REGIONE BASILICATA
PROVINCIA DI POTENZA
Comuni di:
Muro Lucano - Bella - Balvano- Baragiano
LOCALITA' "Monte Raitiello"

PROGETTO DEFINITIVO DI ADEGUAMENTO TECNICO PER LA REALIZZAZIONE DI UN IMPIANTO DI PRODUZIONE DI ENERGIA ELETTRICA DA FONTE EOLICA E RELATIVE OPERE DI CONNESSIONE - 12 AEROGENERATORI

Progetto originario a 25 aerogeneratori autorizzato con DGR N° 1415 del 23/10/12

Sezione 6:
RELAZIONI SPECIALISTICHE

Titolo elaborato:
RELAZIONE DI SHADOW FLICKERING

N. Elaborato: 6.4

Scala: -

Proponente

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Rev.	Data	Elaborazione	Approvazione	Emissione	DESCRIZIONE
00	OTTOBRE 2023	GDS	GT	ML	EMISSIONE
		sigla	sigla	sigla	

INDICE

1. PREMESSA

La presente relazione riguarda l'adeguamento tecnico che la società Monte Raitiello srl ha deciso di proporre al proprio progetto di impianto eolico già autorizzato con DGR n. 1415 del 23/10/2012 emanato dalla Regione Basilicata.

Nello specifico, con DGR n. 1415 del 23/10/2012 la Regione Basilicata ha autorizzato la costruzione e l'esercizio di un parco eolico di potenza nominale pari a 55,80 MW costituito da 25 aerogeneratori (Parco Eolico) di cui n.18 (da 2,00 MW di potenza ognuna), n.6 (da 3,00 MW di potenza ognuna) e n.1 (da 1,80 MW di potenza ognuna), da ubicare alla località "Monte Raitiello" in agro del Comune di Muro Lucano (PZ) e, delle relative opere connesse ed infrastrutture indispensabili di collegamento (Impianti di rete e di utenza) alla RTN gestita da Terna Rete Italia S.r.l. localizzate nel Comune di Balvano (PZ).

La proposta di adeguamento tecnico dell'impianto eolico autorizzato consiste in:

- Riduzione del numero di aerogeneratori (da 25 a 12)
- Cambio del modello di aerogeneratore (passaggio dal modello Vestas V90 con diametro 90 m e altezza al mozzo 95 m, al modello Vestas V150 con diametro 150 m e altezza al mozzo 105 m, ad eccezione di un'unica turbina di modello Vestas V136 con diametro 136 m e altezza al mozzo 82 m), mantenendo invariato il posizionamento degli aerogeneratori con incremento della potenza unitaria di macchina. È prevista, infatti, l'installazione di 12 aerogeneratori di potenza nominale pari a 4.5 MW.

L'adeguamento tecnico proposto contempla, dunque, la diminuzione sia del numero degli aerogeneratori che delle opere connesse. Esso, inoltre, determina un aumento della produzione. Pertanto, risulta perfettamente in linea con le finalità, di miglioramento del rendimento e delle prestazioni ambientali, indicate all'art.6, comma 9, del D. Lgs. 3 aprile 2006, n.152.

La diminuzione del numero di aerogeneratori è anche perfettamente in linea con la Strategia Energetica Nazionale 2017 adottata con D.M. del 10/11/2017 del MISE e del MASE (al tempo MAATM - paragrafo "Fonti rinnovabili, consumo di suolo e tutela del paesaggio") e con la polita energetica che esprimono chiaramente il favore, sia a livello nazionale che regionale, per l'utilizzo di macchine di potenza unitaria maggiore, in quanto consentono minor consumo del territorio e minor impatto paesaggistico.

In definitiva, in ragione del fatto che l'adeguamento tecnico proposto non comporta impatti ambientali significativi e negativi, è stata predisposta tutta la documentazione per l'espletamento della valutazione preliminare di cui all'art. 6, comma 9 del D.Lgs. 152/2006 e ss.m.ii presso il MASE.

Lo Shadow-Flickering è l'espressione comunemente impiegata in ambito specialistico per descrivere l'effetto stroboscopico delle ombre proiettate dalle pale rotanti degli aerogeneratori eolici quando sussistono le condizioni meteorologiche opportune. Infatti, la possibilità e la durata di tali effetti dipendono da una serie di condizioni ambientali, tra cui: la posizione del sole, l'ora del giorno, il giorno dell'anno, le condizioni atmosferiche ambientali e la posizione della turbina eolica rispetto ad un recettore sensibile.

La valutazione tecnica è eseguita con l'ausilio di un software di simulazione specifico per la progettazione degli impianti eolici WIND PRO®, costituito da un insieme di moduli di elaborazione

orientati alla simulazione di una serie di aspetti che caratterizzano le diverse fasi progettuali. Il modulo SHADOW è quello specifico per la valutazione dell'evoluzione dell'ombra e del flickering.

In tale report è riportata:

- La descrizione del caso studio con le posizioni delle turbine e loro caratteristiche tecniche;
- Una breve descrizione tecnica del fenomeno di shadow flickering;
- La descrizione dei recettori soggetti al fenomeno per i quali è stata richiesta questa analisi;
- Sintesi della metodologia di analisi seguita per lo studio;
- Sintesi dei risultati ottenuti, con allegati grafici ed analitici di dettaglio che descrivono il fenomeno su ognuno dei recettori e da parte di ognuna delle turbine per tutto l'anno solare.

2. IL CASO STUDIO

Come anticipato, il presente elaborato ha lo scopo di valutare in maniera tecnica l'eventuale impatto generato dall'evoluzione dell'ombra dovuta alla presenza di un impianto di produzione di energia da fonte eolica costituito da 12 aerogeneratori con caratteristiche dimensionali di 150 e 136 m di diametro di rotore, altezza al mozzo fissata a 105 e 82 m s.l.t. e di potenza elettrica nominale fino ad un massimo di 4,5 MW per una potenza complessiva pari ad un massimo 54,0 MW. L'impianto sarà ubicato nel comune di Muro Lucano (PZ) alla località "Monte Raitiello", con relative opere connesse ed infrastrutture indispensabili di collegamento (Impianti di rete e di utenza) alla RTN gestita da Terna Rete Italia S.r.l. localizzate nel Comune di Balvano (PZ).

Le elaborazioni saranno eseguite considerando i modelli di aerogeneratori e i parametri progettuali ipotizzati per la realizzazione del parco eolico e riassunti nella seguente tabella.

Tabella 1: Parametri Progettuali.

Comuni - Località	Muro Lucano (PZ)
N° WTG – Tip Massimo [m]	11 – 180; 1 - 150
Potenza singole WTG [MW]	4,5
Potenza Totale Windfarm [MW]	54,0
Tipologia/modello WTG	Vestas V150; Vestas V136

L'area nel suo contesto agricolo con prevalenza di incolto-pascolo è interessata dalla presenza di altri impianti eolici, unitamente ad iniziative in fase autorizzativa per il cui dettaglio si rimanda al paragrafo 4.2 del presente elaborato.

2.1. DESCRIZIONE DEL SITO DI INDAGINE

L'area oggetto dello sviluppo progettuale si presenta a carattere montano con il suolo che evidenzia una variabilità topografica ed altimetrica abbastanza complessa. L'elevazione media dell'area di si attesta essere di circa 930 m s.l.m. Il comune di Muro lucano è posto a circa 3,5 km dalle posizioni più a nord dell'impianto, mentre a Sud è individuabile il comune di Ricigliano (SA), della limitrofa regione Campania a soli 2,2 km dalla posizione più a Sud.

Si riportano di seguito le immagini su corografia OpenTopoMap e a seguire l'individuazione dell'area e della disposizione di tutte le turbine di progetto su ortofoto planimetrica e nel prospetto 3D estratta da Google Earth. Le turbine di progetto saranno sempre riportate con icona di colore rosso ed etichetta "ML".

