56	05:24 20:17	05:36 20:16	06:03 19:46	06:31 19:00	06:59 18:13	06:32 16:37	07:01 16:29
17	07:08 16:53	06:41 17:28	06:01 17:58	06:13 19:28	05:37 19:56	05:24 20:18	05:37 20:15	06:04 19:45	06:32 18:58	07:00 18:11	06:33 16:36	07:02 16:29
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 19:29	05:37 19:57	05:24 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:35	07:03 16:29
19	07:07 16:55	06:39 17:30	05:58 18:00	06:11 19:30	05:36 19:58	05:24 20:18	05:39 20:14	06:06 19:42	06:34 18:55	07:02 18:09	06:36 16:35	07:03 16:30
20	07:06 16:56	06:38 17:31	05:57 18:01	06:09 19:31	05:35 19:59	05:24 20:19	05:39 20:13	06:07 19:41	06:35 18:53	07:03 18:07	06:37 16:34	07:04 16:30
21	07:06 16:57	06:36 17:32	05:55 18:02	06:08 19:32	05:34 20:00	05:25 20:19	05:40 20:13	06:08 19:39	06:35 18:52	07:04 18:06	06:38 16:33	07:05 16:31
22	07:05 16:58	06:35 17:34	05:53 18:03	06:06 19:33	05:33 20:01	05:25 20:19	05:41 20:12	06:08 19:38	06:36 18:50	07:05 18:04	06:39 16:33	07:05 16:31
23	07:05 16:59	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:19	05:42 20:11	06:09 19:37	06:37 18:49	07:06 18:03	06:40 16:32	07:06 16:32
24	07:04 17:00	06:32 17:36	05:50 18:05	06:04 19:35	05:32 20:03	05:25 20:20	05:43 20:10	06:10 19:35	06:38 18:47	07:07 18:02	06:41 16:32	07:06 16:32
25	07:04 17:01	06:31 17:37	05:49 18:05	06:02 19:36	05:31 20:03	05:25 20:20	05:44 20:10	06:11 19:34	06:39 18:45	07:08 18:00	06:42 16:31	07:07 16:33
26	07:03 17:03	06:30 17:38	05:47 19:06	06:01 19:37	05:31 20:04	05:26 20:20	05:44 20:09	06:12 19:32	06:40 18:44	07:09 17:59	06:43 16:31	07:07 16:33
27	07:02 17:04	06:28 17:39	06:46 19:07	06:00 19:37	05:30 20:05	05:26 20:20	05:45 20:08	06:13 19:31	06:41 18:42	07:10 17:58	06:44 16:30	07:07 16:34
28	07:01 17:05	06:27 17:40	06:44 19:08	05:58 19:38	05:29 20:06	05:26 20:20	05:46 20:07	06:14 19:29	06:42 18:41	07:11 17:57	06:45 16:30	07:08 16:34
29	07:01 17:06		06:42 19:09	05:57 19:39	05:29 20:07	05:27 20:20	05:47 20:06	06:15 19:28	06:43 18:39	06:13 16:55	06:46 16:29	07:08 16:35
30	07:00 17:07		06:41 19:10	05:56 19:40	05:28 20:07	05:27 20:20	05:48 20:05	06:16 19:26	06:44 18:37	06:14 16:54	06:47 16:29	07:08 16:36
31	06:59 17:08		06:39 19:11		05:28 20:08		05:49 20:04	06:17 19:25		06:15 16:53		07:09 16:36
Potential sun hours	302	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

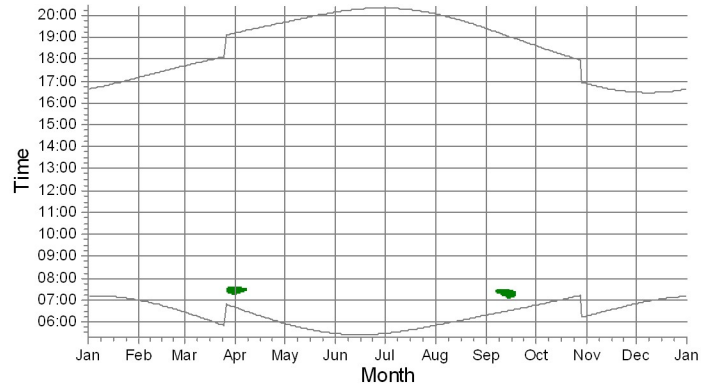
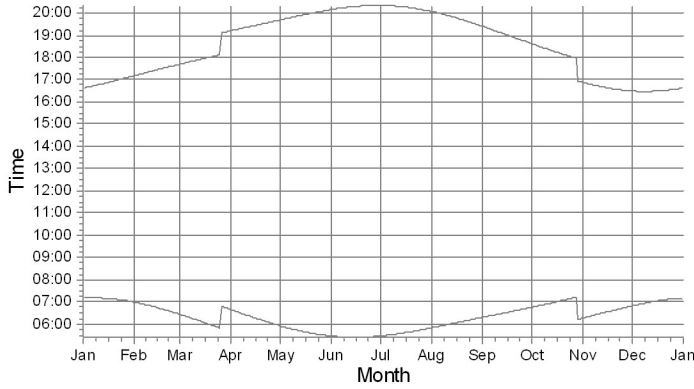
Table layout: For each day in each month the following matrix apply

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

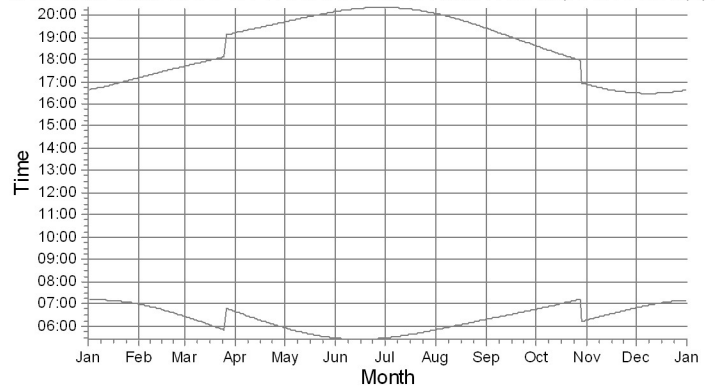
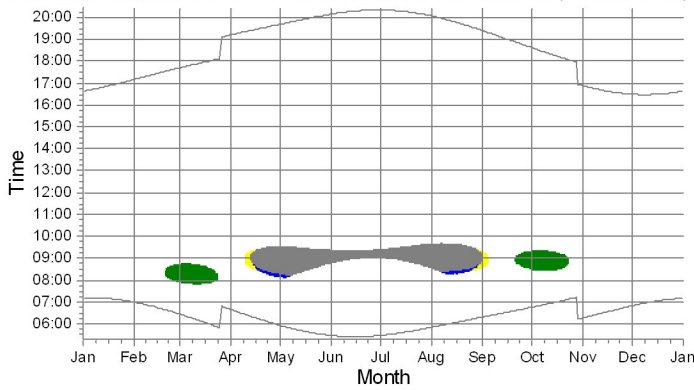
SHADOW - Calendar per WTG, graphical

Calculation: CANTORATO

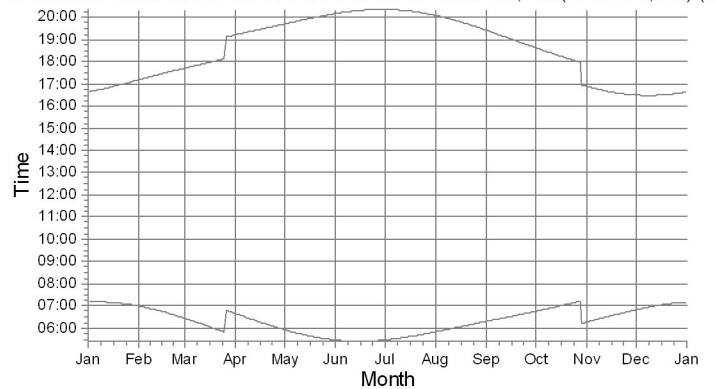
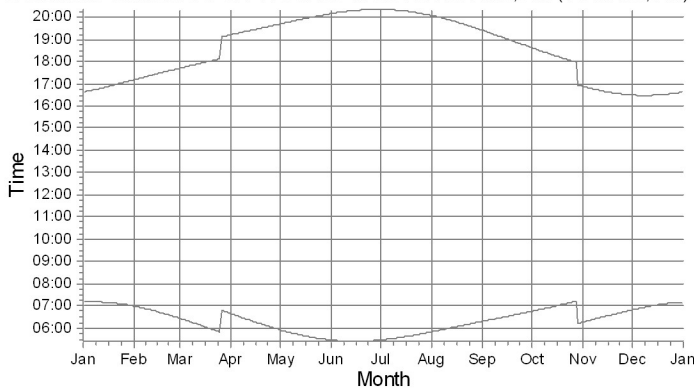
1: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (2: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (2)



3: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (4: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (4)



5: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (6: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (6)



Shadow receptors

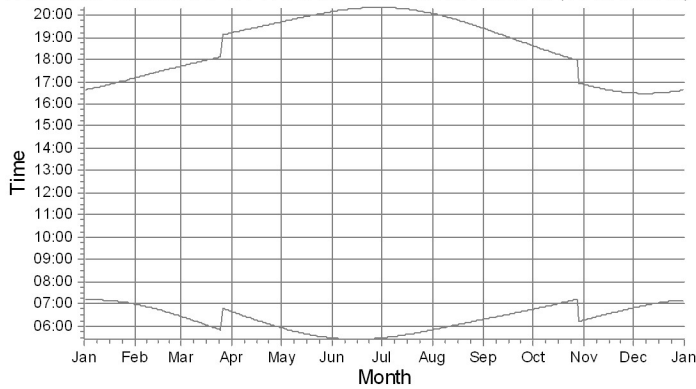
- A: Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (1)
- B: Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (2)

- C: Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (3)
- D: Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (4)

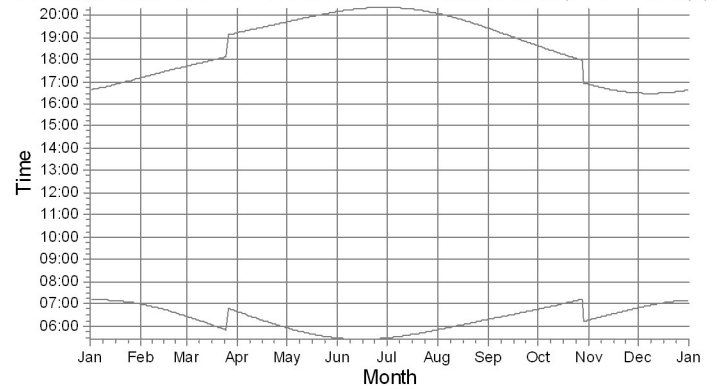
SHADOW - Calendar per WTG, graphical

Calculation: CANTORATO

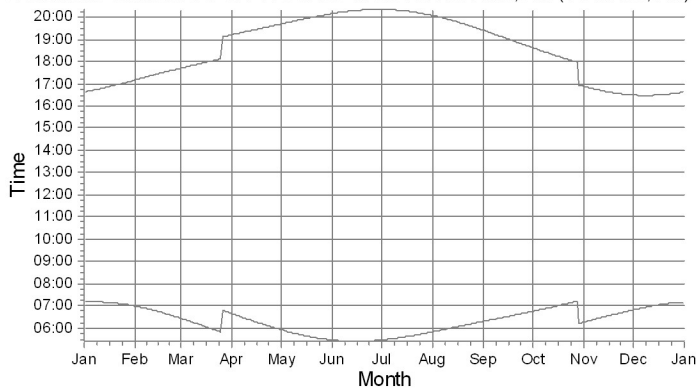
7: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (



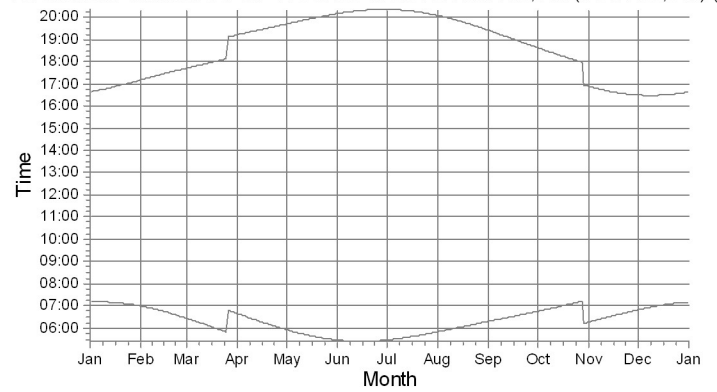
8: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (8)



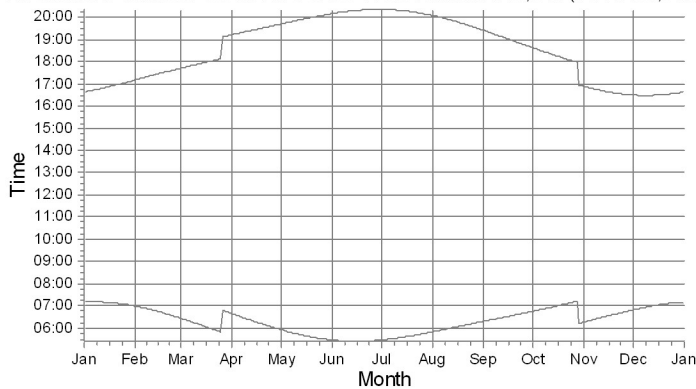
9: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (



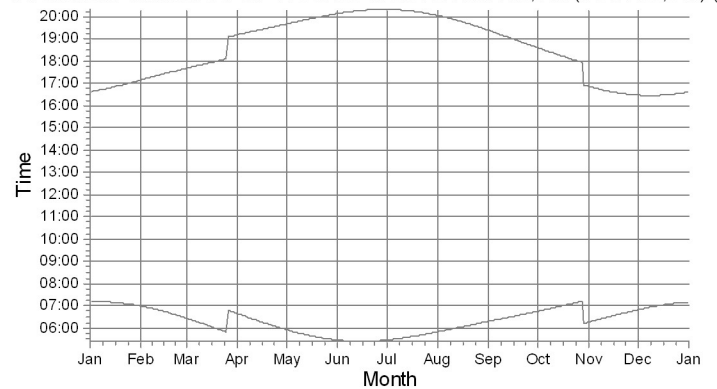
10: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (10)



11: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m)



12: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (12)

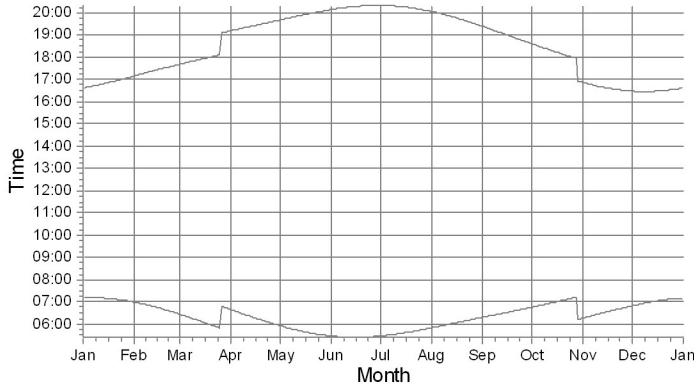


Shadow receptors

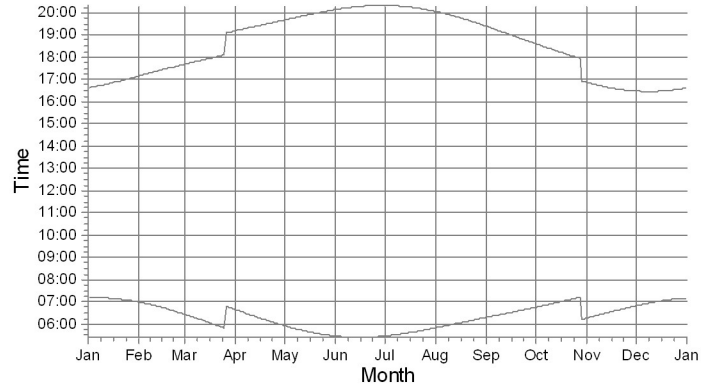
SHADOW - Calendar per WTG, graphical

Calculation: CANTORATO

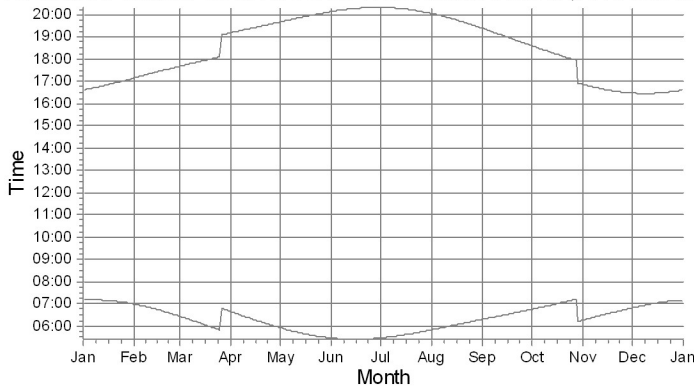
13: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m)



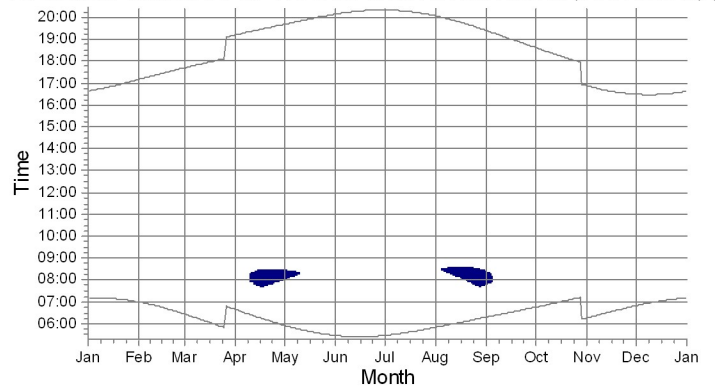
14: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (14)



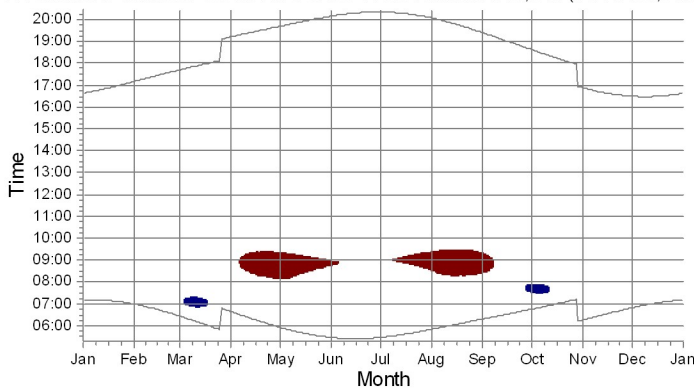
15: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m)



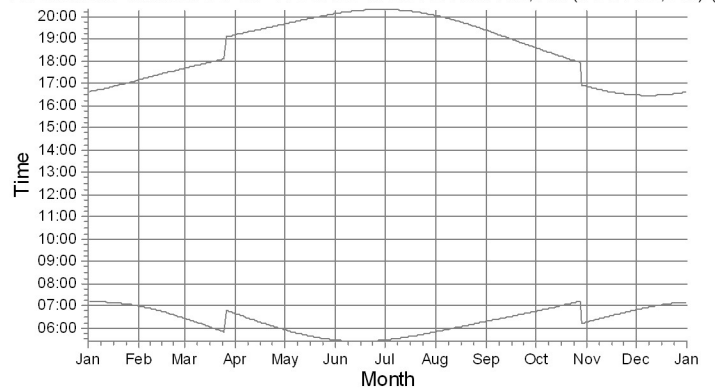
16: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (16)




17: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m)




18: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (18)



Shadow receptors

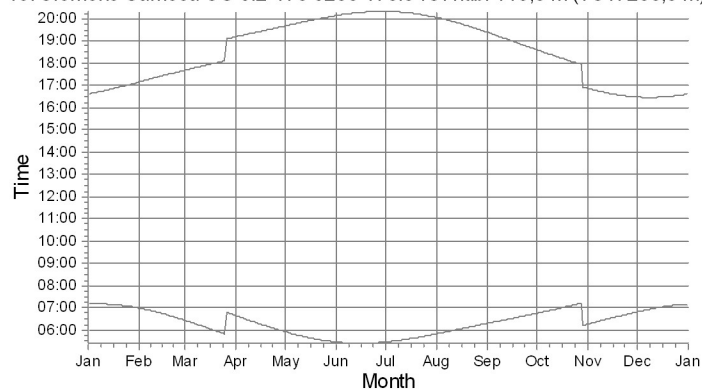
 G: Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (7)

 H: Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (8)

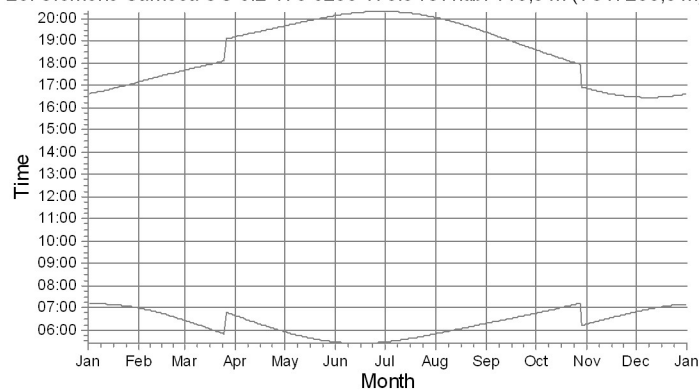
SHADOW - Calendar per WTG, graphical

Calculation: CANTORATO

19: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m)



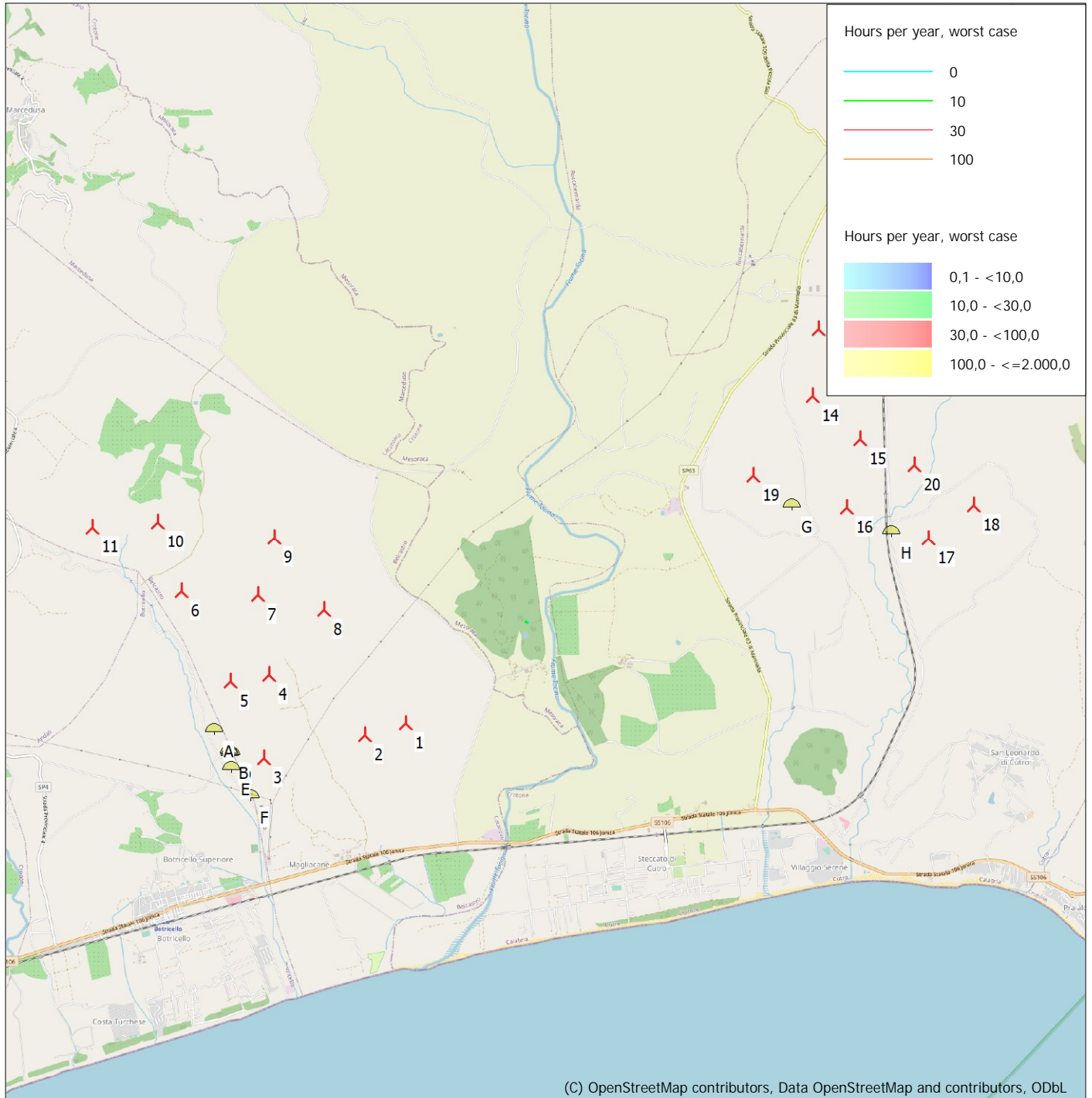
20: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (20)



Shadow receptors

SHADOW - Map

Calculation: CANTORATO



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

0 1 2 3 4 km

Map: EMD OpenStreetMap , Print scale 1:75.000, Map center Geo WGS84 East: 16,911659° E North: 38,975325° N
 Shadow receptor

New WTG

Flicker map level: 10 m above sea level
 Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 2,0 m

SHADOW - Main Result

Calculation: CANTORATO REAL

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) [CROTONE]

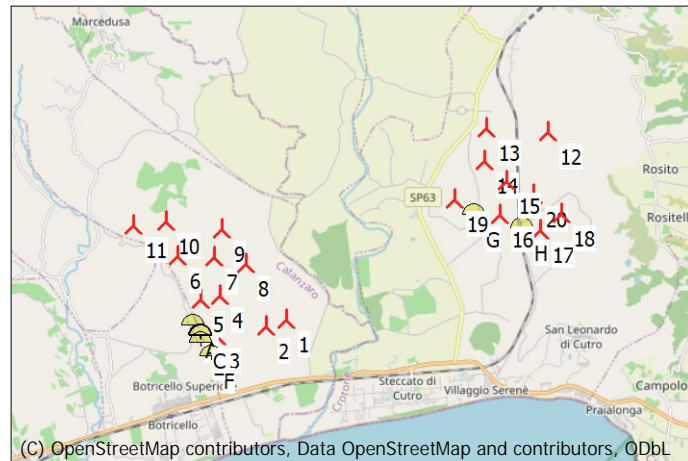
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,16	4,62	5,58	6,71	8,10	9,27	10,00	9,47	7,89	5,95	5,05	4,11

No operational time reduction. It is assumed the WTGs are always wind running with worst case wind direction.

Topographic shadow included in calculation

All coordinates are in

Geo [deg]-WGS84



Scale 1:200.000

▲ New WTG

👤 Shadow receptor

WTGs

Longitude	Latitude	Z	Row data/Description	WTG type			Shadow data				
				Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM [RPM]
16,892793° E	38,956897° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 2	Yes	2	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,886697° E	38,955473° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 3	Yes	3	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,871650° E	38,952895° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 4	Yes	4	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,872469° E	38,962514° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 5	Yes	5	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,866759° E	38,961749° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 6	Yes	6	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,859458° E	38,972075° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 7	Yes	7	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,870805° E	38,971659° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 8	Yes	8	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,880585° E	38,970042° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 9	Yes	9	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,873161° E	38,978280° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 10	Yes	10	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,855963° E	38,980114° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 11	Yes	11	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,846227° E	38,979484° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 12	Yes	12	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,972728° E	39,001705° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 13	Yes	13	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,954031° E	39,002444° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 14	Yes	14	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,953123° E	38,994647° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 15	Yes	15	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,960169° E	38,989717° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 16	Yes	16	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,958160° E	38,981768° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 17	Yes	17	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,970296° E	38,978140° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 18	Yes	18	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,977090° E	38,982097° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 19	Yes	19	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,944318° E	38,985522° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes 20	Yes	20	Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8
16,968236° E	38,986698° N	200,0	Siemens Gamesa SG 6.2-170 6200 ...Yes	Yes		Siemens Gamesa SG 6.2-170-6.200	6.200	170,0	115,0	2.041	8,8

Shadow receptor-Input

No.	Longitude	Latitude	Z	Width	Height	Elevation	Degrees from	Slope of	Direction mode	Eye height
				[m]	[m]	a.g.l.	south cw	window		(ZVI) a.g.l.
				[m]	[m]	[m]	[°]	[°]		[m]
A	16,864260° E	38,955780° N	9,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
B	16,866544° E	38,953319° N	3,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
C	16,866636° E	38,953101° N	8,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
D	16,866870° E	38,953233° N	3,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
E	16,866824° E	38,951450° N	6,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
F	16,869704° E	38,948214° N	3,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
G	16,950023° E	38,981823° N	3,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0
H	16,964897° E	38,978663° N	3,0	2,0	2,0	2,0	0,0	90,0	Fixed direction	4,0

SHADOW - Main Result

Calculation: CANTORATO REAL

Calculation Results

Shadow receptor

Shadow, expected values

No. Shadow hours

	per year [h/year]
A	23:59
B	58:37
C	52:58
D	64:55
E	0:00
F	0:00
G	19:59
H	53:44

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

No.	Name	Expected [h/year]
1	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (1)	0:00
2	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (2)	2:50
3	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (3)	92:38
4	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (4)	0:00
5	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (5)	0:00
6	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (6)	0:00
7	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (7)	0:00
8	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (8)	0:00
9	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (9)	0:00
10	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (10)	0:00
11	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (11)	0:00
12	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (12)	0:00
13	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (13)	0:00
14	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (14)	0:00
15	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (15)	0:00
16	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (16)	16:01
17	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (17)	57:42
18	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (18)	0:00
19	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (19)	0:00
20	Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (20)	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: CANTORATO REAL Shadow receptor: A - Shadow Receptor: 2,0 x 2,0 Azimuth: 0,0° Slope: 90,0° (1)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December			
1	07:09	06:59	06:26	07:57 (3)	06:38	07:17 (2)	05:55	05:28	05:50	06:18	06:45	08:32 (3)	06:16	06:49	
2	16:38	17:10	17:42	08:42 (3)	19:13	07:35 (2)	19:42	20:09	20:20	20:04	19:24	18:36	09:17 (3)	16:52	16:29
3	16:40	17:12	17:44	08:43 (3)	19:14	07:34 (2)	19:43	20:10	20:20	20:03	19:22	18:35	09:18 (3)	16:51	16:29
4	16:40	17:14	17:45	08:43 (3)	19:15	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:50	16:29
5	16:41	17:15	17:46	08:43 (3)	19:16	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
6	16:42	17:16	17:47	08:43 (3)	19:17	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
7	16:43	17:17	17:48	08:43 (3)	19:18	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
8	16:44	17:18	17:49	08:43 (3)	19:19	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
9	16:45	17:19	17:50	08:43 (3)	19:20	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
10	16:46	17:20	17:51	08:43 (3)	19:21	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
11	16:47	17:21	17:52	08:43 (3)	19:22	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
12	16:48	17:22	17:53	08:43 (3)	19:23	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
13	16:49	17:23	17:54	08:43 (3)	19:24	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
14	16:50	17:24	17:55	08:43 (3)	19:25	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
15	16:51	17:25	17:56	08:43 (3)	19:26	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
16	16:52	17:26	17:57	08:43 (3)	19:27	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
17	16:53	17:27	17:58	08:43 (3)	19:28	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
18	16:54	17:28	17:59	08:43 (3)	19:29	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
19	16:55	17:29	18:00	08:43 (3)	19:30	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
20	16:56	17:30	18:01	08:43 (3)	19:31	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
21	16:57	17:31	18:02	08:43 (3)	19:32	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
22	16:58	17:32	18:03	08:43 (3)	19:33	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
23	17:00	17:34	18:05	08:43 (3)	19:34	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
24	17:01	17:35	18:06	08:43 (3)	19:35	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
25	17:02	17:36	18:07	08:43 (3)	19:36	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
26	17:03	17:37	18:08	08:43 (3)	19:37	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
27	17:04	17:38	18:09	08:43 (3)	19:38	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
28	17:05	17:39	18:10	08:43 (3)	19:39	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
29	17:06	17:40	18:11	08:43 (3)	19:40	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
30	17:07	17:41	18:12	08:43 (3)	19:41	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
31	17:08	17:42	18:13	08:43 (3)	19:42	07:34 (2)	19:44	20:11	20:20	20:02	19:21	18:33	09:18 (3)	16:51	16:29
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294			
Total, worst case		277	1041	74					457	954					
Sun reduction		0,43	0,47	0,51					0,63	0,53					
Oper. time red.		1,00	1,00	1,00					1,00	1,00					
Wind dir. red.		1,00	1,00	1,00					1,00	1,00					
Total reduction		0,43	0,47	0,51					0,63	0,53					
Total, real		119	487	38					289	507					

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

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



SHADOW - Calendar

Calculation: CANTORATO REAL Shadow receptor: C - Shadow Receptor: 2,0 x 2,0 Azimuth: 0,0° Slope: 90,0° (3)
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) [CROTONE]

Reference year for calendar 2023 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	08:11 (3) 09:19 (3) 05:28 20:09	08:49 (3) 09:12 (3) 05:28 20:20	09:03 (3) 09:14 (3) 05:50 20:04	08:35 (3) 09:28 (3) 06:18 19:24	06:45 09:28 (3) 06:16 19:24	06:16 09:28 (3) 06:16 19:24	06:49 09:28 (3) 06:16 19:24
30	07:00 17:08	06:41 19:11	06:00 19:41	06:12 19:41	05:37 20:08	08:31 (3) 09:18 (3) 05:25 20:20	09:02 (3) 09:14 (3) 05:38 20:20	08:52 (3) 09:26 (3) 06:05 19:28	08:22 (3) 09:26 (3) 06:33 19:28	07:01 09:26 (3) 06:35 19:28	06:35 09:26 (3) 06:35 19:28	07:03 09:26 (3) 06:35 19:28
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Total, worst case				797	1472	355	865	1625				
Sun reduction				0,51	0,57	0,62	0,68	0,69				
Oper. time red.				1,00	1,00	1,00	1,00	1,00				
Wind dir. red.				1,00	1,00	1,00	1,00	1,00				
Total reduction				0,51	0,57	0,62	0,68	0,69				
Total, real				405	835	222	592	1125				