Figura 1: Inquadramento geografico del sito in agro del comune di Muro Lucano (PZ).
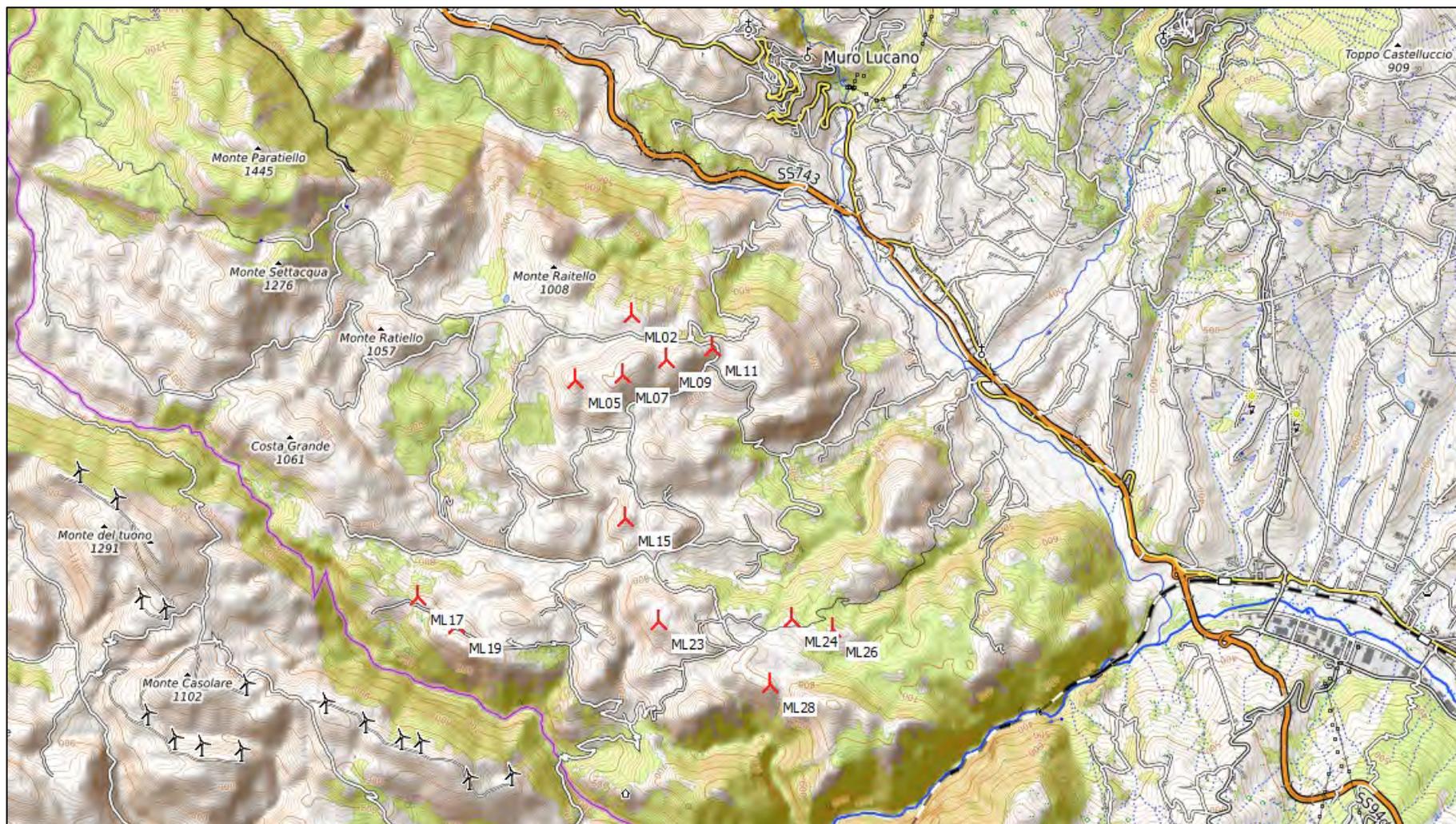
Figura 2: Individuazione dell'area di installazione della WTG su stralcio cartografico OpenTopoMap con evidenza dell'impianto di progetto (icone il rosso con etichetta ML)
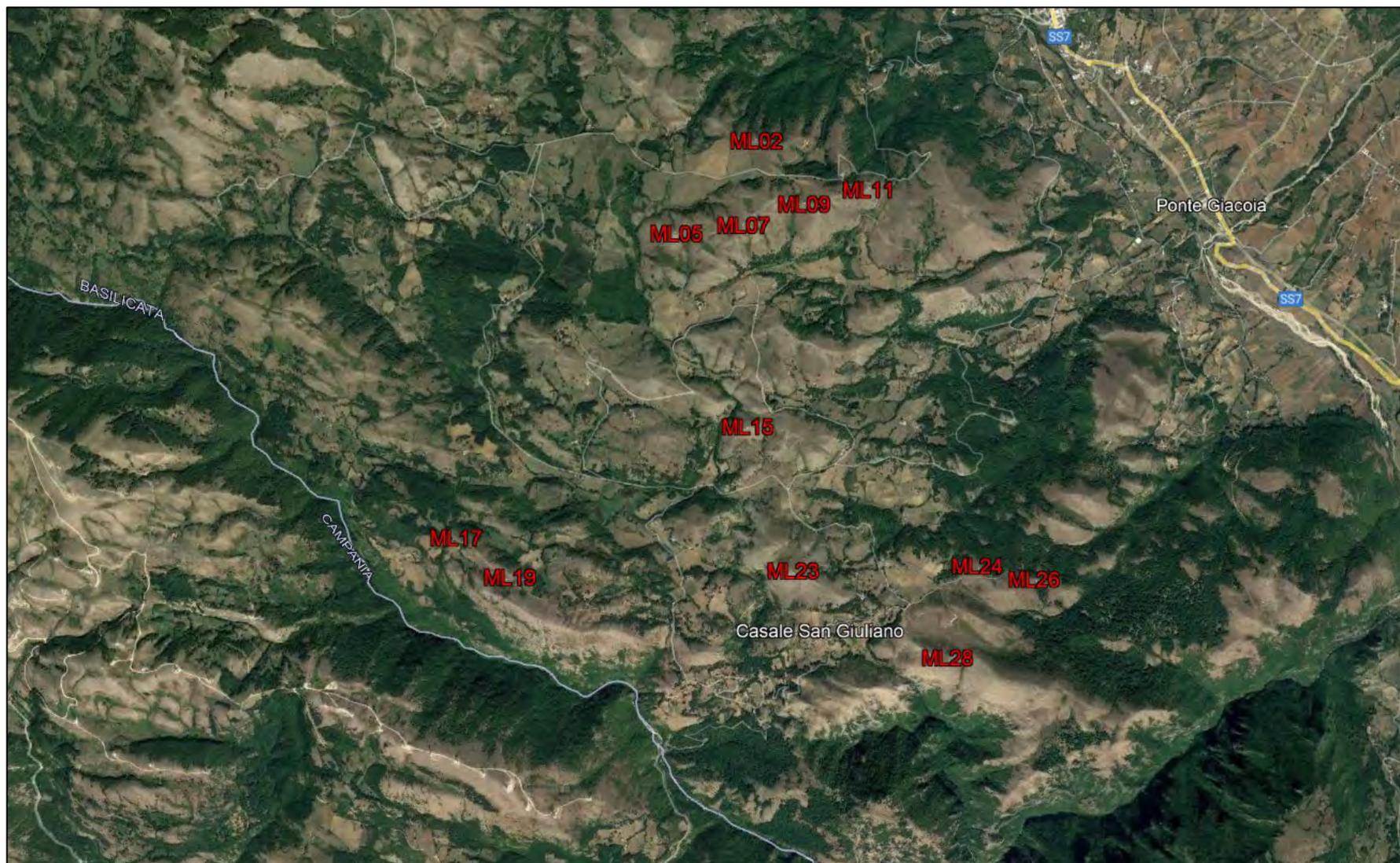
Figura 3: Individuazione dell'area di installazione della Windfarm su immagine ortofotografica.
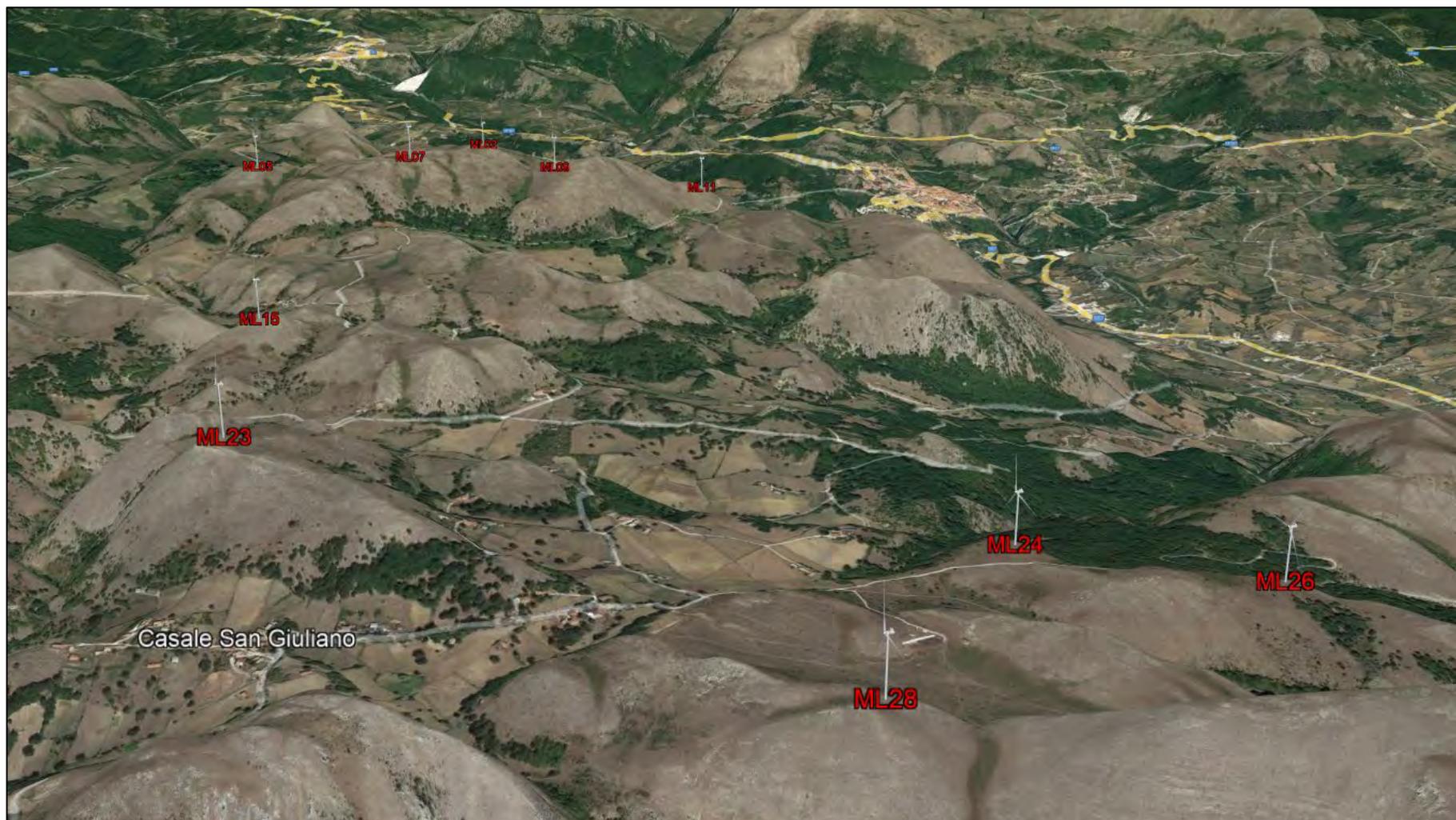
Figura 4: Individuazione dell'area di installazione delle WTG su immagine ortofotografica nel prospetto 3D con evidenza dell'impianto di progetto.