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

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



SHADOW - Calendar

Calculation: CANTORATO REAL Shadow receptor: E - Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (5)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:09 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:29 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	05:53 19:44	05:27 20:11	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
4	07:10 16:40	06:56 17:14	06:21 17:45	06:33 19:16	05:51 19:45	05:27 20:11	05:30 20:20	05:53 20:01	06:21 19:19	06:48 18:31	06:19 16:49	06:52 16:29
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:17	05:50 19:46	05:26 20:12	05:30 20:20	05:54 20:00	06:22 19:18	06:49 18:30	06:20 16:48	06:53 16:29
6	07:10 16:42	06:54 17:16	06:18 17:47	06:30 19:17	05:49 19:47	05:26 20:13	05:31 20:20	05:54 19:59	06:22 19:16	06:50 18:28	06:22 16:47	06:54 16:28
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	05:48 19:47	05:26 20:13	05:31 20:19	05:55 19:57	06:23 19:15	06:51 18:27	06:23 16:46	06:54 16:28
8	07:10 16:44	06:52 17:18	06:16 17:49	06:27 19:19	05:47 19:48	05:25 20:14	05:32 20:19	05:56 19:56	06:24 19:13	06:52 18:25	06:24 16:45	06:55 16:28
9	07:10 16:45	06:51 17:19	06:14 17:50	06:26 19:20	05:46 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:53 18:24	06:25 16:44	06:56 16:28
10	07:10 16:46	06:50 17:20	06:13 17:51	06:24 19:21	05:45 19:50	05:25 20:15	05:33 20:19	05:58 19:54	06:26 19:10	06:53 18:22	06:26 16:43	06:57 16:28
11	07:09 16:47	06:49 17:22	06:11 17:52	06:23 19:22	05:44 19:51	05:25 20:15	05:34 20:18	05:59 19:53	06:27 19:08	06:54 18:21	06:27 16:42	06:58 16:28
12	07:09 16:48	06:48 17:23	06:09 17:53	06:21 19:23	05:43 19:52	05:25 20:16	05:34 20:18	06:00 19:52	06:28 19:07	06:55 18:19	06:28 16:41	06:59 16:29
13	07:09 16:49	06:47 17:24	06:08 17:54	06:20 19:24	05:42 19:53	05:25 20:16	05:35 20:17	06:01 19:50	06:29 19:05	06:56 18:18	06:29 16:40	07:00 16:29
14	07:09 16:50	06:45 17:25	06:06 17:55	06:18 19:25	05:41 19:54	05:25 20:17	05:36 20:17	06:02 19:49	06:30 19:03	06:57 18:16	06:30 16:39	07:00 16:29
15	07:09 16:51	06:44 17:26	06:05 17:56	06:17 19:26	05:40 19:55	05:25 20:17	05:36 20:16	06:03 19:48	06:30 19:02	06:58 18:15	06:32 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:39 19:56	05:25 20:18	05:37 20:16	06:03 19:47	06:31 19:00	06:59 18:13	06:33 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	05:38 19:57	05:25 20:18	05:38 20:15	06:04 19:45	06:32 18:59	07:00 18:12	06:34 16:37	07:02 16:30
18	07:07 16:54	06:41 17:30	06:00 17:59	06:12 19:29	05:37 19:58	05:25 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:36	07:03 16:30
19	07:07 16:55	06:39 17:31	05:59 18:00	06:11 19:30	05:36 19:59	05:25 20:19	05:39 20:14	06:06 19:43	06:34 18:55	07:02 18:09	06:36 16:35	07:04 16:30
20	07:07 16:56	06:38 17:32	05:57 18:01	06:10 19:31	05:35 19:59	05:25 20:19	05:40 20:14	06:07 19:41	06:35 18:54	07:03 18:08	06:37 16:35	07:04 16:31
21	07:06 16:57	06:37 17:33	05:55 18:02	06:08 19:32	05:35 20:00	05:25 20:19	05:41 20:13	06:08 19:40	06:36 18:52	07:04 18:06	06:38 16:34	07:05 16:31
22	07:06 16:59	06:35 17:34	05:54 18:03	06:07 19:33	05:34 20:01	05:25 20:20	05:42 20:12	06:09 19:38	06:37 18:51	07:06 18:05	06:39 16:33	07:05 16:32
23	07:05 17:00	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:20	05:42 20:12	06:10 19:37	06:38 18:49	07:07 18:04	06:40 16:33	07:06 16:32
24	07:04 17:01	06:33 17:36	05:51 18:05	06:04 19:35	05:32 20:03	05:26 20:20	05:43 20:11	06:11 19:36	06:39 18:47	07:08 18:02	06:41 16:32	07:06 16:33
25	07:04 17:02	06:31 17:37	05:49 18:06	06:03 19:36	05:32 20:04	05:26 20:20	05:44 20:10	06:12 19:34	06:39 18:46	07:09 18:01	06:42 16:32	07:07 16:33
26	07:03 17:03	06:30 17:38	06:48 19:07	06:01 19:37	05:31 20:05	05:26 20:20	05:45 20:09	06:13 19:33	06:40 18:44	07:10 18:00	06:44 16:31	07:07 16:34
27	07:03 17:04	06:29 17:39	06:46 19:08	06:00 19:38	05:30 20:05	05:27 20:20	05:46 20:08	06:13 19:31	06:41 18:43	07:11 17:58	06:45 16:31	07:08 16:34
28	07:02 17:05	06:27 17:41	06:44 19:09	05:59 19:39	05:30 20:06	05:27 20:20	05:47 20:07	06:14 19:30	06:42 18:41	07:12 17:57	06:46 16:30	07:08 16:35
29	07:01 17:07		06:43 19:10	05:58 19:40	05:29 20:07	05:27 20:20	05:47 20:07	06:15 19:28	06:43 18:39	06:13 16:56	06:47 16:30	07:08 16:36
30	07:00 17:08		06:41 19:11	05:56 19:41	05:29 20:08	05:28 20:20	05:48 20:06	06:16 19:27	06:44 18:38	06:14 16:55	06:48 16:30	07:09 16:36
31	06:59 17:09		06:40 19:12		05:28 20:08		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
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: CANTORATO REAL Shadow receptor: F - Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (6)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

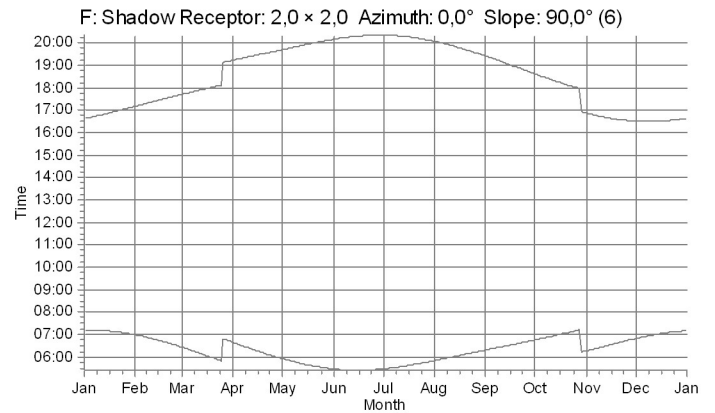
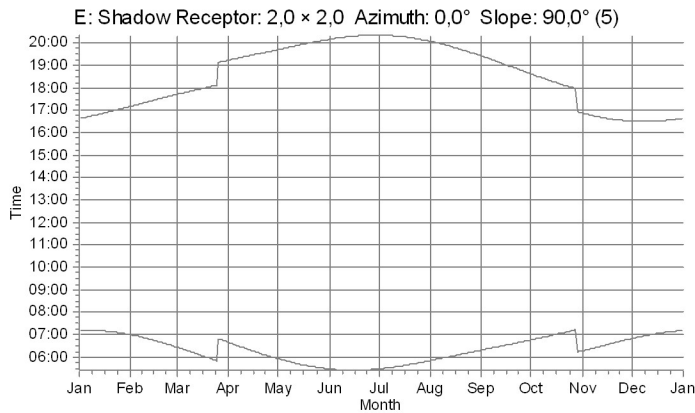
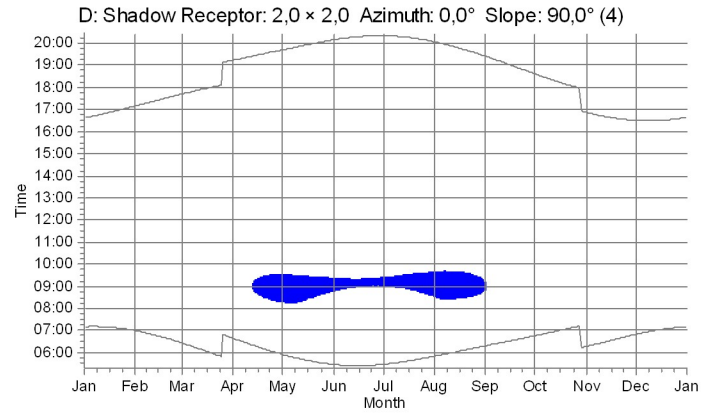
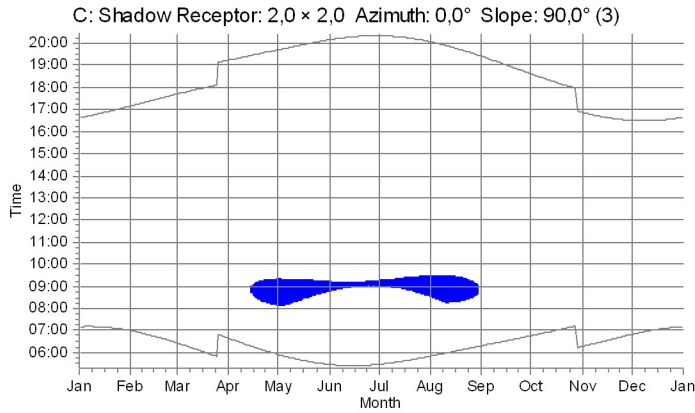
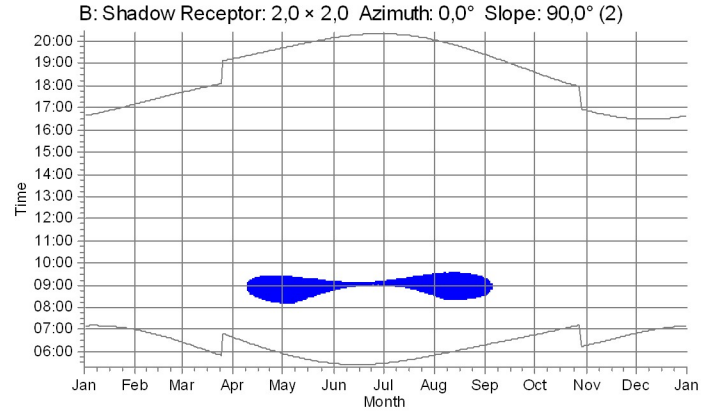
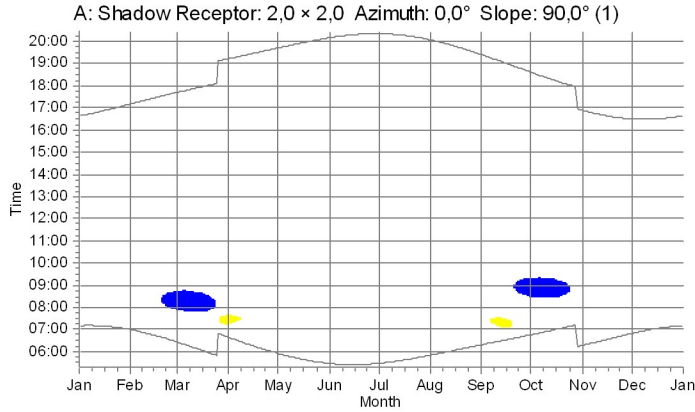
	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:09 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:29 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	05:53 19:44	05:27 20:11	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
4	07:10 16:40	06:56 17:14	06:21 17:45	06:33 19:16	05:51 19:45	05:27 20:11	05:30 20:20	05:53 20:01	06:21 19:19	06:48 18:31	06:19 16:49	06:52 16:29
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:17	05:50 19:46	05:26 20:12	05:30 20:20	05:54 20:00	06:22 19:18	06:49 18:30	06:20 16:48	06:53 16:29
6	07:10 16:42	06:54 17:16	06:18 17:47	06:30 19:17	05:49 19:46	05:26 20:13	05:31 20:20	05:54 19:59	06:22 19:16	06:50 18:28	06:22 16:47	06:53 16:28
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	05:48 19:47	05:26 20:13	05:31 20:19	05:55 19:57	06:23 19:15	06:51 18:27	06:23 16:46	06:54 16:28
8	07:10 16:44	06:52 17:18	06:16 17:49	06:27 19:19	05:47 19:48	05:25 20:14	05:32 20:19	05:56 19:56	06:24 19:13	06:52 18:25	06:24 16:45	06:55 16:28
9	07:10 16:45	06:51 17:19	06:14 17:50	06:26 19:20	05:46 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:53 18:24	06:25 16:44	06:56 16:28
10	07:10 16:46	06:50 17:20	06:12 17:51	06:24 19:21	05:45 19:50	05:25 20:15	05:33 20:19	05:58 19:54	06:26 19:10	06:53 18:22	06:26 16:43	06:57 16:28
11	07:09 16:47	06:49 17:22	06:11 17:52	06:23 19:22	05:44 19:51	05:25 20:15	05:34 20:18	05:59 19:53	06:27 19:08	06:54 18:21	06:27 16:42	06:58 16:28
12	07:09 16:48	06:48 17:23	06:09 17:53	06:21 19:23	05:43 19:52	05:25 20:16	05:34 20:18	06:00 19:52	06:28 19:07	06:55 18:19	06:28 16:41	06:59 16:29
13	07:09 16:49	06:47 17:24	06:08 17:54	06:20 19:24	05:42 19:53	05:25 20:16	05:35 20:17	06:01 19:50	06:29 19:05	06:56 18:18	06:29 16:40	06:59 16:29
14	07:09 16:50	06:45 17:25	06:06 17:55	06:18 19:25	05:41 19:54	05:25 20:17	05:36 20:17	06:02 19:49	06:30 19:03	06:57 18:16	06:30 16:39	07:00 16:29
15	07:09 16:51	06:44 17:26	06:05 17:56	06:17 19:26	05:40 19:55	05:25 20:17	05:36 20:16	06:03 19:48	06:30 19:02	06:58 18:15	06:32 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:39 19:56	05:25 20:18	05:37 20:16	06:03 19:47	06:31 19:00	06:59 18:13	06:33 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	05:38 19:57	05:25 20:18	05:38 20:15	06:04 19:45	06:32 18:59	07:00 18:12	06:34 16:37	07:02 16:30
18	07:07 16:54	06:41 17:30	06:00 17:59	06:12 19:29	05:37 19:58	05:25 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:36	07:03 16:30
19	07:07 16:55	06:39 17:31	05:59 18:00	06:11 19:30	05:36 19:59	05:25 20:19	05:39 20:14	06:06 19:43	06:34 18:55	07:02 18:09	06:36 16:35	07:04 16:30
20	07:07 16:56	06:38 17:32	05:57 18:01	06:10 19:31	05:35 19:59	05:25 20:19	05:40 20:14	06:07 19:41	06:35 18:54	07:03 18:08	06:37 16:35	07:04 16:31
21	07:06 16:57	06:37 17:33	05:55 18:02	06:08 19:32	05:35 20:00	05:25 20:19	05:41 20:13	06:08 19:40	06:36 18:52	07:04 18:06	06:38 16:34	07:05 16:31
22	07:06 16:59	06:35 17:34	05:54 18:03	06:07 19:33	05:34 20:01	05:25 20:19	05:42 20:12	06:09 19:38	06:37 18:51	07:05 18:05	06:39 16:33	07:05 16:32
23	07:05 17:00	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:20	05:42 20:11	06:10 19:37	06:38 18:49	07:07 18:04	06:40 16:33	07:06 16:32
24	07:04 17:01	06:33 17:36	05:51 18:05	06:04 19:35	05:32 20:03	05:26 20:20	05:43 20:11	06:11 19:36	06:39 18:47	07:08 18:02	06:41 16:32	07:06 16:33
25	07:04 17:02	06:31 17:37	05:49 18:06	06:03 19:36	05:32 20:04	05:26 20:20	05:44 20:10	06:12 19:34	06:39 18:46	07:09 18:01	06:42 16:32	07:07 16:33
26	07:03 17:03	06:30 17:38	06:48 19:07	06:01 19:37	05:31 20:05	05:26 20:20	05:45 20:09	06:13 19:33	06:40 18:44	07:10 18:00	06:44 16:31	07:07 16:34
27	07:02 17:04	06:29 17:39	06:46 19:08	06:00 19:38	05:30 20:05	05:27 20:20	05:46 20:08	06:13 19:31	06:41 18:43	07:11 17:58	06:45 16:31	07:08 16:34
28	07:02 17:05	06:27 17:41	06:44 19:09	05:59 19:39	05:30 20:06	05:27 20:20	05:47 20:07	06:14 19:30	06:42 18:41	07:12 17:57	06:46 16:30	07:08 16:35
29	07:01 17:07		06:43 19:10	05:58 19:40	05:29 20:07	05:27 20:20	05:47 20:07	06:15 19:28	06:43 18:39	06:13 16:56	06:47 16:30	07:08 16:36
30	07:00 17:08		06:41 19:11	05:56 19:41	05:29 20:08	05:28 20:20	05:48 20:06	06:16 19:27	06:44 18:38	06:14 16:55	06:48 16:30	07:09 16:36
31	06:59 17:09		06:40 19:12		05:28 20:08		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	295
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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


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


SHADOW - Calendar, graphical

Calculation: CANTORATO REAL



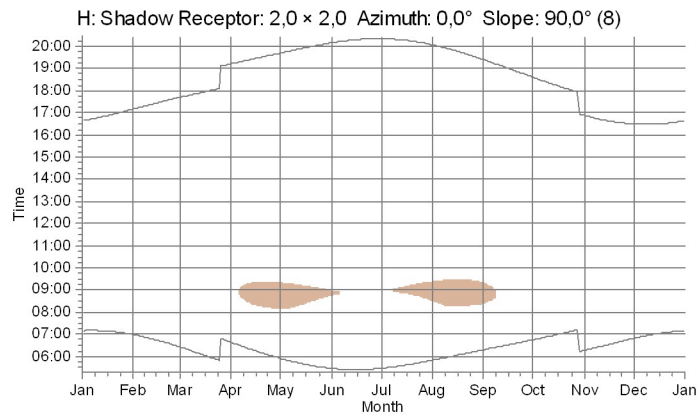
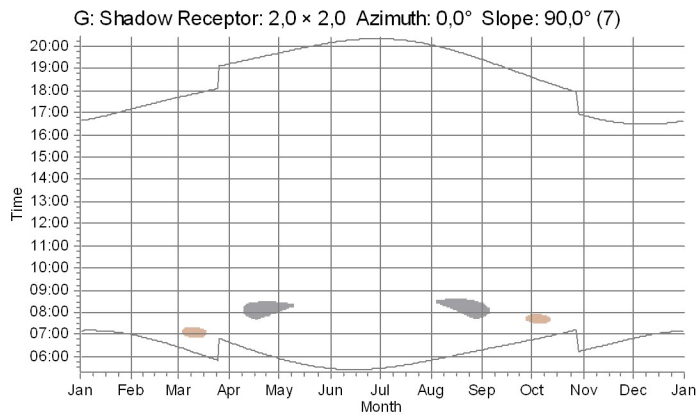
WTGs

 2: Siemens Gamesa SG 6.2-170 6200 170.0 IOI hub: 115,0 m (TOT: 200,0 m) (2)

 3: Siemens Gamesa SG 6.2-170 6200 170.0 IOI hub: 115,0 m (TOT: 200,0 m) (3)

SHADOW - Calendar, graphical

Calculation: CANTORATO REAL



WTGs

16: Siemens Gamesa SG 6.2-170 6200 170.0 I0I hub: 115,0 m (TOT: 200,0 m) (16)

17: Siemens Gamesa SG 6.2-170 6200 170.0 I0I hub: 115,0 m (TOT: 200,0 m) (17)

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 1 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (1)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:41	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:09 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:28 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:39	06:57 17:12	06:23 17:44	06:35 19:15	05:52 19:44	05:27 20:10	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
4	07:10 16:40	06:56 17:13	06:21 17:45	06:33 19:15	05:51 19:45	05:27 20:11	05:29 20:20	05:53 20:01	06:21 19:19	06:48 18:31	06:19 16:49	06:52 16:29
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:16	05:50 19:45	05:26 20:12	05:30 20:20	05:53 20:00	06:21 19:18	06:49 18:30	06:20 16:48	06:52 16:28
6	07:10 16:42	06:54 17:16	06:18 17:47	06:30 19:17	05:49 19:46	05:26 20:12	05:30 20:20	05:54 19:58	06:22 19:16	06:50 18:28	06:21 16:46	06:53 16:28
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	05:48 19:47	05:26 20:13	05:31 20:19	05:55 19:57	06:23 19:14	06:51 18:27	06:23 16:45	06:54 16:28
8	07:10 16:44	06:52 17:18	06:15 17:49	06:27 19:19	05:47 19:48	05:25 20:14	05:32 20:19	05:56 19:56	06:24 19:13	06:51 18:25	06:24 16:44	06:55 16:28
9	07:10 16:45	06:51 17:19	06:14 17:50	06:26 19:20	05:46 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:52 18:24	06:25 16:43	06:56 16:28
10	07:10 16:46	06:50 17:20	06:12 17:51	06:24 19:21	05:45 19:50	05:25 20:15	05:33 20:18	05:58 19:54	06:26 19:10	06:53 18:22	06:26 16:42	06:57 16:28
11	07:09 16:47	06:49 17:21	06:11 17:52	06:23 19:22	05:44 19:51	05:25 20:15	05:33 20:18	05:59 19:53	06:27 19:08	06:54 18:21	06:27 16:42	06:58 16:28
12	07:09 16:48	06:48 17:23	06:09 17:53	06:21 19:23	05:42 19:52	05:25 20:16	05:34 20:18	06:00 19:51	06:28 19:07	06:55 18:19	06:28 16:41	06:59 16:28
13	07:09 16:49	06:46 17:24	06:08 17:54	06:20 19:24	05:42 19:53	05:25 20:16	05:35 20:17	06:01 19:50	06:29 19:05	06:56 18:18	06:29 16:40	06:59 16:29
14	07:09 16:50	06:45 17:25	06:06 17:55	06:18 19:25	05:41 19:54	05:25 20:17	05:35 20:17	06:02 19:49	06:29 19:03	06:57 18:16	06:30 16:39	07:00 16:29
15	07:08 16:51	06:44 17:26	06:05 17:56	06:17 19:26	05:40 19:55	05:24 20:17	05:36 20:16	06:02 19:48	06:30 19:02	06:58 18:15	06:31 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:39 19:56	05:25 20:18	05:37 20:16	06:03 19:46	06:31 19:00	06:59 18:13	06:33 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	05:38 19:57	05:25 20:18	05:38 20:15	06:04 19:45	06:32 18:59	07:00 18:12	06:34 16:37	07:02 16:29
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 19:29	05:37 19:58	05:25 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:36	07:03 16:30
19	07:07 16:55	06:39 17:31	05:58 18:00	06:11 19:30	05:36 19:58	05:25 20:19	05:39 20:14	06:06 19:42	06:34 18:55	07:02 18:09	06:36 16:35	07:04 16:30
20	07:07 16:56	06:38 17:32	05:57 18:01	06:10 19:31	05:35 19:59	05:25 20:19	05:40 20:13	06:07 19:41	06:35 18:54	07:03 18:08	06:37 16:34	07:04 16:31
21	07:06 16:57	06:37 17:33	05:55 18:02	06:08 19:32	05:34 20:00	05:25 20:19	05:41 20:13	06:08 19:40	06:36 18:52	07:04 18:06	06:38 16:34	07:05 16:31
22	07:06 16:58	06:35 17:34	05:54 18:03	06:07 19:33	05:34 20:01	05:25 20:19	05:41 20:12	06:09 19:38	06:37 18:51	07:05 18:05	06:39 16:33	07:05 16:31
23	07:05 17:00	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:20	05:42 20:11	06:10 19:37	06:38 18:49	07:06 18:03	06:40 16:33	07:06 16:32
24	07:04 17:01	06:33 17:36	05:51 18:05	06:04 19:35	05:32 20:03	05:26 20:20	05:43 20:11	06:11 19:36	06:38 18:47	07:07 18:02	06:41 16:32	07:06 16:32
25	07:04 17:02	06:31 17:37	05:49 18:06	06:03 19:36	05:32 20:04	05:26 20:20	05:44 20:10	06:12 19:34	06:39 18:46	07:09 18:01	06:42 16:32	07:07 16:33
26	07:03 17:03	06:30 17:38	06:47 19:07	06:01 19:37	05:31 20:04	05:26 20:20	05:45 20:09	06:12 19:33	06:40 18:44	07:10 17:59	06:43 16:31	07:07 16:34
27	07:02 17:04	06:28 17:39	06:46 19:08	06:00 19:38	05:30 20:05	05:26 20:20	05:46 20:08	06:13 19:31	06:41 18:42	07:11 17:58	06:45 16:31	07:08 16:34
28	07:02 17:05	06:27 17:40	06:44 19:09	05:59 19:39	05:30 20:06	05:27 20:20	05:46 20:07	06:14 19:30	06:42 18:41	07:12 17:57	06:46 16:30	07:08 16:35
29	07:01 17:06		06:43 19:10	05:57 19:40	05:29 20:07	05:27 20:20	05:47 20:06	06:15 19:28	06:43 18:39	06:13 16:56	06:47 16:30	07:08 16:35
30	07:00 17:08		06:41 19:11	05:56 19:41	05:29 20:08	05:28 20:20	05:48 20:06	06:16 19:27	06:44 18:38	06:14 16:54	06:48 16:30	07:09 16:36
31	06:59 17:09		06:40 19:12		05:28 20:08		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 2 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI hub: 115,0 m (TOT: 200,0 m) (2)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	07:17-07:35/18 19:42	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52
2	07:09 16:39	06:58 17:11	06:24 17:43	06:37 19:14	07:19-07:35/16 19:43	05:54 19:43	05:27 20:10	05:28 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	07:21-07:34/13 19:44	05:52 19:44	05:27 20:10	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50
4	07:10 16:40	06:56 17:13	06:21 17:45	06:33 19:15	07:23-07:34/11 19:45	05:51 19:45	05:27 20:11	05:29 20:20	05:53 20:01	06:21 19:19	06:48 18:31	06:19 16:49
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:16	07:24-07:32/8 19:45	05:50 19:45	05:26 20:12	05:30 20:20	05:53 20:00	06:21 19:18	06:49 18:30	06:20 16:48
6	07:10 16:42	06:54 17:16	06:18 17:47	06:30 19:17	07:25-07:31/6 19:46	05:49 19:46	05:26 20:12	05:30 20:20	05:54 19:58	06:22 19:16	06:50 18:28	06:21 16:47
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	07:27-07:29/2 19:47	05:48 19:47	05:26 20:13	05:31 20:19	05:55 19:57	06:23 19:14	07:22-07:25/3 18:27	06:23 16:45
8	07:10 16:44	06:52 17:18	06:15 17:49	06:27 19:19	06:29 19:48	05:47 19:48	05:25 20:14	05:32 20:19	05:56 19:56	06:24 19:13	07:20-07:27/7 18:25	06:24 16:44
9	07:10 16:45	06:51 17:19	06:14 17:50	06:26 19:20	06:29 19:49	05:46 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	07:18-07:27/9 18:24	06:25 16:43
10	07:10 16:46	06:50 17:20	06:12 17:51	06:24 19:21	06:29 19:50	05:45 19:50	05:25 20:15	05:33 20:18	05:58 19:54	06:26 19:10	07:16-07:28/12 18:22	06:26 16:42
11	07:09 16:47	06:49 17:22	06:11 17:52	06:23 19:22	06:29 19:51	05:44 19:51	05:25 20:15	05:33 20:18	05:59 19:53	06:27 19:08	07:13-07:28/15 18:21	06:27 16:42
12	07:09 16:48	06:48 17:23	06:09 17:53	06:21 19:23	06:29 19:52	05:43 19:52	05:25 20:16	05:34 20:18	06:00 19:52	06:28 19:07	07:11-07:28/17 18:19	06:28 16:41
13	07:09 16:49	06:46 17:24	06:08 17:54	06:20 19:24	06:29 19:53	05:42 19:53	05:25 20:16	05:35 20:17	06:01 19:50	06:29 19:05	07:08-07:26/18 18:18	06:29 16:40
14	07:09 16:50	06:45 17:25	06:06 17:55	06:18 19:25	06:29 19:54	05:41 19:54	05:25 20:17	05:35 20:17	06:02 19:49	06:30 19:03	07:07-07:26/19 18:16	06:30 16:39
15	07:08 16:51	06:44 17:26	06:05 17:56	06:17 19:26	06:29 19:55	05:40 19:55	05:25 20:17	05:36 20:16	06:02 19:48	06:30 19:02	07:07-07:25/18 18:15	06:31 16:38
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	06:29 19:56	05:39 19:56	05:25 20:18	05:37 20:16	06:03 19:46	06:31 19:00	07:08-07:24/16 18:13	06:33 16:37
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	06:29 19:57	05:38 19:57	05:25 20:18	05:38 20:15	06:04 19:45	06:32 18:59	07:09-07:22/13 18:12	06:34 16:37
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 19:29	06:29 19:58	05:37 19:58	05:25 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:12-07:19/7 18:10	06:35 16:36
19	07:07 16:55	06:39 17:31	05:59 18:00	06:11 19:30	06:29 19:59	05:36 19:59	05:25 20:19	05:39 20:14	06:06 19:42	06:34 18:55	07:02-07:26/19 18:09	06:36 16:35
20	07:07 16:56	06:38 17:32	05:57 18:01	06:10 19:31	06:29 19:59	05:35 19:59	05:25 20:19	05:40 20:14	06:07 19:41	06:35 18:54	07:03-07:27/18 18:08	06:37 16:34
21	07:06 16:57	06:37 17:33	05:55 18:02	06:08 19:32	06:29 20:00	05:35 20:00	05:25 20:19	05:41 20:13	06:08 19:40	06:36 18:52	07:04-07:28/17 18:06	06:38 16:34
22	07:06 16:58	06:35 17:34	05:54 18:03	06:07 19:33	06:29 20:01	05:34 20:01	05:25 20:19	05:41 20:12	06:09 19:38	06:37 18:51	07:05-07:29/16 18:05	06:39 16:33
23	07:05 17:00	06:34 17:35	05:52 18:04	06:05 19:34	06:29 20:02	05:33 20:02	05:25 20:20	05:42 20:11	06:10 19:37	06:38 18:49	07:06-07:30/15 18:03	06:40 16:33
24	07:04 17:01	06:33 17:36	05:51 18:05	06:04 19:35	06:29 20:03	05:32 20:03	05:26 20:20	05:43 20:11	06:11 19:36	06:39 18:47	07:08-07:32/14 18:02	06:41 16:32
25	07:04 17:02	06:31 17:37	05:49 18:06	06:03 19:36	06:29 20:04	05:32 20:04	05:26 20:20	05:44 20:10	06:12 19:34	06:39 18:46	07:09-07:33/13 18:01	06:42 16:32
26	07:03 17:03	06:30 17:38	06:48 19:07	06:01 19:37	06:29 20:04	05:31 20:04	05:26 20:20	05:45 20:09	06:12 19:33	06:40 18:44	07:10-07:34/12 17:59	06:43 16:31
27	07:02 17:04	06:29 17:39	06:46 19:08	07:22-07:31/9 19:37	06:00 19:38	05:30 20:05	05:27 20:20	05:46 20:08	06:13 19:31	06:41 18:43	07:11-07:35/11 17:58	06:45 16:31
28	07:02 17:05	06:27 17:40	06:44 19:09	07:20-07:34/14 19:39	05:59 19:39	05:30 20:06	05:27 20:20	05:46 20:07	06:14 19:30	06:42 18:41	07:12-07:36/10 17:57	06:46 16:30
29	07:01 17:06	06:26 17:41	06:43 19:10	07:18-07:34/16 19:40	05:57 19:40	05:29 20:07	05:27 20:20	05:47 20:07	06:15 19:28	06:43 18:39	07:13-07:37/9 16:56	06:47 16:30
30	07:00 17:08	06:25 17:42	06:42 19:11	07:16-07:34/18 19:41	05:56 20:08	05:29 20:20	05:28 20:06	05:48 20:06	06:16 19:27	06:44 18:38	07:14-07:38/8 16:54	06:48 16:30
31	06:59 17:09	06:40 17:43	07:16-07:35/19 19:12	05:55 19:41	05:28 20:08	05:28 20:08	05:49 20:05	06:17 20:05	06:17 19:25	06:44 19:25	07:15-07:39/7 16:53	07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	76	74	0	0	0	0	154	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: CANTORATO REAL WTG: 3 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI hub: 115,0 m (TOT: 200,0 m) (3)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June
1	07:09 16:38	06:59 17:10	06:26 07:57-08:42/45 17:42	06:38 19:13	05:55 08:11-09:30/79 19:42	05:28 08:49-09:20/31 20:09
2	07:09 16:39	06:58 17:11	06:24 07:56-08:43/47 17:43	06:37 19:14	05:54 08:11-09:30/79 19:43	05:27 08:50-09:19/29 20:10
3	07:10 16:40	06:57 17:12	06:23 07:56-08:43/47 17:44	06:35 19:15	05:53 08:09-09:29/80 19:44	05:27 08:51-09:19/28 20:11
4	07:10 16:40	06:56 17:13	06:21 07:55-08:43/48 17:45	06:33 19:16	05:51 08:10-09:29/79 19:45	05:27 08:52-09:19/27 20:11
5	07:10 16:41	06:55 17:15	06:20 07:55-08:44/49 17:46	06:32 19:17	05:50 08:12-09:29/77 19:46	05:26 08:54-09:20/26 20:12
6	07:10 16:42	06:54 17:16	06:18 07:54-08:43/49 17:47	06:30 19:17	05:49 08:13-09:29/76 19:47	05:26 08:54-09:19/25 20:13
7	07:10 16:43	06:53 17:17	06:17 07:54-08:43/49 17:48	06:29 19:18	05:48 08:15-09:28/73 19:47	05:26 08:55-09:19/24 20:13
8	07:10 16:44	06:52 17:18	06:15 07:53-08:42/49 17:49	06:27 19:19	05:47 08:16-09:28/72 19:48	05:25 08:56-09:19/23 20:14
9	07:10 16:45	06:51 17:19	06:14 07:52-08:42/50 17:50	06:26 19:20	05:46 08:18-09:28/70 19:49	05:25 08:57-09:19/22 20:14
10	07:10 16:46	06:50 17:20	06:12 07:52-08:41/49 17:51	06:24 08:48-09:07/19 19:21	05:45 08:19-09:28/69 19:50	05:25 08:58-09:19/21 20:15
11	07:09 16:47	06:49 17:22	06:11 07:52-08:40/48 17:52	06:23 08:43-09:11/28 19:22	05:44 08:21-09:27/66 19:51	05:25 08:58-09:18/20 20:15
12	07:09 16:48	06:48 17:23	06:09 07:52-08:40/48 17:53	06:21 08:39-09:14/35 19:23	05:43 08:22-09:27/65 19:52	05:25 08:58-09:18/20 20:16
13	07:09 16:49	06:47 17:24	06:08 07:52-08:39/47 17:54	06:20 08:37-09:16/39 19:24	05:42 08:24-09:26/62 19:53	05:25 08:59-09:18/19 20:16
14	07:09 16:50	06:45 17:25	06:06 07:53-08:38/45 17:55	06:18 08:34-09:18/44 19:25	05:41 08:25-09:26/61 19:54	05:25 09:00-09:18/18 20:17
15	07:09 16:51	06:44 17:26	06:05 07:53-08:37/44 17:56	06:17 08:32-09:19/47 19:26	05:40 08:27-09:25/58 19:55	05:25 09:00-09:18/18 20:17
16	07:08 16:52	06:43 17:27	06:03 07:54-08:36/42 17:57	06:15 08:30-09:21/51 19:27	05:39 08:29-09:26/57 19:56	05:25 09:01-09:18/17 20:18
17	07:08 16:53	06:42 17:28	06:02 07:54-08:34/40 17:58	06:14 08:28-09:21/53 19:28	05:38 08:30-09:25/55 19:57	05:25 09:01-09:18/17 20:18
18	07:07 16:54	06:41 17:30	06:00 07:54-08:32/38 17:59	06:12 08:27-09:23/56 19:29	05:37 08:31-09:25/54 19:58	05:25 09:02-09:19/17 20:18
19	07:07 16:55	06:39 17:31	05:59 07:56-08:31/35 18:00	06:11 08:25-09:24/59 19:30	05:36 08:32-09:24/52 19:59	05:25 09:03-09:19/16 20:19
20	07:07 16:56	06:38 08:17-08:25/8 17:32	05:57 07:57-08:28/31 18:01	06:10 08:24-09:26/62 19:31	05:35 08:34-09:23/49 19:59	05:25 09:03-09:19/16 20:19
21	07:06 16:57	06:37 08:12-08:31/19 17:33	05:55 07:59-08:26/27 18:02	06:08 08:23-09:27/64 19:32	05:35 08:36-09:24/48 20:00	05:25 09:03-09:19/16 20:19
22	07:06 16:59	06:35 08:08-08:33/25 17:34	05:54 08:00-08:23/23 18:03	06:07 08:21-09:27/66 19:33	05:34 08:37-09:23/46 20:01	05:25 09:03-09:19/16 20:20
23	07:05 17:00	06:34 08:06-08:36/30 17:35	05:52 08:03-08:18/15 18:04	06:05 08:20-09:28/68 19:34	05:33 08:38-09:22/44 20:02	05:25 09:03-09:19/16 20:20
24	07:04 17:01	06:33 08:04-08:38/34 17:36	05:51 18:05 18:05	06:04 08:19-09:29/70 19:35	05:32 08:40-09:23/43 20:03	05:26 09:04-09:20/16 20:20
25	07:04 17:02	06:31 08:02-08:39/37 17:37	05:49 18:06 18:06	06:03 08:17-09:29/72 19:36	05:32 08:41-09:22/41 20:04	05:26 09:04-09:20/16 20:20
26	07:03 17:03	06:30 08:01-08:40/39 17:38	06:48 19:07 19:07	06:01 08:16-09:29/73 19:37	05:31 08:42-09:22/40 20:05	05:26 09:03-09:20/17 20:20
27	07:02 17:04	06:29 07:59-08:40/41 17:39	06:46 19:08 19:08	06:00 08:15-09:30/75 19:38	05:30 08:43-09:21/38 20:05	05:27 09:04-09:21/17 20:20
28	07:02 17:05	06:27 07:58-08:42/44 17:40	06:44 19:09 19:09	05:59 08:13-09:29/76 19:39	05:30 08:45-09:22/37 20:06	05:27 09:04-09:21/17 20:20
29	07:01 17:07	06:26 19:10 19:10	06:43 19:10 19:10	05:57 08:13-09:29/76 19:40	05:29 08:46-09:21/35 20:07	05:27 09:03-09:21/18 20:20
30	07:00 17:08	06:25 19:11 19:11	06:41 19:11 19:11	05:56 08:12-09:30/78 19:41	05:29 08:47-09:21/34 20:08	05:28 09:04-09:22/18 20:20
31	06:59 17:09	06:24 19:12 19:12	06:40 19:12 19:12	05:55 19:12 19:12	05:28 08:48-09:20/32 20:08	05:28 08:48-09:20/32 20:08
Potential sun hours	303	299	369	395	442	445
Sum of minutes with flicker	0	277	965	1211	1771	601