2.1. DESCRIZIONE DEGLI AEROGENERATORI E CARATTERISTICHE GEOGRAFICHE DI POSIZIONE

Come detto precedentemente, le macchine di progetto considerate nel calcolo sono le seguenti:

- Vestas V150 di potenza nominale di 4,5 MW con altezza del mozzo posta a 105 m s.l.t e diametro del rotore pari a 150 m.
- Vestas V136 di potenza nominale di 4,5 MW con altezza del mozzo posta a 82 m s.l.t e diametro del rotore pari a 136 m

Si riporta di seguito la tabella per l'individuazione geografica e a seguire le caratteristiche tecniche degli aerogeneratori di progetto estratte da documentazione resa disponibile dal costruttore.

Tabella 2: Coordinate, tipologia e caratteristiche principali degli aerogeneratori di progetto

ID WTG	UTM WGS 84 Long. Est [m]	UTM WGS 84 Lat. Nord [m]	Altitudine s.l.m. [m]	Modello aerogeneratore	Potenza [MW]	Altezza mozzo s.l.t. [m]
ML02	539139	4508646	985	VESTAS V136	4,5	82
ML05	538501	4507908	990	VESTAS V150	4,5	105
ML07	539040	4507970	1011	VESTAS V150	4,5	105
ML09	539524	4508146	975	VESTAS V150	4,5	105
ML11	540047	4508276	922	VESTAS V150	4,5	105
ML15	539078	4506374	873	VESTAS V150	4,5	105
ML17	536724	4505473	915	VESTAS V150	4,5	105
ML19	537165	4505164	939	VESTAS V150	4,5	105
ML23	539453	4505221	904	VESTAS V150	4,5	105
ML24	540967	4505252	785	VESTAS V150	4,5	105
ML26	541437	4505144	783	VESTAS V150	4,5	105
ML28	540722	4504511	815	VESTAS V150	4,5	105
MEAN VALUES			908			
TOTAL					54	

Tabella 3: Caratteristiche tecniche della turbina Vestas V150 – 4,5 MW, di progetto.

V150-4.5 MW™

Technical specifications

POWER REGULATION OPERATIONAL DATA

Pitch regulated with variable speed

Rated power	4.500kW
Cut-in wind speed	3m/s
Cut-out wind speed	24,5m/s
Re cut-in wind speed	22,5m/s
Wind class	IEC S
Standard operating temperature range	from -30°C° to +45°C with de-rating above 23°C

SOUND POWER

Maximum	105.0 dB(A) Sound Optimised modes dependent on site and country

ROTOR

Rotor diameter	150m
Swept area	17,671m2
Aerodynamic brake	full blade feathering with 3 pitch cylinders

NACELLE DIMENSIONS

Height for transport	3.5 m
Height installed (incl. CoolerTop®)	8.4 m
Length	12.96 m
Width	3.98 m

ELECTRICAL

Frequency	50/60 Hz
Converter	full scale

GEARBOX

Type	two planetary stages and one helical stage

TOWER

Hub heights	90 m (IEC IIIB) and 105 m (IEC IIIB)

HUB DIMENSIONS

Max. transport height	3.5m
Max. transport width	3.7m
Max. transport length	5.5m

BLADE DIMENSIONS

Length	73.7m
Max. chord	4.2m
Max weight per unit for transportation	70 metric tonnes

SUSTAINABILITY METRICS PENDING

Carbon Footprint	5.6g CO_2e/kWh
Return on energy break-even	5.9 months
Lifetime return on energy	41 times
Recyclability rate	82.8%

Configuration: 105m hub height and wind class IECIIIB. Depending on site-specific conditions. Metrics are based on an externally reviewed Life Cycle Assessment available on vestas.com

Tabella 4: Caratteristiche tecniche della turbina Vestas V136 – 4,5 MW, di progetto.

Technical specifications

POWER REGULATION OPERATIONAL DATA

Pitch regulated with variable speed

Rated power	4,500kW
Cut-in wind speed	3m/s
Cut-out wind speed	32m/s
Re cut-in wind speed	28m/s
Wind class	IEC IIB
Standard operating temperature range	from -20°C° to +45°C with de-rating above 23°C

SOUND POWER

Maximum	103.9 dB(A) Sound Optimised modes dependent on site and country

ROTOR

Rotor diameter	136m
Swept area	14,527m2
Aerodynamic brake	full blade feathering with 3 pitch cylinders

ELECTRICAL

Frequency	50/60 Hz
Converter	full scale

GEARBOX

Type	two planetary stages and one helical stage

TOWER

Hub heights	112 m (IEC IIB)

NACELLE DIMENSIONS

Height for transport	3.5m
Height installed /incl. CoolerTop)	8.4m
Length	12.96m
Width	3.98m

HUB DIMENSIONS

Max. transport height	3.5m
Max. transport width	3.7m
Max. transport length	5.5m

BLADE DIMENSIONS

Length	66.7m
Max. chord	4.1m
Max. weight per unit for transportation	70 metric tonnes

SUSTAINABILITY METRICS

Carbon Footprint	4.9g CO2e/kWh
Return on energy break-even	5.2 months
Lifetime return on energy	46 times
Recyclability rate	87.4%

Configuration: 112m hub height and wind class IECIIB. Depending on site-specific conditions. Metrics are based on an externally reviewed Life Cycle Assessment available on vestas.com

2.2. INDIVIDUAZIONE E SCELTA DEI RECETTORI

Per il sito in esame, sono state prese in considerazione e valutate tutte le strutture presenti nell'area limitrofa i punti di futura installazione delle turbine di progetto. I fabbricati rientranti nell'area di impianto sono stati censiti consultando le cartografie catastali, i CTR, le tavole IGM in scala 1:25.000.