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: CANTORATO REAL WTG: 3 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI hub: 115,0 m (TOT: 200,0 m) (3)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	July	August	September	October	November	December
1	05:28 09:03-09:22/19 20:20	05:50 08:35-09:37/62 20:04	06:18 08:37-09:15/38 19:24	06:45 08:32-09:17/45 18:36	06:16 16:52	06:49 16:29
2	05:29 09:03-09:23/20 20:20	05:51 08:33-09:37/64 20:03	06:19 08:40-09:12/32 19:22	06:46 08:31-09:18/47 18:35	06:17 16:51	06:50 16:29
3	05:29 09:03-09:23/20 20:20	05:52 08:31-09:37/66 20:02	06:20 08:44-09:08/24 19:21	06:47 08:30-09:18/48 18:33	06:18 16:50	06:51 16:29
4	05:30 09:03-09:24/21 20:20	05:53 08:30-09:38/68 20:01	06:21 08:50-09:02/12 19:19	06:48 08:30-09:18/48 18:31	06:19 16:49	06:52 16:29
5	05:30 09:02-09:24/22 20:20	05:54 08:28-09:38/70 20:00	06:22 06:22 19:18	06:49 08:29-09:18/49 18:30	06:20 16:48	06:53 16:29
6	05:31 09:02-09:25/23 20:20	05:54 08:27-09:38/71 19:59	06:22 06:22 19:16	06:50 08:29-09:19/50 18:28	06:22 16:47	06:53 16:28
7	05:31 09:01-09:25/24 20:19	05:55 08:25-09:39/74 19:57	06:23 06:23 19:15	06:51 08:29-09:18/49 18:27	06:23 16:46	06:54 16:28
8	05:32 09:01-09:26/25 20:19	05:56 08:23-09:38/75 19:56	06:24 06:24 19:13	06:52 08:29-09:18/49 18:25	06:24 16:45	06:55 16:28
9	05:32 08:59-09:26/27 20:19	05:57 08:21-09:38/77 19:55	06:25 06:25 19:11	06:53 08:29-09:18/49 18:24	06:25 16:44	06:56 16:28
10	05:33 08:59-09:26/27 20:19	05:58 08:19-09:38/79 19:54	06:26 06:26 19:10	06:53 08:29-09:18/49 18:22	06:26 16:43	06:57 16:28
11	05:34 08:59-09:27/28 20:18	05:59 08:18-09:38/80 19:53	06:27 06:27 19:08	06:54 08:29-09:17/48 18:21	06:27 16:42	06:58 16:28
12	05:34 08:58-09:27/29 20:18	06:00 08:19-09:38/79 19:52	06:28 06:28 19:07	06:55 08:29-09:17/48 18:19	06:28 16:41	06:59 16:28
13	05:35 08:57-09:28/31 20:17	06:01 08:20-09:38/78 19:50	06:29 06:29 19:05	06:56 08:29-09:16/47 18:18	06:29 16:40	06:59 16:29
14	05:36 08:57-09:29/32 20:17	06:02 08:20-09:38/78 19:49	06:30 06:30 19:03	06:57 08:30-09:15/45 18:16	06:30 16:39	07:00 16:29
15	05:36 08:55-09:29/34 20:16	06:03 08:21-09:38/77 19:48	06:30 06:30 19:02	06:58 08:30-09:14/44 18:15	06:32 16:38	07:01 16:29
16	05:37 08:55-09:30/35 20:16	06:03 08:20-09:36/76 19:47	06:31 06:31 19:00	06:59 08:31-09:13/42 18:13	06:33 16:37	07:02 16:29
17	05:38 08:54-09:31/37 20:15	06:04 08:21-09:36/75 19:45	06:32 06:32 18:59	07:00 08:32-09:11/39 18:12	06:34 16:37	07:02 16:30
18	05:38 08:52-09:30/38 20:15	06:05 08:22-09:36/74 19:44	06:33 06:33 18:57	07:01 08:33-09:10/37 18:10	06:35 16:36	07:03 16:30
19	05:39 08:51-09:31/40 20:14	06:06 08:23-09:35/72 19:43	06:34 06:34 18:55	07:02 08:34-09:08/34 18:09	06:36 16:35	07:04 16:30
20	05:40 08:51-09:32/41 20:14	06:07 08:24-09:34/70 19:41	06:35 06:35 18:54	07:03 08:37-09:07/30 18:08	06:37 16:35	07:04 16:31
21	05:41 08:50-09:33/43 20:13	06:08 08:25-09:34/69 19:40	06:36 08:55-08:58/3 18:52	07:04 08:39-09:05/26 18:06	06:38 16:34	07:05 16:31
22	05:42 08:48-09:32/44 20:12	06:09 08:26-09:33/67 19:38	06:37 08:48-09:05/17 18:51	07:05 08:42-09:02/20 18:05	06:39 16:33	07:05 16:32
23	05:42 08:47-09:33/46 20:11	06:10 08:26-09:31/65 19:37	06:38 08:45-09:08/23 18:49	07:07 08:46-08:57/11 18:04	06:40 16:33	07:06 16:32
24	05:43 08:46-09:34/48 20:11	06:11 08:27-09:30/63 19:36	06:39 08:42-09:10/28 18:47	07:08 07:08 18:02	06:41 16:32	07:06 16:33
25	05:44 08:45-09:34/49 20:10	06:12 08:28-09:28/60 19:34	06:39 08:40-09:12/32 18:46	07:09 07:09 18:01	06:42 16:32	07:07 16:33
26	05:45 08:44-09:35/51 20:09	06:13 08:29-09:27/58 19:33	06:40 08:38-09:14/36 18:44	07:10 07:10 18:00	06:44 16:31	07:07 16:34
27	05:46 08:41-09:35/54 20:08	06:13 08:30-09:25/55 19:31	06:41 08:37-09:15/38 18:43	07:11 07:11 17:58	06:45 16:31	07:08 16:34
28	05:47 08:40-09:35/55 20:07	06:14 08:31-09:23/52 19:30	06:42 08:36-09:16/40 18:41	07:12 07:12 17:57	06:46 16:30	07:08 16:35
29	05:47 08:39-09:36/57 20:07	06:15 08:33-09:22/49 19:28	06:43 08:35-09:17/42 18:39	06:13 06:13 16:56	06:47 16:30	07:08 16:36
30	05:48 08:38-09:36/58 20:06	06:16 08:33-09:19/46 19:27	06:44 08:33-09:17/44 18:38	06:14 06:14 16:55	06:48 16:30	07:09 16:36
31	05:49 08:36-09:37/61 20:05	06:17 08:35-09:17/42 19:25		06:15 06:15 16:53	07:09 16:37	
Potential sun hours	453	425	375	348	303	294
Sum of minutes with flicker	1139	2091	409	954	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: CANTORATO REAL WTG: 4 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (4)

Assumptions for shadow calculations

Reference year for calendar

2023

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:09 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:29 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	05:53 19:44	05:27 20:11	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
4	07:10 16:40	06:56 17:13	06:21 17:45	06:33 19:16	05:51 19:45	05:27 20:11	05:29 20:20	05:53 20:01	06:21 19:19	06:48 18:31	06:19 16:49	06:52 16:29
5	07:10 16:41	06:55 17:15	06:20 17:46	06:32 19:17	05:50 19:46	05:26 20:12	05:30 20:20	05:53 20:00	06:22 19:18	06:49 18:30	06:20 16:48	06:53 16:28
6	07:10 16:42	06:54 17:16	06:18 17:47	06:30 19:17	05:49 19:47	05:26 20:13	05:31 20:20	05:54 19:59	06:22 19:16	06:50 18:28	06:22 16:47	06:54 16:28
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	05:48 19:47	05:26 20:13	05:31 20:19	05:55 19:57	06:23 19:15	06:51 18:27	06:23 16:46	06:54 16:28
8	07:10 16:44	06:52 17:18	06:16 17:49	06:27 19:19	05:47 19:48	05:25 20:14	05:32 20:19	05:56 19:56	06:24 19:13	06:52 18:25	06:24 16:44	06:55 16:28
9	07:10 16:45	06:51 17:19	06:14 17:50	06:26 19:20	05:46 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:53 18:24	06:25 16:44	06:56 16:28
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11	07:09 16:47	06:49 17:22	06:11 17:52	06:23 19:22	05:44 19:51	05:25 20:15	05:33 20:18	05:59 19:53	06:27 19:08	06:54 18:21	06:27 16:42	06:58 16:28
12	07:09 16:48	06:48 17:23	06:09 17:53	06:21 19:23	05:43 19:52	05:25 20:16	05:34 20:18	06:00 19:52	06:28 19:07	06:55 18:19	06:28 16:41	06:59 16:28
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15	07:09 16:51	06:44 17:26	06:05 17:56	06:17 19:26	05:40 19:55	05:25 20:17	05:36 20:16	06:03 19:48	06:30 19:02	06:58 18:15	06:32 16:38	07:01 16:29
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20	07:07 16:56	06:38 17:32	05:57 18:01	06:10 19:31	05:35 19:59	05:25 20:19	05:40 20:14	06:07 19:41	06:35 18:54	07:03 18:08	06:37 16:34	07:04 16:31
21	07:06 16:57	06:37 17:33	05:55 18:02	06:08 19:32	05:35 20:00	05:25 20:19	05:41 20:13	06:08 19:40	06:36 18:52	07:04 18:06	06:38 16:34	07:05 16:31
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31	06:59 17:09		06:40 19:12		05:28 20:08		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 5 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (5)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
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31	06:59 17:09		06:40 19:12		05:28 20:08		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 6 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI hub: 115,0 m (TOT: 200,0 m) (6)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
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15	07:09 16:51	06:44 17:26	06:05 17:56	06:17 19:26	05:40 19:55	05:25 20:17	05:36 20:17	06:03 19:48	06:30 19:02	06:58 18:15	06:32 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:39 19:56	05:25 20:18	05:37 20:16	06:03 19:47	06:31 19:00	06:59 18:13	06:33 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:02 17:58	06:14 19:28	05:38 19:57	05:25 20:18	05:38 20:15	06:04 19:45	06:32 18:59	07:00 18:12	06:34 16:37	07:03 16:30
18	07:08 16:54	06:41 17:30	06:00 17:59	06:12 19:29	05:37 19:58	05:25 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:36	07:03 16:30
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31	07:00 17:09		06:40 19:12		05:28 20:09		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 7 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (7)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
2	07:10 16:39	06:58 17:11	06:24 17:43	06:37 19:14	05:54 19:43	05:27 20:10	05:28 20:20	05:51 20:03	06:19 19:22	06:46 18:35	06:17 16:51	06:50 16:29
3	07:10 16:40	06:57 17:12	06:23 17:44	06:35 19:15	05:53 19:44	05:27 20:11	05:29 20:20	05:52 20:02	06:20 19:21	06:47 18:33	06:18 16:50	06:51 16:29
4	07:10 16:40	06:56 17:13	06:21 17:45	06:33 19:16	05:51 19:45	05:27 20:11	05:29 20:20	05:53 20:01	06:21 19:19	06:48 18:31	06:19 16:49	06:52 16:29
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Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 8 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (8)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
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	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 9 - Siemens Gamesa SG 6.2-170 6200 170.0 !OI! hub: 115,0 m (TOT: 200,0 m) (9)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
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Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 10 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (10)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
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Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 11 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (11)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:59 17:10	06:26 17:42	06:38 19:13	05:55 19:42	05:28 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:49 16:29
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27	07:03 17:04	06:29 17:40	06:46 19:08	06:00 19:38	05:30 20:06	05:27 20:20	05:46 20:08	06:14 19:31	06:41 18:43	07:11 17:58	06:45 16:31	07:08 16:34
28	07:02 17:05	06:27 17:41	06:45 19:09	05:59 19:39	05:30 20:06	05:27 20:20	05:47 20:08	06:14 19:30	06:42 18:41	07:12 17:57	06:46 16:30	07:08 16:35
29	07:01 17:07		06:43 19:10	05:58 19:40	05:29 20:07	05:27 20:21	05:47 20:07	06:15 19:28	06:43 18:39	06:13 16:56	06:47 16:30	07:09 16:36
30	07:00 17:08		06:41 19:11	05:56 19:41	05:29 20:08	05:28 20:21	05:48 20:06	06:16 19:27	06:44 18:38	06:14 16:55	06:48 16:30	07:09 16:36
31	07:00 17:09		06:40 19:12		05:28 20:09		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	303	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 12 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (12)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:37	06:58 17:09	06:25 17:41	06:38 19:12	05:54 19:41	05:27 20:09	05:28 20:20	05:49 20:03	06:17 19:23	06:45 18:36	06:16 16:52	06:48 16:29
2	07:09 16:38	06:57 17:11	06:24 17:42	06:36 19:13	05:53 19:42	05:27 20:10	05:28 20:20	05:50 20:02	06:18 19:22	06:46 18:34	06:17 16:50	06:49 16:29
3	07:09 16:39	06:57 17:12	06:23 17:43	06:35 19:14	05:52 19:43	05:26 20:10	05:28 20:20	05:51 20:01	06:19 19:20	06:46 18:33	06:18 16:49	06:50 16:28
4	07:09 16:40	06:56 17:13	06:21 17:44	06:33 19:15	05:51 19:44	05:26 20:11	05:29 20:20	05:52 20:00	06:20 19:19	06:47 18:31	06:19 16:48	06:51 16:28
5	07:10 16:41	06:55 17:14	06:20 17:45	06:31 19:16	05:50 19:45	05:26 20:12	05:29 20:20	05:53 19:59	06:21 19:17	06:48 18:29	06:20 16:47	06:52 16:28
6	07:10 16:42	06:54 17:15	06:18 17:46	06:30 19:17	05:49 19:46	05:25 20:12	05:30 20:19	05:54 19:58	06:22 19:16	06:49 18:28	06:21 16:46	06:53 16:28
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9	07:09 16:44	06:51 17:19	06:14 17:49	06:25 19:20	05:45 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:52 18:23	06:25 16:43	06:56 16:28
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31	06:59 17:08		06:39 19:11		05:28 20:08		05:49 20:04	06:17 19:25		06:15 16:53		07:09 16:36
Potential sun hours	302	299	369	395	442	446	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 13 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (13)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	05:27 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:48 16:29
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31	06:59 17:08		06:39 19:11		05:28 20:08		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	302	299	369	395	442	446	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 14 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (14)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	05:27 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:48 16:29
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31	06:59 17:08		06:39 19:11		05:28 20:08		05:49 20:04	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	302	299	369	395	442	446	453	425	375	348	303	294
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/
	Sun set (hh:mm)	First time (hh:mm) with flicker-	Last time (hh:mm) with flicker/
		Minutes with flicker	Minutes with flicker

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 15 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (15)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	05:27 20:09	05:28 20:20	05:50 20:03	06:18 19:24	06:45 18:36	06:16 16:52	06:48 16:29
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Potential sun hours	302	299	369	395	442	445	453	425	375	348	303	294
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/
	Sun set (hh:mm)	First time (hh:mm) with flicker-	Last time (hh:mm) with flicker/
		Minutes with flicker	Minutes with flicker

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 16 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (16)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:58 17:10	06:25 17:41	06:38 19:12	05:55 08:05-08:25/20 19:41	05:27 20:09	05:28 20:20	05:50 20:03	06:18 07:51-08:21/30 19:24	06:45 18:36	06:16 16:52	06:48 16:29
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29	07:01 17:06		06:43 19:09	05:57 08:02-08:26/24 19:39	05:29 20:07	05:27 20:20	05:47 20:06	06:15 07:46-08:26/40 19:28	06:43 18:39	07:12 16:55	06:46 16:30	07:08 16:35
30	07:00 17:07		06:41 19:10	05:56 08:04-08:26/22 19:40	05:28 20:07	05:27 20:20	05:48 20:05	06:16 07:48-08:25/37 19:27	06:44 18:37	07:13 16:54	06:47 16:29	07:08 16:36
31	06:59 17:08		06:39 19:11		05:28 20:08		05:49 20:04	06:17 07:49-08:23/34 19:25		06:15 16:53	06:48 16:37	07:09 16:37
Potential sun hours	302	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	690	103	0	0	719	87	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: CANTORATO REAL WTG: 17 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (17)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June
1	07:09 16:38	06:58 17:10	06:25 17:41	06:38 19:12	05:55 08:12-09:18/66 19:41	05:27 08:48-08:56/8 20:09
2	07:09 16:38	06:57 17:11	06:24 17:42	06:36 19:13	05:53 08:12-09:17/65 19:42	05:27 08:50-08:56/6 20:10
3	07:09 16:39	06:57 17:12	06:23 17:43	06:35 19:14	05:52 08:12-09:17/65 19:43	05:27 08:51-08:55/4 20:10
4	07:09 16:40	06:56 17:13	06:21 07:03-07:09/6 17:44	06:33 19:15	05:51 08:12-09:17/65 19:44	05:26 08:51-08:53/2 20:11
5	07:09 16:41	06:55 17:14	06:20 06:59-07:12/13 17:45	06:32 19:16	05:50 08:12-09:16/64 19:45	05:26 08:52-08:53/1 20:12
6	07:09 16:42	06:54 17:15	06:18 06:58-07:14/16 17:46	06:30 08:52-08:58/6 19:17	05:49 08:13-09:16/63 19:46	05:26 20:12
7	07:09 16:43	06:53 17:17	06:17 06:56-07:14/18 17:47	06:28 08:43-09:05/22 19:18	05:47 08:15-09:15/60 19:47	05:25 20:13
8	07:09 16:43	06:52 17:18	06:15 06:55-07:15/20 17:48	06:27 08:40-09:09/29 19:19	05:46 08:16-09:15/59 19:48	05:25 20:13
9	07:09 16:44	06:51 17:19	06:14 06:54-07:15/21 17:50	06:25 08:36-09:11/35 19:20	05:45 08:18-09:14/56 19:49	05:25 20:14
10	07:09 16:45	06:50 17:20	06:12 06:54-07:16/22 17:51	06:24 08:33-09:14/41 19:21	05:44 08:19-09:13/54 19:50	05:25 20:15
11	07:09 16:46	06:48 17:21	06:11 06:53-07:15/22 17:52	06:22 08:31-09:15/44 19:22	05:43 08:21-09:13/52 19:51	05:24 20:15
12	07:09 16:47	06:47 17:22	06:09 06:53-07:14/21 17:53	06:21 08:29-09:17/48 19:23	05:42 08:22-09:12/50 19:52	05:24 20:16
13	07:09 16:48	06:46 17:23	06:08 06:54-07:14/20 17:54	06:19 08:27-09:17/50 19:24	05:41 08:24-09:11/47 19:53	05:24 20:16
14	07:08 16:49	06:45 17:25	06:06 06:54-07:12/18 17:55	06:18 08:25-09:19/54 19:25	05:40 08:25-09:10/45 19:54	05:24 20:16
15	07:08 16:50	06:44 17:26	06:04 06:55-07:11/16 17:56	06:16 08:24-09:20/56 19:26	05:39 08:26-09:09/43 19:55	05:24 20:17
16	07:08 16:51	06:43 17:27	06:03 06:56-07:09/13 17:57	06:15 08:22-09:20/58 19:27	05:38 08:28-09:09/41 19:56	05:24 20:17
17	07:08 16:53	06:41 17:28	06:01 06:59-07:07/8 17:58	06:13 08:21-09:21/60 19:28	05:37 08:29-09:08/39 19:56	05:24 20:18
18	07:07 16:54	06:40 17:29	06:00 06:40-07:17/59 17:59	06:12 08:20-09:20/60 19:29	05:37 08:31-09:08/37 19:57	05:24 20:18
19	07:07 16:55	06:39 17:30	05:58 06:40-07:18/58 18:00	06:11 08:19-09:21/62 19:30	05:36 08:32-09:07/35 19:58	05:24 20:18
20	07:06 16:56	06:38 17:31	05:57 06:40-07:18/57 18:01	06:09 08:19-09:21/62 19:31	05:35 08:34-09:06/32 19:59	05:24 20:19
21	07:06 16:57	06:36 17:32	05:55 06:40-07:18/56 18:02	06:08 08:17-09:21/64 19:32	05:34 08:35-09:05/30 20:00	05:25 20:19
22	07:05 16:58	06:35 17:34	05:53 06:40-07:18/55 18:03	06:06 08:17-09:21/64 19:33	05:33 08:37-09:05/28 20:01	05:25 20:19
23	07:05 16:59	06:34 17:35	05:52 06:40-07:18/54 18:04	06:05 08:15-09:20/65 19:34	05:33 08:38-09:04/26 20:02	05:25 20:19
24	07:04 17:00	06:32 17:36	05:50 06:40-07:18/53 18:05	06:04 08:15-09:21/66 19:35	05:32 08:39-09:02/23 20:03	05:25 20:20
25	07:03 17:01	06:31 17:37	05:49 06:40-07:18/52 18:05	06:02 08:15-09:21/66 19:36	05:31 08:40-09:02/22 20:03	05:25 20:20
26	07:03 17:03	06:30 17:38	06:47 06:40-07:18/51 19:06	06:01 08:14-09:21/67 19:36	05:31 08:41-09:01/20 20:04	05:26 20:20
27	07:02 17:04	06:28 17:39	06:46 06:40-07:18/50 19:07	06:00 08:13-09:20/67 19:37	05:30 08:43-09:01/18 20:05	05:26 20:20
28	07:01 17:05	06:27 17:40	06:44 06:40-07:18/49 19:08	05:58 08:13-09:19/66 19:38	05:29 08:44-09:00/16 20:06	05:26 20:20
29	07:01 17:06		06:42 06:40-07:18/48 19:09	05:57 08:13-09:19/66 19:39	05:29 08:45-08:59/14 20:07	05:27 20:20
30	07:00 17:07		06:41 06:40-07:18/47 19:10	05:56 08:13-09:19/66 19:40	05:28 08:46-08:58/12 20:07	05:27 20:20
31	06:59 17:08		06:39 06:40-07:18/46 19:11		05:28 08:48-08:57/9 20:08	
Potential sun hours	303	299	369	395	442	445
Sum of minutes with flicker	0	0	234	1344	1256	21

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: CANTORATO REAL WTG: 17 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (17)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	July	August	September	October	November	December
1	05:28 20:20	05:50 08:34-09:21/47 20:03	06:18 08:28-09:17/49 19:23	06:45 07:34-07:52/18 18:36	06:16 16:52	06:48 16:29
2	05:28 20:20	05:50 08:33-09:22/49 20:02	06:18 08:29-09:15/46 19:22	06:46 07:33-07:53/20 18:34	06:17 16:51	06:49 16:29
3	05:29 20:20	05:51 08:31-09:23/52 20:01	06:19 08:30-09:12/42 19:20	06:46 07:32-07:53/21 18:33	06:18 16:49	06:50 16:28
4	05:29 20:20	05:52 08:30-09:23/53 20:00	06:20 08:32-09:10/38 19:19	06:47 07:31-07:53/22 18:31	06:19 16:48	06:51 16:28
5	05:30 20:20	05:53 08:27-09:23/56 19:59	06:21 08:34-09:08/34 19:17	06:48 07:31-07:53/22 18:29	06:20 16:47	06:52 16:28
6	05:30 20:19	05:54 08:26-09:24/58 19:58	06:22 08:38-09:04/26 19:16	06:49 07:31-07:52/21 18:28	06:21 16:46	06:53 16:28
7	05:31 20:19	05:55 08:24-09:24/60 19:57	06:23 08:42-08:59/17 19:14	06:50 07:31-07:51/20 18:26	06:22 16:45	06:54 16:28
8	05:31 20:19	05:56 08:23-09:25/62 19:56	06:24 19:13	06:51 07:32-07:50/18 18:25	06:23 16:44	06:55 16:28
9	05:32 08:59-09:00/1 20:19	05:57 08:21-09:25/64 19:55	06:25 19:11	06:52 07:33-07:49/16 18:23	06:25 16:43	06:56 16:28
10	05:32 08:59-09:01/2 20:18	05:58 08:21-09:26/65 19:54	06:26 19:09	06:53 07:34-07:47/13 18:22	06:26 16:42	06:57 16:28
11	05:33 08:58-09:02/4 20:18	05:58 08:21-09:26/65 19:52	06:26 19:08	06:54 07:37-07:44/7 18:20	06:27 16:41	06:58 16:28
12	05:34 08:58-09:04/6 20:17	05:59 08:21-09:27/66 19:51	06:27 19:06	06:55 18:19	06:28 16:40	06:58 16:28
13	05:34 08:56-09:04/8 20:17	06:00 08:20-09:26/66 19:50	06:28 19:05	06:56 18:17	06:29 16:39	06:59 16:28
14	05:35 08:56-09:05/9 20:17	06:01 08:20-09:26/66 19:49	06:29 19:03	06:57 18:16	06:30 16:39	07:00 16:28
15	05:36 08:55-09:07/12 20:16	06:02 08:20-09:27/67 19:47	06:30 19:01	06:58 18:14	06:31 16:38	07:01 16:29
16	05:36 08:54-09:08/14 20:16	06:03 08:20-09:27/67 19:46	06:31 19:00	06:59 18:13	06:32 16:37	07:01 16:29
17	05:37 08:53-09:09/16 20:15	06:04 08:20-09:27/67 19:45	06:32 18:58	07:00 18:11	06:33 16:36	07:02 16:29
18	05:38 08:52-09:10/18 20:14	06:05 08:21-09:27/66 19:44	06:33 18:57	07:01 18:10	06:35 16:35	07:03 16:29
19	05:39 08:51-09:11/20 20:14	06:06 08:21-09:27/66 19:42	06:34 18:55	07:02 18:09	06:36 16:35	07:03 16:30
20	05:40 08:50-09:11/21 20:13	06:07 08:20-09:26/66 19:41	06:35 18:53	07:03 18:07	06:37 16:34	07:04 16:30
21	05:40 08:49-09:12/23 20:13	06:08 08:20-09:26/66 19:39	06:35 18:52	07:04 18:06	06:38 16:33	07:05 16:31
22	05:41 08:48-09:14/26 20:12	06:08 08:21-09:26/65 19:38	06:36 18:50	07:05 18:04	06:39 16:33	07:05 16:31
23	05:42 08:47-09:15/28 20:11	06:09 08:21-09:25/64 19:37	06:37 18:49	07:06 18:03	06:40 16:32	07:06 16:32
24	05:43 08:46-09:16/30 20:10	06:10 08:22-09:25/63 19:35	06:38 18:47	07:07 18:02	06:41 16:32	07:06 16:32
25	05:44 08:44-09:16/32 20:10	06:11 08:22-09:24/62 19:34	06:39 18:45	07:08 18:00	06:42 16:31	07:07 16:33
26	05:44 08:43-09:17/34 20:09	06:12 08:23-09:24/61 19:32	06:40 18:44	07:09 17:59	06:43 16:31	07:07 16:33
27	05:45 08:41-09:18/37 20:08	06:13 08:23-09:22/59 19:31	06:41 18:42	07:10 17:58	06:44 16:30	07:07 16:34
28	05:46 08:40-09:19/39 20:07	06:14 08:23-09:22/59 19:29	06:42 07:40-07:48/8 18:41	07:11 17:57	06:45 16:30	07:08 16:34
29	05:47 08:39-09:20/41 20:06	06:15 08:24-09:21/57 19:28	06:43 07:37-07:50/13 18:39	07:12 16:55	06:46 16:30	07:08 16:35
30	05:48 08:37-09:19/42 20:05	06:16 08:25-09:20/55 19:26	06:44 07:35-07:51/16 18:37	06:14 16:54	06:47 16:29	07:08 16:36
31	05:49 08:35-09:20/45 20:04	06:17 08:26-09:18/52 19:25		06:15 16:53		07:09 16:37
Potential sun hours	453	425	375	348	303	294
Sum of minutes with flicker	508	1891	289	198	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: CANTORATO REAL WTG: 18 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (18)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:37	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	05:27 20:09	05:28 20:20	05:49 20:03	06:17 19:23	06:45 18:36	06:16 16:52	06:48 16:29
2	07:09 16:38	06:57 17:11	06:24 17:42	06:36 19:13	05:53 19:42	05:27 20:10	05:28 20:20	05:50 20:02	06:18 19:22	06:45 18:34	06:17 16:51	06:49 16:29
3	07:09 16:39	06:56 17:12	06:22 17:43	06:35 19:14	05:52 19:43	05:26 20:10	05:28 20:20	05:51 20:01	06:19 19:20	06:46 18:33	06:18 16:49	06:50 16:28
4	07:09 16:40	06:56 17:13	06:21 17:44	06:33 19:15	05:51 19:44	05:26 20:11	05:29 20:20	05:52 20:00	06:20 19:19	06:47 18:31	06:19 16:48	06:51 16:28
5	07:09 16:41	06:55 17:14	06:20 17:45	06:31 19:16	05:50 19:45	05:26 20:12	05:30 20:19	05:53 19:59	06:21 19:17	06:48 18:29	06:20 16:47	06:52 16:28
6	07:09 16:42	06:54 17:15	06:18 17:46	06:30 19:17	05:49 19:46	05:25 20:12	05:30 20:19	05:54 19:58	06:22 19:16	06:49 18:28	06:21 16:46	06:53 16:28
7	07:09 16:43	06:53 17:16	06:17 17:47	06:28 19:18	05:47 19:47	05:25 20:13	05:31 20:19	05:55 19:57	06:23 19:14	06:50 18:26	06:22 16:45	06:54 16:28
8	07:09 16:43	06:52 17:18	06:15 17:48	06:27 19:19	05:46 19:48	05:25 20:13	05:31 20:19	05:56 19:56	06:24 19:13	06:51 18:25	06:23 16:44	06:55 16:28
9	07:09 16:44	06:51 17:19	06:14 17:49	06:25 19:20	05:45 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:52 18:23	06:24 16:43	06:56 16:28
10	07:09 16:45	06:50 17:20	06:12 17:50	06:24 19:21	05:44 19:50	05:25 20:15	05:32 20:18	05:58 19:54	06:26 19:09	06:53 18:22	06:26 16:42	06:57 16:28
11	07:09 16:46	06:48 17:21	06:11 17:52	06:22 19:22	05:43 19:51	05:24 20:15	05:33 20:18	05:58 19:52	06:26 19:08	06:54 18:20	06:27 16:41	06:58 16:28
12	07:09 16:47	06:47 17:22	06:09 17:53	06:21 19:23	05:42 19:52	05:24 20:16	05:34 20:17	05:59 19:51	06:27 19:06	06:55 18:19	06:28 16:40	06:58 16:28
13	07:09 16:48	06:46 17:23	06:07 17:54	06:19 19:24	05:41 19:53	05:24 20:16	05:34 20:17	06:00 19:50	06:28 19:05	06:56 18:17	06:29 16:39	06:59 16:28
14	07:08 16:49	06:45 17:25	06:06 17:55	06:18 19:25	05:40 19:54	05:24 20:16	05:35 20:17	06:01 19:49	06:29 19:03	06:57 18:16	06:30 16:39	07:00 16:28
15	07:08 16:50	06:44 17:26	06:04 17:56	06:16 19:26	05:39 19:55	05:24 20:17	05:36 20:16	06:02 19:47	06:30 19:01	06:58 18:14	06:31 16:38	07:01 16:29
16	07:08 16:51	06:43 17:27	06:03 17:57	06:15 19:27	05:38 19:56	05:24 20:17	05:36 20:16	06:03 19:46	06:31 19:00	06:59 18:13	06:32 16:37	07:01 16:29
17	07:08 16:53	06:41 17:28	06:01 17:58	06:13 19:28	05:37 19:56	05:24 20:18	05:37 20:15	06:04 19:45	06:32 18:58	07:00 18:11	06:33 16:36	07:02 16:29
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 19:29	05:37 19:57	05:24 20:18	05:38 20:14	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:35	07:03 16:29
19	07:07 16:55	06:39 17:30	05:58 18:00	06:11 19:30	05:36 19:58	05:24 20:18	05:39 20:14	06:06 19:42	06:34 18:55	07:02 18:09	06:36 16:35	07:03 16:30
20	07:06 16:56	06:38 17:31	05:57 18:01	06:09 19:31	05:35 19:59	05:24 20:19	05:39 20:13	06:07 19:41	06:35 18:53	07:03 18:07	06:37 16:34	07:04 16:30
21	07:06 16:57	06:36 17:32	05:55 18:02	06:08 19:32	05:34 20:00	05:25 20:19	05:40 20:13	06:08 19:39	06:35 18:52	07:04 18:06	06:38 16:33	07:05 16:31
22	07:05 16:58	06:35 17:34	05:53 18:03	06:06 19:33	05:33 20:01	05:25 20:19	05:41 20:12	06:09 19:38	06:36 18:50	07:05 18:04	06:39 16:33	07:05 16:31
23	07:05 16:59	06:34 17:35	05:52 18:03	06:05 19:34	05:33 20:02	05:25 20:19	05:42 20:11	06:09 19:37	06:37 18:49	07:06 18:03	06:40 16:32	07:06 16:31
24	07:04 17:00	06:32 17:36	05:50 18:04	06:04 19:35	05:32 20:03	05:25 20:20	05:43 20:10	06:10 19:35	06:38 18:47	07:07 18:02	06:41 16:32	07:06 16:32
25	07:03 17:01	06:31 17:37	05:49 18:05	06:02 19:35	05:31 20:03	05:25 20:20	05:43 20:10	06:11 19:34	06:39 18:45	07:08 18:00	06:42 16:31	07:07 16:33
26	07:03 17:03	06:30 17:38	06:47 19:06	06:01 19:36	05:31 20:04	05:26 20:20	05:44 20:09	06:12 19:32	06:40 18:44	07:09 17:59	06:43 16:31	07:07 16:33
27	07:02 17:04	06:28 17:39	06:46 19:07	06:00 19:37	05:30 20:05	05:26 20:20	05:45 20:08	06:13 19:31	06:41 18:42	07:10 17:58	06:44 16:30	07:07 16:34
28	07:01 17:05	06:27 17:40	06:44 19:08	05:58 19:38	05:29 20:06	05:26 20:20	05:46 20:07	06:14 19:29	06:42 18:41	07:11 17:57	06:45 16:30	07:08 16:34
29	07:01 17:06		06:42 19:09	05:57 19:39	05:29 20:07	05:27 20:20	05:47 20:06	06:15 19:28	06:43 18:39	06:12 16:55	06:46 16:29	07:08 16:35
30	07:00 17:07		06:41 19:10	05:56 19:40	05:28 20:07	05:27 20:20	05:48 20:05	06:16 19:26	06:44 18:37	06:14 16:54	06:47 16:29	07:08 16:36
31	06:59 17:08		06:39 19:11		05:28 20:08		05:49 20:04	06:17 19:25		06:15 16:53		07:09 16:36
Potential sun hours	302	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 19 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (19)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:38	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	05:27 20:09	05:28 20:20	05:50 20:04	06:18 19:24	06:45 18:36	06:16 16:52	06:48 16:29
2	07:09 16:38	06:58 17:11	06:24 17:42	06:36 19:13	05:53 19:42	05:27 20:10	05:28 20:20	05:50 20:03	06:19 19:22	06:46 18:34	06:17 16:51	06:49 16:29
3	07:09 16:39	06:57 17:12	06:23 17:43	06:35 19:14	05:52 19:43	05:27 20:10	05:29 20:20	05:51 20:02	06:19 19:21	06:47 18:33	06:18 16:49	06:50 16:28
4	07:10 16:40	06:56 17:13	06:21 17:44	06:33 19:15	05:51 19:44	05:26 20:11	05:29 20:20	05:52 20:00	06:20 19:19	06:47 18:31	06:19 16:48	06:51 16:28
5	07:10 16:41	06:55 17:14	06:20 17:45	06:32 19:16	05:50 19:45	05:26 20:12	05:30 20:20	05:53 19:59	06:21 19:17	06:48 18:30	06:20 16:47	06:52 16:28
6	07:10 16:42	06:54 17:15	06:18 17:47	06:30 19:17	05:49 19:46	05:26 20:12	05:30 20:19	05:54 19:58	06:22 19:16	06:49 18:28	06:21 16:46	06:53 16:28
7	07:10 16:43	06:53 17:17	06:17 17:48	06:29 19:18	05:48 19:47	05:25 20:13	05:31 20:19	05:55 19:57	06:23 19:14	06:50 18:26	06:22 16:45	06:54 16:28
8	07:10 16:44	06:52 17:18	06:15 17:49	06:27 19:19	05:46 19:48	05:25 20:14	05:31 20:19	05:56 19:56	06:24 19:13	06:51 18:25	06:24 16:44	06:55 16:28
9	07:10 16:45	06:51 17:19	06:14 17:50	06:25 19:20	05:45 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:52 18:23	06:25 16:43	06:56 16:28
10	07:09 16:45	06:50 17:20	06:12 17:51	06:24 19:21	05:44 19:50	05:25 20:15	05:32 20:18	05:58 19:54	06:26 19:10	06:53 18:22	06:26 16:42	06:57 16:28
11	07:09 16:46	06:49 17:21	06:11 17:52	06:22 19:22	05:43 19:51	05:25 20:15	05:33 20:18	05:59 19:53	06:27 19:08	06:54 18:20	06:27 16:41	06:58 16:28
12	07:09 16:47	06:47 17:22	06:09 17:53	06:21 19:23	05:42 19:52	05:24 20:16	05:34 20:18	05:59 19:51	06:27 19:06	06:55 18:19	06:28 16:40	06:59 16:28
13	07:09 16:48	06:46 17:24	06:08 17:54	06:19 19:24	05:41 19:53	05:24 20:16	05:34 20:17	06:00 19:50	06:28 19:05	06:56 18:17	06:29 16:39	06:59 16:28
14	07:09 16:49	06:45 17:25	06:06 17:55	06:18 19:25	05:40 19:54	05:24 20:17	05:35 20:17	06:01 19:49	06:29 19:03	06:57 18:16	06:30 16:39	07:00 16:28
15	07:08 16:51	06:44 17:26	06:05 17:56	06:16 19:26	05:39 19:55	05:24 20:17	05:36 20:16	06:02 19:48	06:30 19:02	06:58 18:14	06:31 16:38	07:01 16:29
16	07:08 16:52	06:43 17:27	06:03 17:57	06:15 19:27	05:38 19:56	05:24 20:17	05:37 20:16	06:03 19:46	06:31 19:00	06:59 18:13	06:32 16:37	07:02 16:29
17	07:08 16:53	06:42 17:28	06:01 17:58	06:14 19:28	05:38 19:57	05:24 20:18	05:37 20:15	06:04 19:45	06:32 18:58	07:00 18:12	06:34 16:36	07:02 16:29
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 19:29	05:37 19:57	05:24 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:36	07:03 16:30
19	07:07 16:55	06:39 17:30	05:58 18:00	06:11 19:30	05:36 19:58	05:24 20:19	05:39 20:14	06:06 19:42	06:34 18:55	07:02 18:09	06:36 16:35	07:04 16:30
20	07:06 16:56	06:38 17:31	05:57 18:01	06:09 19:31	05:35 19:59	05:25 20:19	05:40 20:13	06:07 19:41	06:35 18:54	07:03 18:07	06:37 16:34	07:04 16:30
21	07:06 16:57	06:36 17:33	05:55 18:02	06:08 19:32	05:34 20:00	05:25 20:19	05:40 20:13	06:08 19:40	06:36 18:52	07:04 18:06	06:38 16:34	07:05 16:31
22	07:05 16:58	06:35 17:34	05:54 18:03	06:06 19:33	05:33 20:01	05:25 20:19	05:41 20:12	06:09 19:38	06:36 18:50	07:05 18:05	06:39 16:33	07:05 16:31
23	07:05 16:59	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:20	05:42 20:11	06:09 19:37	06:37 18:49	07:06 18:03	06:40 16:32	07:06 16:32
24	07:04 17:00	06:32 17:36	05:50 18:05	06:04 19:35	05:32 20:03	05:25 20:20	05:43 20:11	06:10 19:35	06:38 18:47	07:07 18:02	06:41 16:32	07:06 16:32
25	07:04 17:02	06:31 17:37	05:49 18:06	06:02 19:36	05:31 20:04	05:26 20:20	05:44 20:10	06:11 19:34	06:39 18:45	07:08 18:01	06:42 16:31	07:07 16:33
26	07:03 17:03	06:30 17:38	06:47 19:07	06:01 19:37	05:31 20:04	05:26 20:20	05:44 20:09	06:12 19:32	06:40 18:44	07:09 17:59	06:43 16:31	07:07 16:33
27	07:02 17:04	06:28 17:39	06:46 19:08	06:00 19:38	05:30 20:05	05:26 20:20	05:45 20:08	06:13 19:31	06:41 18:42	07:10 17:58	06:44 16:30	07:08 16:34
28	07:02 17:05	06:27 17:40	06:44 19:09	05:58 19:39	05:29 20:06	05:27 20:20	05:46 20:07	06:14 19:30	06:42 18:41	07:12 17:57	06:45 16:30	07:08 16:35
29	07:01 17:06		06:43 19:09	05:57 19:40	05:29 20:07	05:27 20:20	05:47 20:06	06:15 19:28	06:43 18:39	06:13 16:55	06:46 16:30	07:08 16:35
30	07:00 17:07		06:41 19:10	05:56 19:40	05:28 20:07	05:27 20:20	05:48 20:05	06:16 19:27	06:44 18:37	06:14 16:54	06:47 16:29	07:09 16:36
31	06:59 17:08		06:39 19:11		05:28 20:08		05:49 20:05	06:17 19:25		06:15 16:53		07:09 16:37
Potential sun hours	302	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