Successivamente è stata condotta una campagna di rilevazioni in sito per la verifica delle reali condizioni dei fabbricati precedentemente individuati "su carta". Tale analisi è stata estesa ai potenziali recettori distanti fino a 1000 metri dall'aerogeneratori di progetto.

Da tale studio si è evinto che parte dei fabbricati individuati sono risultati ruderi, altri adibiti a ricovero di mezzi ed attrezzi agricoli oppure depositi. Per le modalità di analisi, di studio e di scelta di tali recettori, oltre al presente elaborato, si faccia riferimento agli elaborati della sezione "SIA-STUDIO DI IMPATTO AMBIENTALE".

I criteri per la definizione delle caratteristiche che debbano avere i fabbricati per essere considerati recettori e la distanza minima che si deve rispettare per essi sono riportati nelle linee guida nazionali per l'autorizzazione alla costruzione e all'esercizio di impianti di produzione di elettricità da fonti rinnovabili (pubblicate nella G.U. del 18/09/2010).

Le linee Guida nazionali prescrivono come misura di mitigazione una distanza minima di ciascun aerogeneratore da unità abitative munite delle caratteristiche di abitabilità, regolarmente censite e stabilmente abitate, non inferiore ai 200 m (rif. lettera a) del punto 5.3 dell'allegato 4 delle linee guida).

Inoltre, come recettori sono state considerate anche le strutte accatastate come "abitazioni" (categorie catastali da A/1 ad A8; Fabbricato Rurale) che attualmente non sono abitate o stabilmente abitate.

Per il sito in esame, l'analisi ha condotto all'individuazione di 41 recettori.

A seguire saranno presentate una tabella di inquadramento geografico dei suddetti recettori e le immagini relative alle porzioni di territorio interessate rispettivamente dagli stessi insieme alle turbine di progetto. I recettori considerati sensibili sono mostrati nelle immagini a seguire e sono identificati da cerchi o semicerchi gialli proposti su carta topografica EMD – OpenTopoMap e su planimetria ortofoto estratto da Google Earth. La turbina di futura installazione è sempre contrassegnata con etichetta di colore rosso, mentre i recettori sensibili sono contrassegnati con l'identificativo "R".

Tabella 10: Inquadramento geografico – Coordinate dei recettori individuati

ID Recettore	UTM WGS 84 Long. Est [m]	UTM WGS 84 Lat. Nord [m]	Altitudine s.l.m. [m]
R01	537851	4508794	928
R02	537801	4508785	919
R03	537822	4508678	927
R04	538422	4508611	932
R05	538599	4508848	928
R06	539587	4508676	894
R07	540181	4507681	793
R08a	538564	4507435	845
R08b	538658	4507416	857
R08c	538694	4507378	848
R08d	538629	4507411	851
R09	537914	4507088	873
R10	538955	4506846	829
R11	537792	4506775	855
R12	539609	4506718	814
R12a	539606	4506629	788
R12b	539590	4506617	789
R13a	538120	4506510	858
R13b	538133	4506455	864
R13c	538174	4506428	868
R13d	538105	4506450	863
R13e	538079	4506486	859
R14	539582	4505647	779
R15	540241	4504922	789
R16	540196	4504847	785
R17	540108	4504871	798
R18a	539995	4505187	806
R18b	539941	4505152	819
R18c	539918	4505182	816
R19	540001	4504784	767
R20	539835	4504812	771
R21	539807	4504626	775
R22	539721	4504580	761
R23	539517	4504737	790
R24	538155	4504988	855
R25a	537782	4505004	870
R25b	537819	4504991	865
R25c	537758	4505012	871
R26	536758	4504752	748
R27	536264	4505227	821
R28	536539	4505994	795
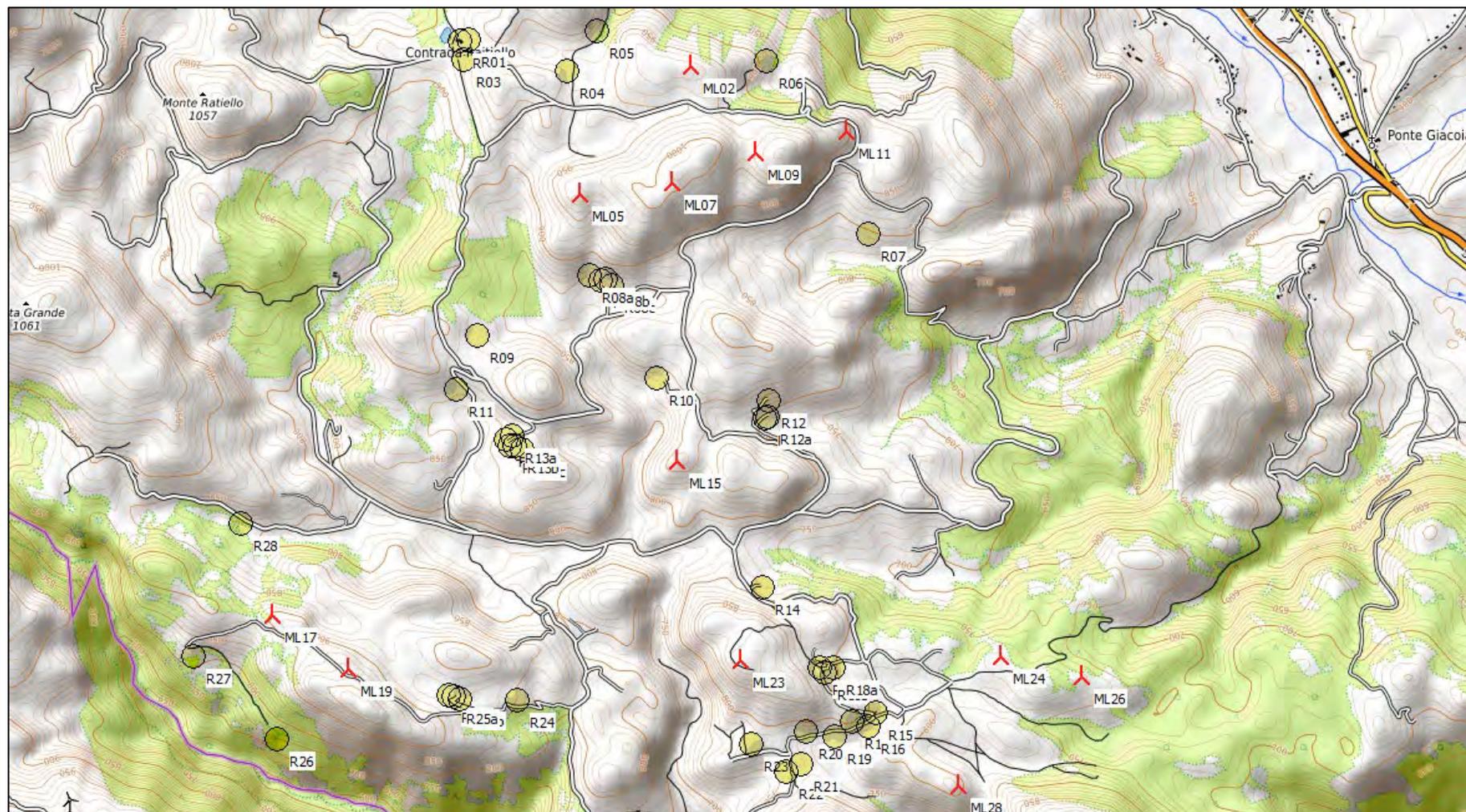
Figura 5: Vista dell'area di studio con le turbine di progetto (etichette rosse) e dei recettori (cerchi gialli) indicati con etichette "R" su carta topografica.
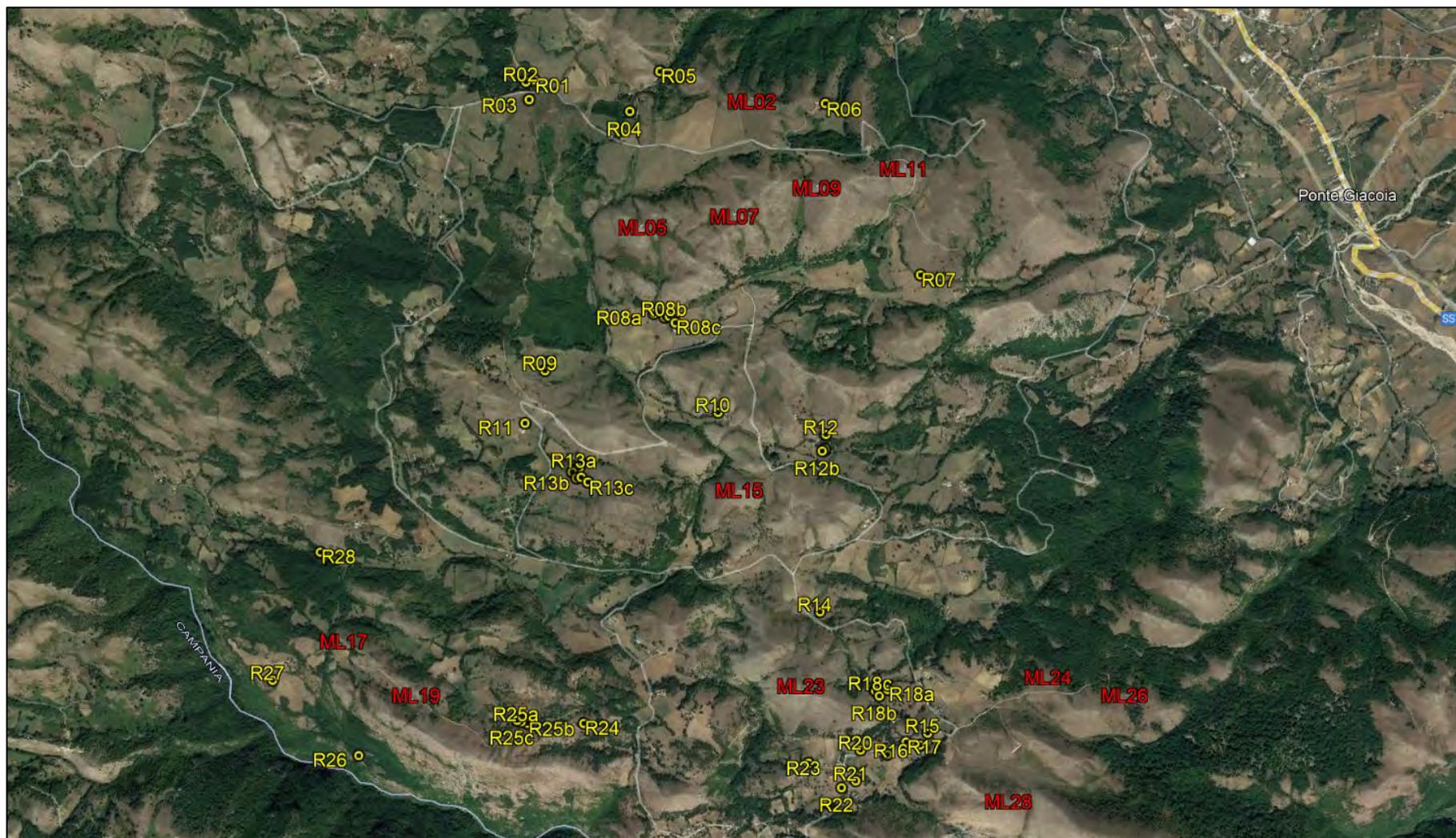
Figura 6: Vista di insieme di tutta l'area di studio con evidenza delle turbine di progetto (ML), e dei recettori sensibili indicati con etichetta "R" su stralcio ortofotografico planimetrico estratto da Google Earth.

A seguire una tabella di riepilogo della matrice delle distanze intercorrenti tra recettori considerati nell'analisi e gli aerogeneratori di progetto.

Tabella 5: Matrice delle distanze (in metri) tra aerogeneratori e recettori.

Recettori\WTG	ML02	ML05	ML07	ML09	ML11	ML15	ML17	ML19	ML23	ML24	ML26	ML28
R01	1296	1099	1447	1794	2256	2713	3507	3694	3916	4718	5117	5156
R02	1345	1122	1483	1838	2303	2728	3483	3676	3928	4744	5146	5177
R03	1317	1027	1409	1783	2261	2624	3388	3575	3822	4651	5055	5077
R04	718	707	890	1196	1659	2331	3568	3669	3543	4214	4595	4701
R05	577	945	983	1161	1557	2520	3861	3953	3726	4306	4666	4829
R06	449	1330	893	534	610	2358	4296	4266	3458	3692	3987	4317
R07	1420	1695	1177	805	610	1710	4102	3928	2565	2553	2831	3216
R08a	1341	477	716	1195	1705	1179	2690	2667	2386	3247	3675	3634
R08b	1321	516	673	1133	1634	1123	2741	2702	2335	3165	3590	3564
R08c	1344	564	686	1131	1624	1075	2740	2691	2287	3112	3538	3512
R08d	1336	513	694	1158	1661	1130	2718	2682	2340	3182	3609	3576
R09	1982	1008	1430	1927	2442	1366	2006	2065	2420	3563	4024	3811
R10	1809	1155	1127	1419	1799	488	2620	2456	1700	2567	3010	2928
R11	2305	1337	1728	2209	2709	1347	1684	1729	2275	3521	3993	3703
R12	1984	1626	1375	1431	1618	633	3142	2896	1505	1998	2412	2472
R12a	2070	1690	1456	1519	1705	586	3105	2847	1416	1936	2357	2394
R12b	2079	1689	1461	1530	1721	567	3086	2827	1403	1939	2362	2391
R13a	2367	1449	1726	2156	2614	968	1739	1650	1854	3113	3587	3281
R13b	2411	1499	1766	2190	2642	948	1717	1614	1807	3079	3555	3238
R13c	2419	1516	1769	2185	2631	906	1736	1617	1759	3030	3507	3189
R13d	2427	1511	1785	2211	2666	976	1692	1593	1824	3103	3579	3257
R13e	2406	1483	1768	2201	2660	1005	1692	1607	1868	3141	3616	3299
R14	3032	2506	2385	2500	2670	885	2863	2465	445	1440	1922	1609
R15	3884	3456	3276	3303	3360	1860	3560	3086	843	797	1216	633
R16	3943	3499	3330	3367	3432	1893	3528	3048	832	871	1276	624
R17	3897	3436	3278	3327	3406	1822	3437	2958	743	940	1357	712
R18a	3563	3104	2942	2996	3089	1500	3283	2830	543	974	1443	993
R18b	3585	3110	2959	3023	3126	1496	3233	2776	493	1031	1496	1010
R18c	3551	3072	2923	2990	3097	1458	3207	2753	467	1051	1519	1047
R19	3957	3465	3328	3396	3492	1838	3349	2861	701	1073	1480	771
R20	3897	3371	3257	3348	3470	1736	3180	2693	560	1215	1636	937
R21	4075	3532	3431	3531	3658	1894	3197	2696	692	1318	1710	922
R22	4107	3545	3458	3571	3710	1906	3127	2622	695	1416	1806	1003
R23	3927	3330	3268	3409	3578	1695	2888	2390	488	1539	1963	1226
R24	3788	2940	3111	3442	3793	1665	1511	1006	1319	2824	3286	2611
R25a	3887	2992	3222	3593	3979	1886	1157	637	1685	3195	3658	2981
R25b	3886	2996	3220	3586	3969	1870	1196	676	1650	3159	3621	2942
R25c	3888	2990	3224	3597	3987	1897	1132	612	1708	3218	3681	3006
R26	4564	3605	3945	4378	4820	2831	722	579	2736	4239	4695	3971
R27	4467	3492	3903	4376	4859	3039	522	903	3189	4703	5174	4515
R28	3714	2741	3187	3680	4185	2567	553	1040	3015	4490	4971	4438

In rosso è evidenziata la distanza tra aerogeneratori di progetto e recettori individuati inferiore ai 500m: il valore minimo è raggiunto dal recettore R14, il quale dista 445 m dall'aerogeneratore ML23.