SHADOW - Calendar per WTG

Calculation: CANTORATO REAL WTG: 20 - Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (20)

Assumptions for shadow calculations

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

Reference year for calendar

2023

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,16 4,62 5,58 6,71 8,10 9,27 10,00 9,47 7,89 5,95 5,05 4,11

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:09 16:37	06:58 17:10	06:25 17:41	06:38 19:12	05:55 19:41	05:27 20:09	05:28 20:20	05:50 20:03	06:18 19:23	06:45 18:36	06:16 16:52	06:48 16:29
2	07:09 16:38	06:57 17:11	06:24 17:42	06:36 19:13	05:53 19:42	05:27 20:10	05:28 20:20	05:50 20:02	06:18 19:22	06:46 18:34	06:17 16:51	06:49 16:29
3	07:09 16:39	06:57 17:12	06:23 17:43	06:35 19:14	05:52 19:43	05:27 20:10	05:29 20:20	05:51 20:01	06:19 19:20	06:46 18:33	06:18 16:49	06:50 16:28
4	07:09 16:40	06:56 17:13	06:21 17:44	06:33 19:15	05:51 19:44	05:26 20:11	05:29 20:20	05:52 20:00	06:20 19:19	06:47 18:31	06:19 16:48	06:51 16:28
5	07:09 16:41	06:55 17:14	06:20 17:45	06:32 19:16	05:50 19:45	05:26 20:12	05:30 20:20	05:53 19:59	06:21 19:17	06:48 18:29	06:20 16:47	06:52 16:28
6	07:10 16:42	06:54 17:15	06:18 17:46	06:30 19:17	05:49 19:46	05:25 20:12	05:30 20:19	05:54 19:58	06:22 19:16	06:49 18:28	06:21 16:46	06:53 16:28
7	07:10 16:43	06:53 17:17	06:17 17:47	06:28 19:18	05:47 19:47	05:25 20:13	05:31 20:19	05:55 19:57	06:23 19:14	06:50 18:26	06:22 16:45	06:54 16:28
8	07:09 16:43	06:52 17:18	06:15 17:48	06:27 19:19	05:46 19:48	05:25 20:13	05:31 20:19	05:56 19:56	06:24 19:13	06:51 18:25	06:23 16:44	06:55 16:28
9	07:09 16:44	06:51 17:19	06:14 17:50	06:25 19:20	05:45 19:49	05:25 20:14	05:32 20:19	05:57 19:55	06:25 19:11	06:52 18:23	06:25 16:43	06:56 16:28
10	07:09 16:45	06:50 17:20	06:12 17:51	06:24 19:21	05:44 19:50	05:25 20:15	05:32 20:18	05:58 19:54	06:26 19:09	06:53 18:22	06:26 16:42	06:57 16:28
11	07:09 16:46	06:48 17:21	06:11 17:52	06:22 19:22	05:43 19:51	05:24 20:15	05:33 20:18	05:58 19:52	06:26 19:08	06:54 18:20	06:27 16:41	06:58 16:28
12	07:09 16:47	06:47 17:22	06:09 17:53	06:21 19:23	05:42 19:52	05:24 20:16	05:34 20:17	05:59 19:51	06:27 19:06	06:55 18:19	06:28 16:40	06:58 16:28
13	07:09 16:48	06:46 17:23	06:08 17:54	06:19 19:24	05:41 19:53	05:24 20:16	05:34 20:17	06:00 19:50	06:28 19:05	06:56 18:17	06:29 16:39	06:59 16:28
14	07:09 16:49	06:45 17:25	06:06 17:55	06:18 19:25	05:40 19:54	05:24 20:17	05:35 20:17	06:01 19:49	06:29 19:03	06:57 18:16	06:30 16:39	07:00 16:28
15	07:08 16:50	06:44 17:26	06:04 17:56	06:16 19:26	05:39 19:55	05:24 20:17	05:36 20:16	06:02 19:47	06:30 19:01	06:58 18:14	06:31 16:38	07:01 16:29
16	07:08 16:51	06:43 17:27	06:03 17:57	06:15 19:27	05:38 19:56	05:24 20:17	05:36 20:16	06:03 19:46	06:31 19:00	06:59 18:13	06:32 16:37	07:01 16:29
17	07:08 16:53	06:41 17:28	06:01 17:58	06:13 19:28	05:37 19:56	05:24 20:18	05:37 20:15	06:04 19:45	06:32 18:58	07:00 18:11	06:33 16:36	07:02 16:29
18	07:07 16:54	06:40 17:29	06:00 17:59	06:12 19:29	05:37 19:57	05:24 20:18	05:38 20:15	06:05 19:44	06:33 18:57	07:01 18:10	06:35 16:35	07:03 16:29
19	07:07 16:55	06:39 17:30	05:58 18:00	06:11 19:30	05:36 19:58	05:24 20:18	05:39 20:14	06:06 19:42	06:34 18:55	07:02 18:09	06:36 16:35	07:03 16:30
20	07:06 16:56	06:38 17:31	05:57 18:01	06:09 19:31	05:35 19:59	05:24 20:19	05:39 20:13	06:07 19:41	06:35 18:53	07:03 18:07	06:37 16:34	07:04 16:30
21	07:06 16:57	06:36 17:32	05:55 18:02	06:08 19:32	05:34 20:00	05:25 20:19	05:40 20:13	06:08 19:39	06:35 18:52	07:04 18:06	06:38 16:33	07:05 16:31
22	07:05 16:58	06:35 17:34	05:53 18:03	06:06 19:33	05:33 20:01	05:25 20:19	05:41 20:12	06:09 19:38	06:36 18:50	07:05 18:04	06:39 16:33	07:05 16:31
23	07:05 16:59	06:34 17:35	05:52 18:04	06:05 19:34	05:33 20:02	05:25 20:19	05:42 20:11	06:09 19:37	06:37 18:49	07:06 18:03	06:40 16:32	07:06 16:32
24	07:04 17:00	06:32 17:36	05:50 18:05	06:04 19:35	05:32 20:03	05:25 20:20	05:43 20:10	06:10 19:35	06:38 18:47	07:07 18:02	06:41 16:32	07:06 16:32
25	07:04 17:01	06:31 17:37	05:49 18:05	06:02 19:36	05:31 20:03	05:25 20:20	05:44 20:10	06:11 19:34	06:39 18:45	07:08 18:00	06:42 16:31	07:07 16:33
26	07:03 17:03	06:30 17:38	06:47 19:06	06:01 19:37	05:31 20:04	05:26 20:20	05:44 20:09	06:12 19:32	06:40 18:44	07:09 17:59	06:43 16:31	07:07 16:33
27	07:02 17:04	06:28 17:39	06:46 19:07	06:00 19:37	05:30 20:05	05:26 20:20	05:45 20:08	06:13 19:31	06:41 18:42	07:10 17:58	06:44 16:30	07:07 16:34
28	07:01 17:05	06:27 17:40	06:44 19:08	05:58 19:38	05:29 20:06	05:26 20:20	05:46 20:07	06:14 19:29	06:42 18:41	07:11 17:57	06:45 16:30	07:08 16:34
29	07:01 17:06		06:42 19:09	05:57 19:39	05:29 20:07	05:27 20:20	05:47 20:06	06:15 19:28	06:43 18:39	06:13 16:55	06:46 16:29	07:08 16:35
30	07:00 17:07		06:41 19:10	05:56 19:40	05:28 20:07	05:27 20:20	05:48 20:05	06:16 19:26	06:44 18:37	06:14 16:54	06:47 16:29	07:08 16:36
31	06:59 17:08		06:39 19:11		05:28 20:08		05:49 20:04	06:17 19:25		06:15 16:53		07:09 16:36
Potential sun hours	302	299	369	395	442	445	453	425	375	348	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

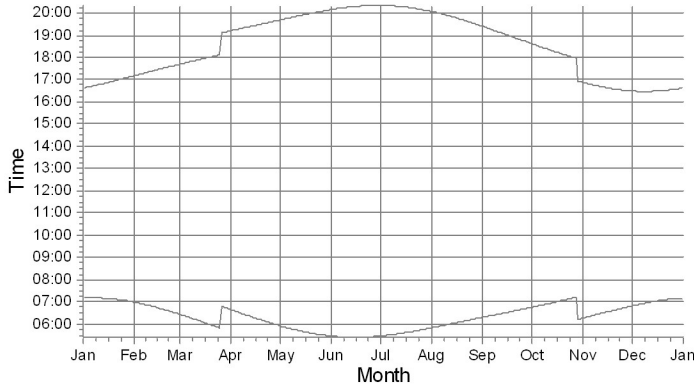
Table layout: For each day in each month the following matrix apply

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

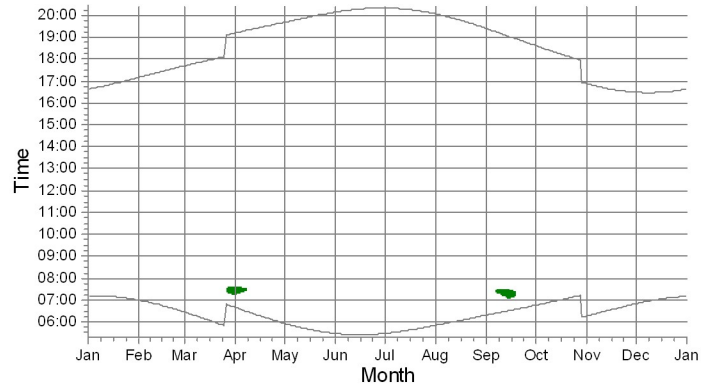
SHADOW - Calendar per WTG, graphical

Calculation: CANTORATO REAL

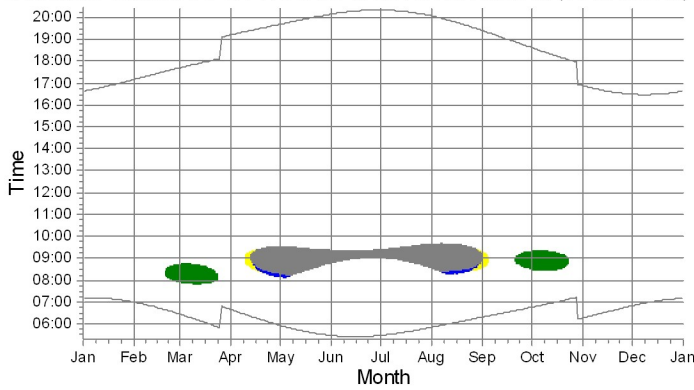
1: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (



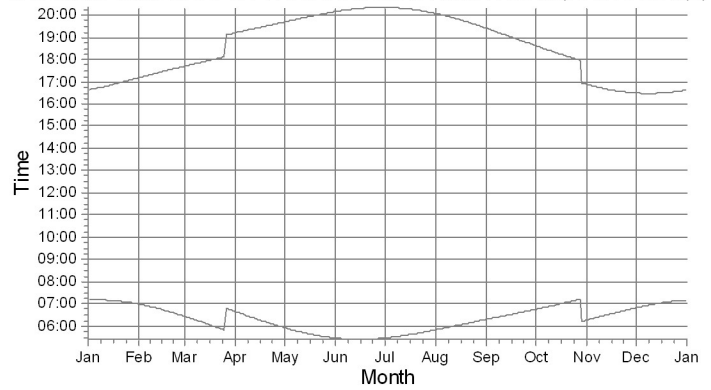
2: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (2)



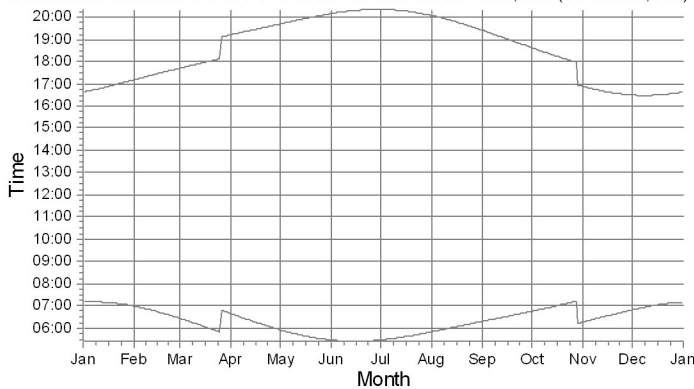
3: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (



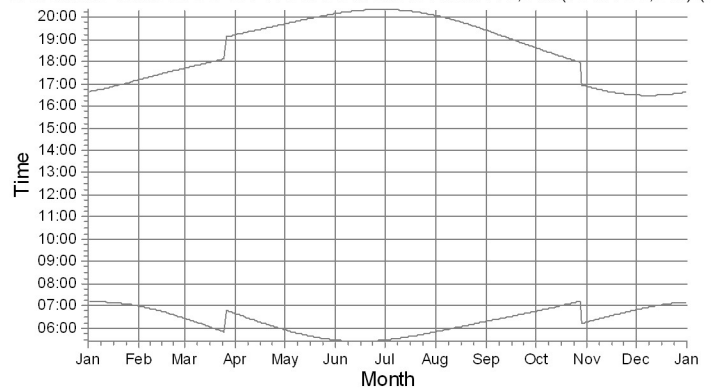
4: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (4)



5: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (



6: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (6)



Shadow receptors

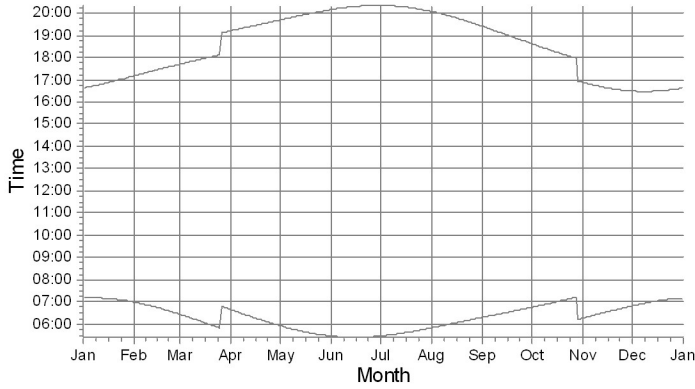
- A: Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (1)
- B: Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (2)

- C: Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (3)
- D: Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (4)

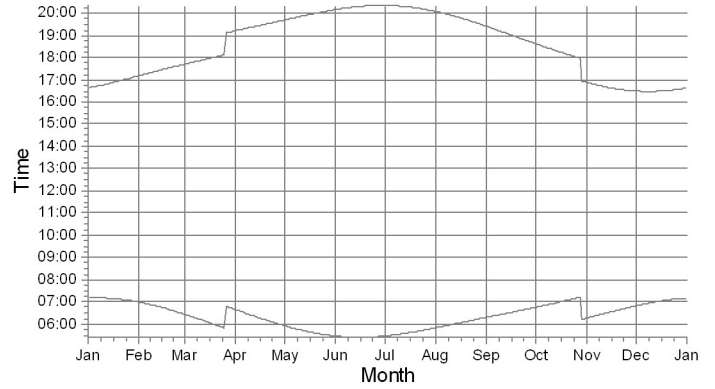
SHADOW - Calendar per WTG, graphical

Calculation: CANTORATO REAL

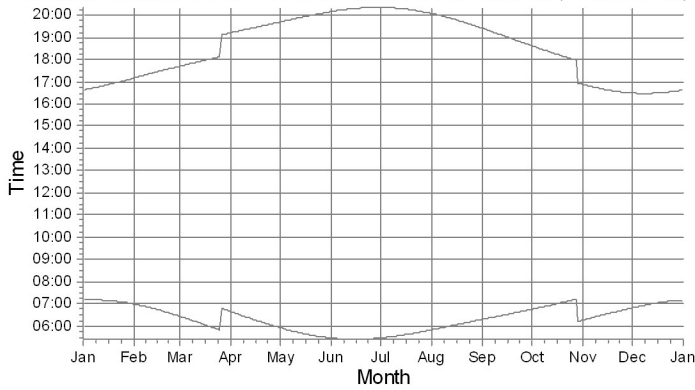
7: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (



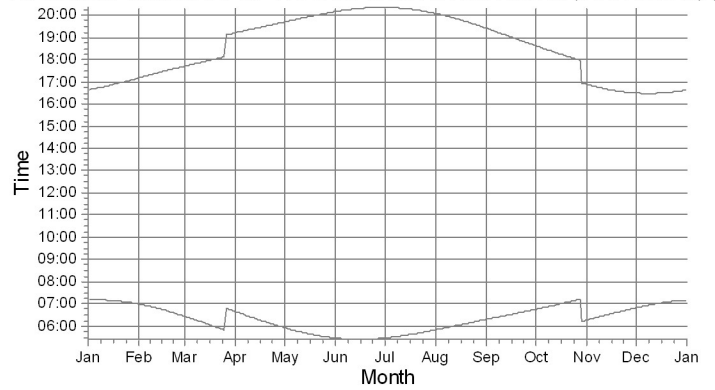
8: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (8)



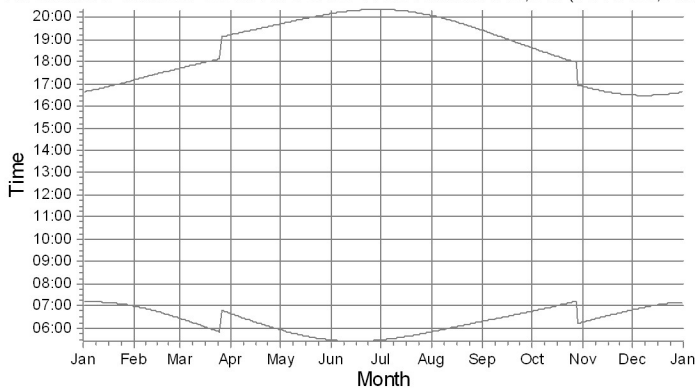
9: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (



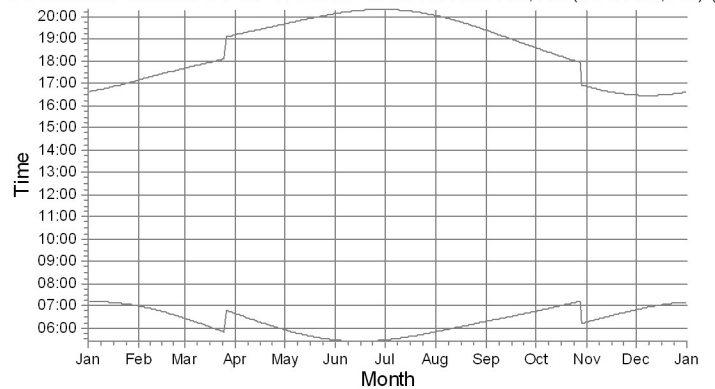
10: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (10)



11: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m)



12: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (12)

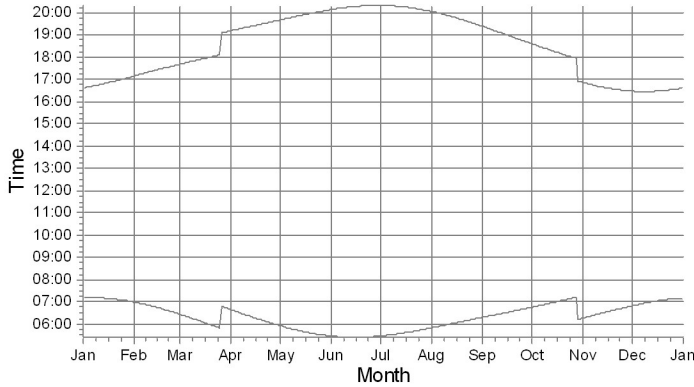


Shadow receptors

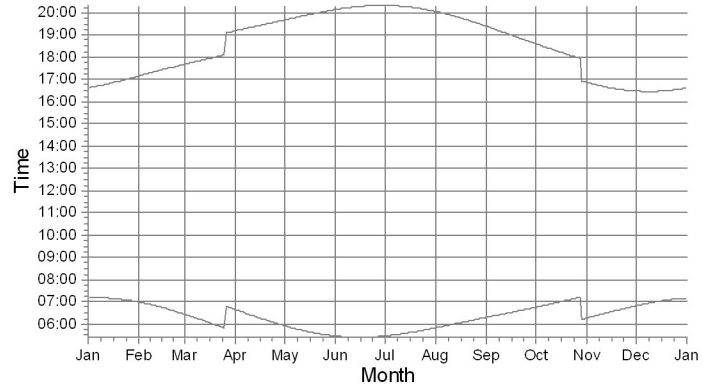
SHADOW - Calendar per WTG, graphical

Calculation: CANTORATO REAL

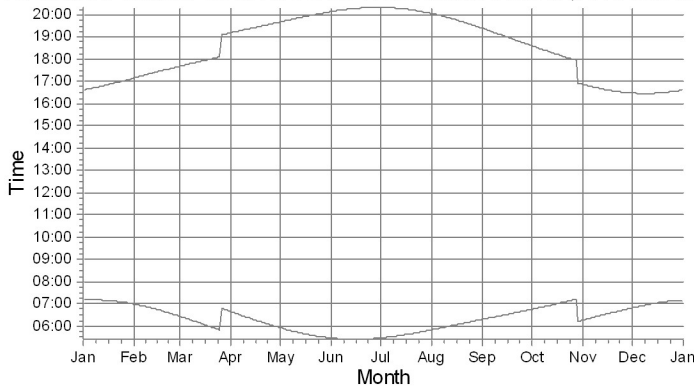
13: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m)



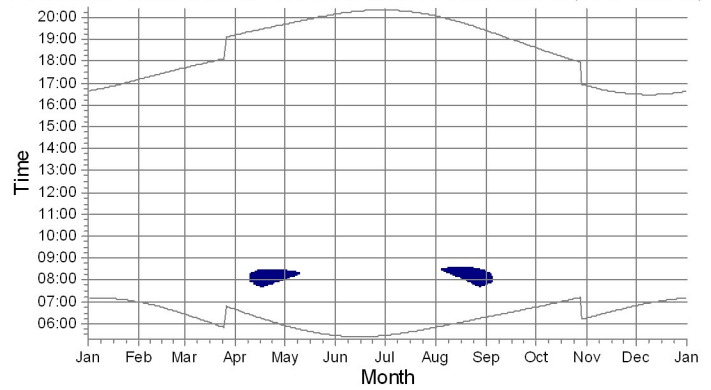
14: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (14)



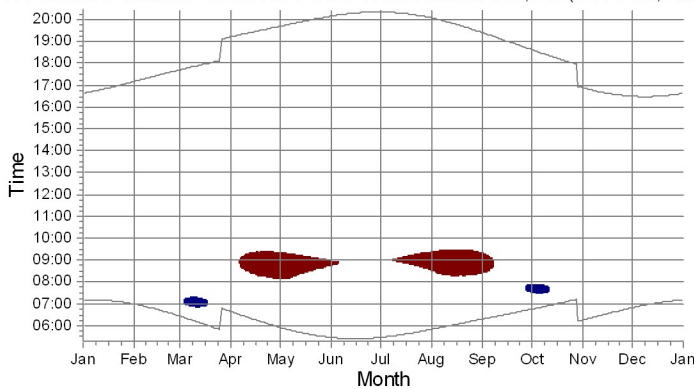
15: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m)



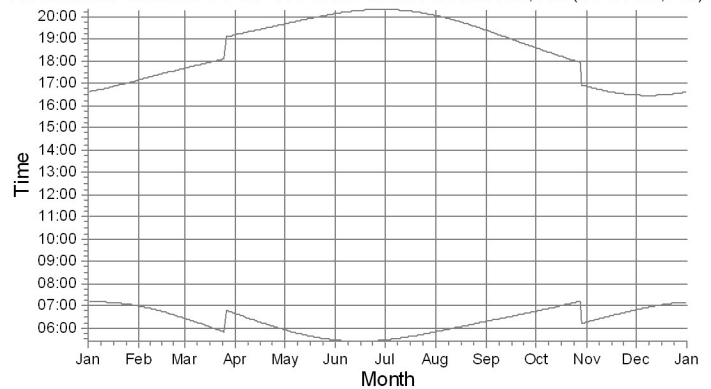
16: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (16)



17: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m)



18: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (18)



Shadow receptors



G: Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (7)

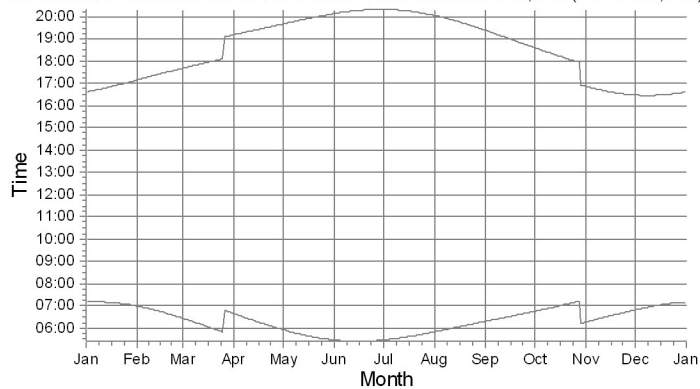


H: Shadow Receptor: 2,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (8)

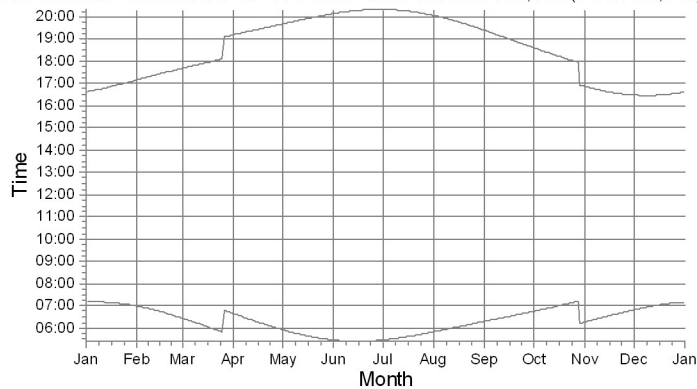
SHADOW - Calendar per WTG, graphical

Calculation: CANTORATO REAL

19: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m)



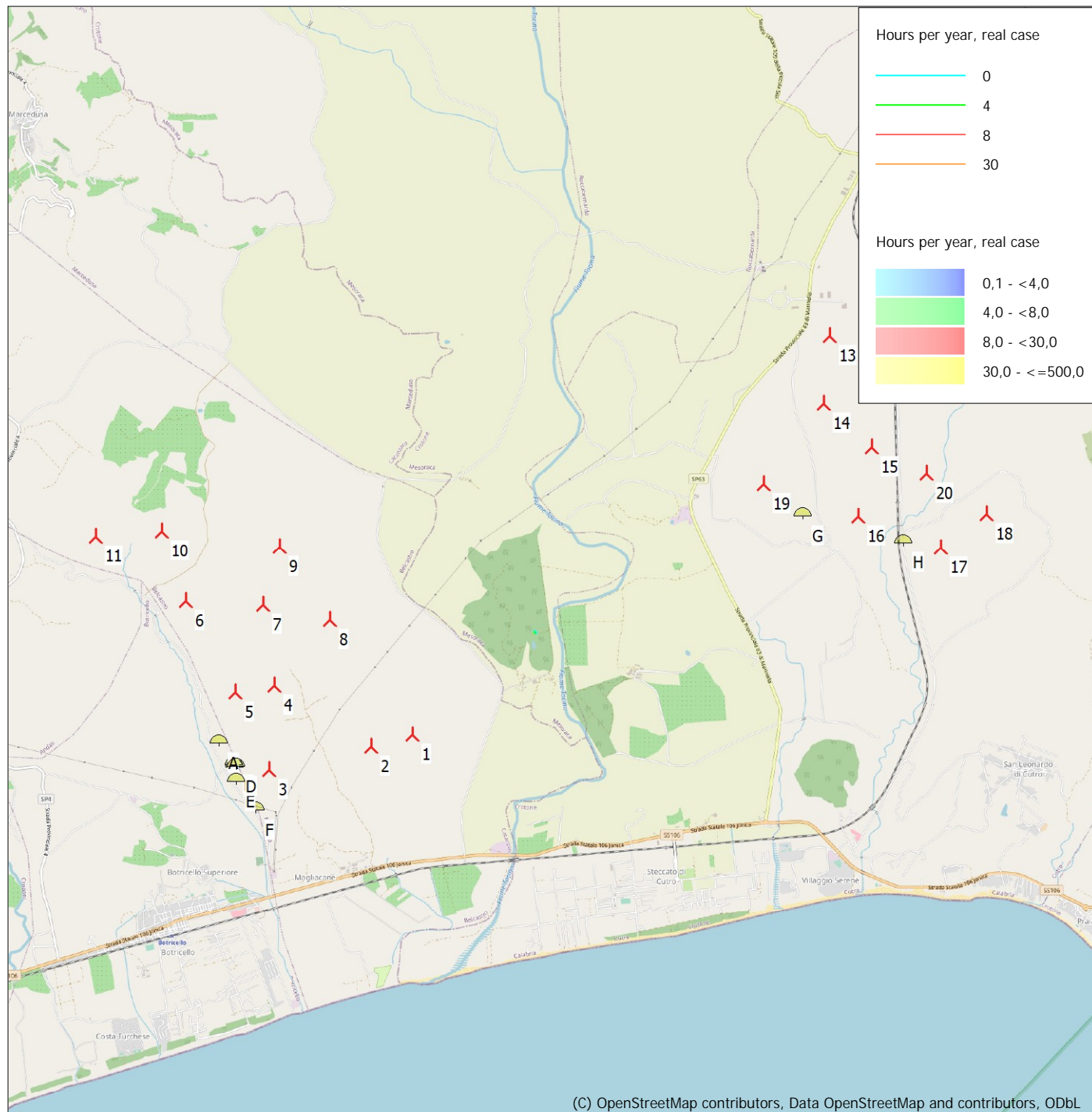
20: Siemens Gamesa SG 6.2-170 6200 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (20)



Shadow receptors

SHADOW - Map

Calculation: CANTORATO REAL



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

0 1 2 3 4 km

Map: EMD OpenStreetMap , Print scale 1:75.000, Map center Geo WGS84 East: 16,911659° E North: 38,975325° N

New WTG Shadow receptor

Flicker map level: 10 m above sea level

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 2,0 m