3. ANALISI DI SHADOW - FLICKERING

3.1. CENNI SUL FENOMENO DELL'EVOLUZIONE DELL'OMBRA GENERATA DAGLI AEROGENERATORI

Le turbine eoliche, come altre strutture fortemente sviluppate in altezza, proiettano un'ombra sulle aree adiacenti in presenza della luce solare diretta
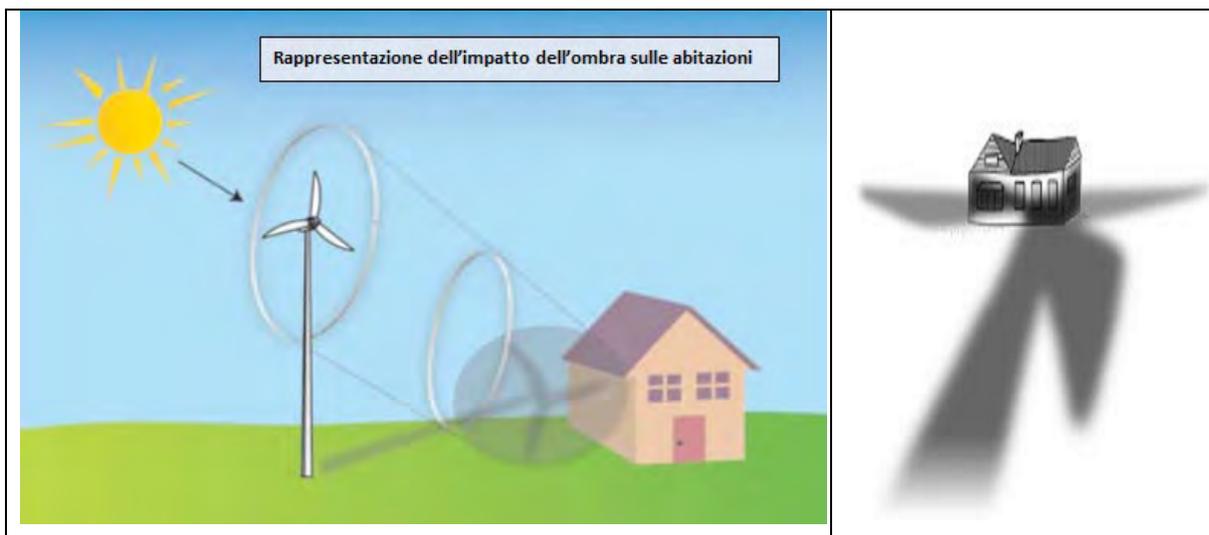
Figura 7: Rappresentazione grafica dell'impatto dell'ombra generata da una turbina eolica

Il cosiddetto fenomeno del "flickering" consiste in un effetto di lampeggiamento che si verifica quando le pale del rotore in movimento "tagliano" la luce solare in maniera intermittente. Il flickering si verifica solo in determinate condizioni e coinvolge solo un'area limitata che circonda un parco eolico; tuttavia, esso può determinare disturbo per i residenti dei fabbricati situati nei pressi dell'impianto e pertanto è importante valutare e garantire che l'esposizione sia limitata.

Affinché il fenomeno si verifichi presso un recettore, il cielo deve essere chiaro e la turbina deve funzionare, altrimenti non vengono emesse ombre in movimento; inoltre, il rotore della turbina deve essere situato lungo la linea di vista, senza ostacoli, dal recettore al sole. Poiché la posizione del sole cambia per tutto il giorno e per tutto l'anno, anche l'area interessata dall'ombra cambia. Il flickering è percepito come disturbante quando la variazione dell'intensità luminosa è superiore al livello di percezione dell'occhio umano.

La distanza tra una turbina eolica e un recettore influisce sull'intensità dello "sfarfallio che diminuisce con la distanza dal recettore alla turbina, fino ad un punto in cui il cambiamento dell'intensità luminosa è inferiore a quello che l'occhio umano può distinguere. Le ombre proiettate vicino ad una turbina sono più intense, distinte e "focalizzate" perché una maggior parte del sole è bloccata intermittentemente dalle lame passanti. Quando aumenta la separazione tra il recettore e la turbina, la percentuale del sole oscurata diminuisce e le ombre diventano meno intense e meno discernibili. A una distanza di circa 10 volte il diametro del rotore, l'intensità del tremolio dell'ombra è significativamente ridotta e diventa meno percepibile all'occhio umano. L'intensità è anche ridotta se il piano del rotore è ad un angolo diverso da quello perpendicolare alla linea di vista dal recettore al sole, anche perché le lame passanti oscurano

una parte minore di sole. Le condizioni di illuminazione ambientale influenzano anche la visibilità dello sfarfallio: il flickering è più evidente in una stanza oscura con una finestra rivolta verso la turbina rispetto all'esterno dove i livelli di luce ambientale sono più alti. La frequenza o la velocità del tremolio dell'ombra è correlata alla velocità del rotore e al numero di lame sulla turbina. Alcune linee guida di paesi esteri raccomandano una velocità di flicker non superiore a 3 "tagli" al secondo.

Per la classica turbina eolica provvista di tre pale, questo effetto corrisponde quindi ad una completa rotazione del rotore in un secondo, equivalente a 60 giri al minuto (60 RPM). Tali valori sono tipici di aerogeneratori di piccola taglia con piccoli rotori (circa 20 m) e più elevata velocità di rotazione. Le attuali turbine in commercio di grande taglia hanno una velocità di rotazione ben inferiore a tali valori, con velocità del rotore intorno ai 20 RPM. Ciò si traduce in bande che passano frequenze inferiori a 1 Hz o 1 ciclo al secondo. <u>A queste basse frequenze, lo sfarfallio potrebbe essere motivo di fastidio, ma non costituisce una minaccia per la salute.</u> Secondo l'Associazione britannica di epilessia, le frequenze inferiori a 3Hz non causano episodi di epilessia fotosensibile e le velocità di sfarfallio delle turbine eoliche moderne non sono in grado di innescare crisi epilettiche. Considerando la relazione spaziale tra le turbine e i recettori (localizzazioni geografiche e elevazioni del suolo) nonché la geometria delle turbine (altezza del mozzo e dimensioni del rotore), il verificarsi del fenomeno di flickering può essere accuratamente modellato e previsto con il dettaglio dei minuti. Una progettazione attenta è comunque fondamentale per evitare questo spiacevole fenomeno semplicemente prevedendo il luogo di incidenza dell'ombra e disponendo le turbine in maniera tale che l'ombra sulle zone sensibili non superi un certo numero di ore all'anno.

Il grafico che segue riporta l'evoluzione annuale tipica dell'ombra di una turbina considerando il caso peggiore di pale sempre in rotazione intorno al mozzo, e orientate sempre ortogonalmente al sole durante la sua evoluzione giornaliera. Come è evidente dal grafico e dalla legenda, le ore annue di ombra sono sempre minori con l'aumentare della distanza dal pilone secondo una particolare geometria dettata dalla posizione geografica; da osservare che l'ombra arriva a proiettarsi anche sino ad una distanza di 1 km, anche se solo per pochi minuti all'anno.
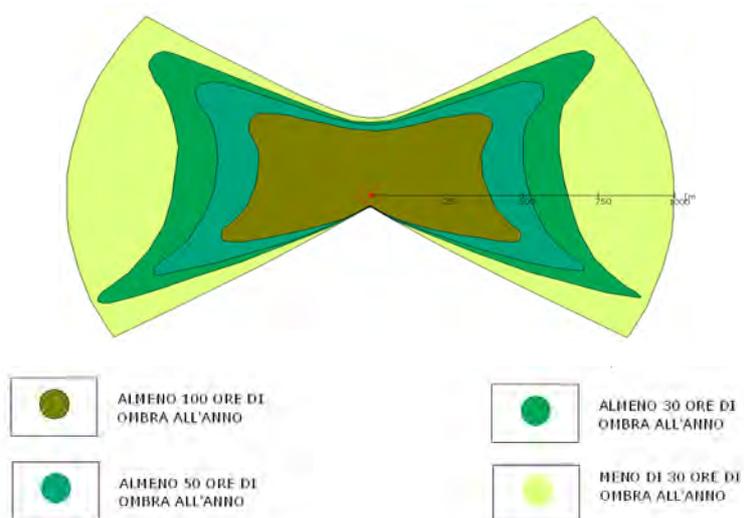
Figura 8: Evoluzione annuale tipo dell'ombra di un aerogeneratore

In Italia, così come nella maggior parte dei paesi Europei ed extraeuropei non esiste una normativa specifica relativa al disturbo generato dal fenomeno di Shadow – Flickering. Esistono delle regolamentazioni locali ma quasi mai comprendono limiti numerici specifici, quanto piuttosto delle raccomandazioni tese a sottolineare che il fenomeno non sia "unreasonable" o "significant".

Il valore di riferimento più diffuso, presente in molte norme internazionali e assunto come valore qualitativo, è quello delle 30 ore per anno calcolate come ore effettive del fenomeno atteso al recettore, che in via generale corrisponde a circa 100-150 ore in worst case in dipendenza delle condizioni meteo.

3.2. METODOLOGIA DI ANALISI

La valutazione tecnica è stata eseguita con l'ausilio di un software di simulazione specifico per la progettazione degli impianti eolici WIND PRO®, costituito da un insieme di moduli di elaborazione orientati alla simulazione di una moltitudine di aspetti che caratterizzano le diverse fasi progettuali. Il modulo SHADOW è quello specifico per la valutazione dell'evoluzione dell'ombra e del flickering.

I dati di input sono:

- modello DTM del terreno;
- la posizione degli aerogeneratori, il modello e le caratteristiche dimensionali;
- definizione di aree sensibili o recettori, posizione geografica e caratteristiche dimensionali dell'area disturbata (finestra, patio, area esterna)
- definizione di caratteristiche anemologiche dell'area per il calcolo del "real case" basato sulla effettiva distribuzione statistica dei dati del vento in relazione alle ore di funzionamento ed al posizionamento della navicella per la proiezione del rotore.
- definizione di dati meteorologici storici di una stazione di riferimento per il calcolo probabilistico delle ore di soleggiamento

Nel modello di calcolo dell'ombra utilizzato da windPRO i seguenti parametri definiscono la propagazione dell'ombra dietro il disco del rotore:

- Il diametro del Sole, D: 1.390.000 km
- La distanza dal Sole, d: 150.000.000 km
- Angolo di attacco: 0.531 gradi

Teoricamente, ciò comporterebbe un impatto di ombra fino a 4,8 km con un rotore di 45 metri di diametro. In realtà, tuttavia, le ombre non raggiungono mai il massimo teorico a causa delle caratteristiche ottiche dell'atmosfera. Quando il Sole diventa troppo basso all'orizzonte e la distanza diventa troppo lunga, l'ombra si disperde prima che raggiunga il suolo (o il recettore).

I recettori dell'ombra sono invece definiti nel modello dalle seguenti informazioni:

- La posizione della "finestra" sopra il livello del suolo e la sua dimensione (altezza e larghezza).
- L'inclinazione della "finestra" rispetto all'orizzontale (si può scegliere tra finestra verticale, orizzontale e tetto [45°]).
- L'orientamento direzionale della finestra rispetto al sud (in gradi, positivi, a ovest).
- In alternativa è possibile selezionare la modalità "Green house", ovvero il recettore è modellato con caratteristiche di una "serra" che riceve ombra da qualunque direzione in quanto

completamente esposto al fenomeno dell'ombra intermittente.
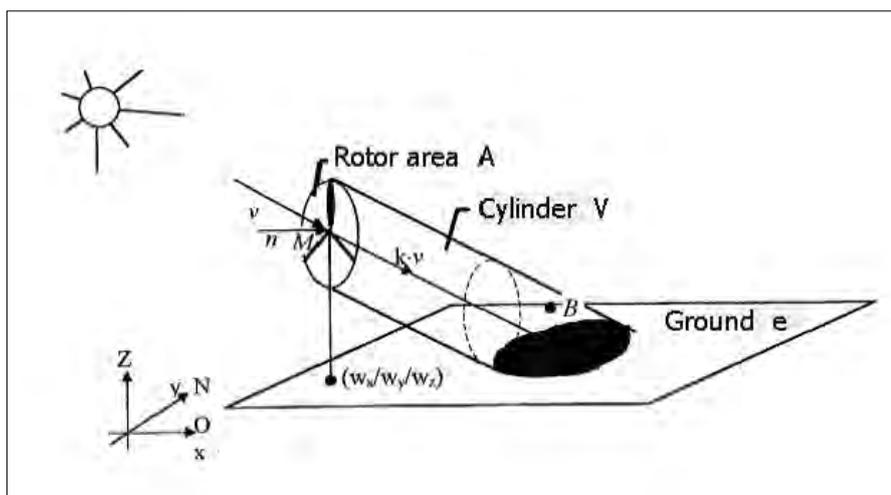
Figura 9: Schema di calcolo del modulo Shadow
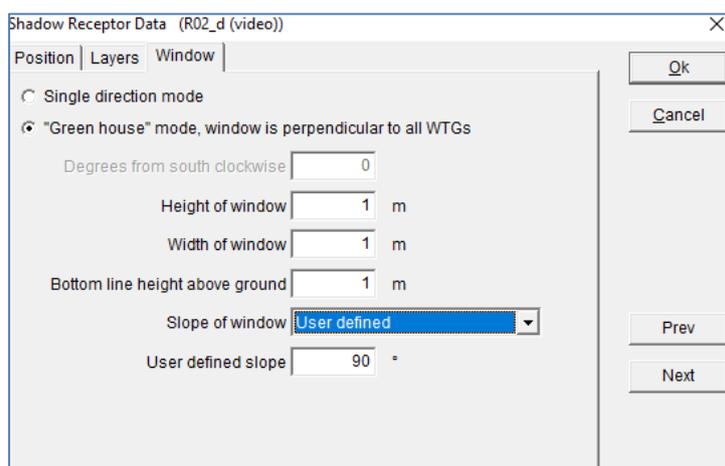
Figura 10: Finestra di input delle caratteristiche del recettore

Il software tiene conto dell'ostacolo naturale costituito dall'orografia e da eventuali ostacoli inputati specificatamente (ad es. foreste, barriere naturali o artificiali etc..), grazie all'opzione ZVI.
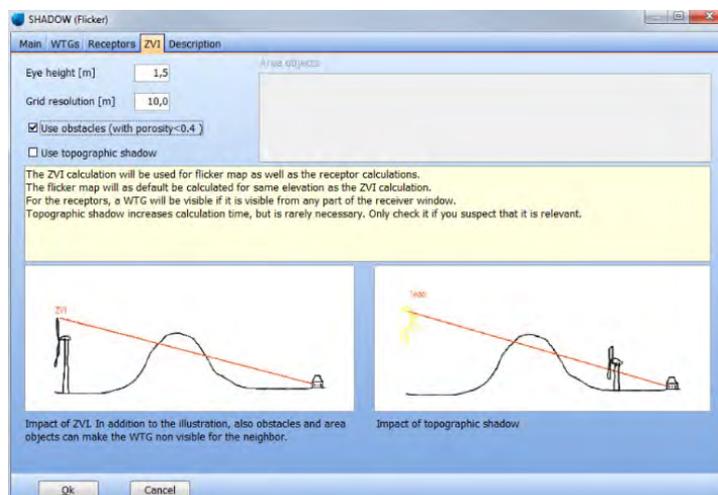
Figura 11: Finestra della opzione ZVI che tiene conto degli ostacoli naturali ed artificiali inputati nel software

Per le simulazioni, ogni singolo ricettore viene considerato in modalità "green house", cioè come se tutte le pareti esterne fossero esposte al fenomeno, senza considerare la presenza di finestre e/o porte dalle quali l'effetto arriva realmente all'interno dell'abitazione. Allo stesso tempo, si è trascurata la presenza degli alberi e di altri ostacoli posti ai margini delle strade che, "intercettando" l'ombra degli aerogeneratori, potrebbero ridurre il fastidio del flickering.

Ciò significa che i risultati ai quali si perverrà sono ampiamente cautelativi.

Ai fini di una comprensione del reale effetto di disturbo, lo studio è stato effettuato in modalità "Real Case", ovvero tenendo conto dei dati statistici ricavati da una stazione anemometrica sita nella stessa area, e di una stazione meteo che fornisce i dati di copertura nuvolosa della zona. In tal modo, viene ricavato il numero di ore di ombreggiamento più realistico in quanto si tiene conto della reale presenza del sole e delle ore di funzionamento della turbina nell'arco di un anno anche in funzione della direzione del vento che influisce sull'orientamento delle pale rispetto al sole e dunque sull'ombra proiettate sui ricettori.

3.3.   DATI DI INPUT E PARAMETRI DEL MODELLO

In base alla metodologia descritta nei paragrafi precedenti, sono stati utilizzati i seguenti dati di input per impostare il modello di simulazione per la valutazione del fenomeno di Shadow-Flickering degli aerogeneratori di esame:

DTM: Modello del terreno digitale per caratterizzare l'orografia, che svolge un ruolo importante nella mascheratura fisica dell'impatto dell'ombra

• Posizioni geografiche di recettori con dettaglio dimensionale delle aree più esposte.

• Posizioni geografiche di generatori di turbine eoliche e loro caratteristiche dimensionali

• Dati del vento di una stazione di misura locale per il calcolo dell'energia per stimare le ore operative e le probabilità associate alle diverse direzioni del vento

• Probabilità mensile della presenza del sole da una stazione meteo nazionale

• Nessun ostacolo naturale o artificiale è stato modellato.

3.4.   DTM

Il modello digitale del terreno DTM (Digital Terrain Model) è stato estrapolato dal grid disponibile in download dal satellite, georeferenziato, sovrapposto, confrontato e adeguato con le curve di livello presenti sulla cartografia ufficiale con uno step di 10 m. Il modello digitale ottenuto copre un'area di 40x40 Km e trova un buon riscontro con l'andamento orografico verificato in sito.
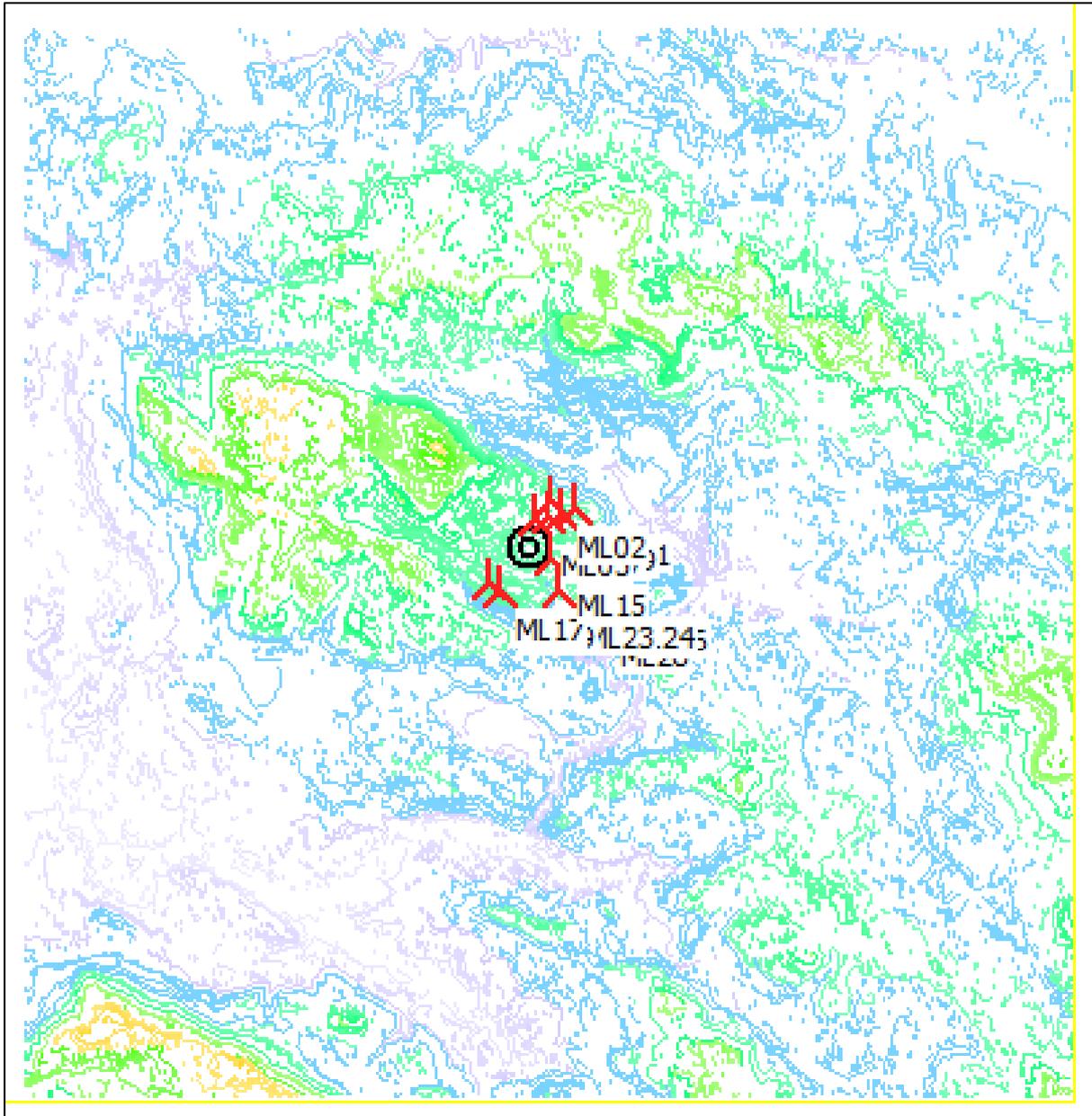
Figura 12: Stralcio del DTM di input con posizione degli aerogeneratori di progetto.

3.5. AEROGENERATORI E RECETTORI

Le coordinate ed il relativo modello di turbina sono stati dettagliati al paragrafo 2.1.

Le caratteristiche e le coordinate dei recettori sono state dettagliate al paragrafo 2.2, ma è importante sottolineare che per tutti i recettori si è ritenuto opportuno usare l'ipotesi di cautela della modalità "green house mode". Questa scelta è stata operata poiché in talune circostanze anche lo spazio antistante le strutture può essere considerato o adibito a luogo di riposo e relax. La scelta di una singola finestra o di una facciata in alcune condizioni potrebbe risultare riduttiva allo scopo di una vera valutazione d'impatto.

Tabella 6: Coordinate geografiche dei recettori e caratteristiche dimensionali della tipologia di area considerata nell'analisi.

ID Recettore	UTM WGS 84 Long Est [m]	UTM WGS 84 Lat Nord [m]	Altitudine	Lunghezza	Larghezza	Altezza	Direction mode
R01	537851	4508794	R01	1	1	1	"Green house mode"
R02	537801	4508785	R02	1	1	1	"Green house mode"
R03	537822	4508678	R03	1	1	1	"Green house mode"
R04	538422	4508611	R04	1	1	1	"Green house mode"
R05	538599	4508848	R05	1	1	1	"Green house mode"
R06	539587	4508676	R06	1	1	1	"Green house mode"
R07	540181	4507681	R07	1	1	1	"Green house mode"
R08a	538564	4507435	R08a	1	1	1	"Green house mode"
R08b	538658	4507416	R08b	1	1	1	"Green house mode"
R08c	538694	4507378	R08c	1	1	1	"Green house mode"
R08d	538629	4507411	R08d	1	1	1	"Green house mode"
R09	537914	4507088	R09	1	1	1	"Green house mode"
R10	538955	4506846	R10	1	1	1	"Green house mode"
R11	537792	4506775	R11	1	1	1	"Green house mode"
R12	539609	4506718	R12	1	1	1	"Green house mode"
R12a	539606	4506629	R12a	1	1	1	"Green house mode"
R12b	539590	4506617	R12b	1	1	1	"Green house mode"
R13a	538120	4506510	R13a	1	1	1	"Green house mode"
R13b	538133	4506455	R13b	1	1	1	"Green house mode"
R13c	538174	4506428	R13c	1	1	1	"Green house mode"
R13d	538105	4506450	R13d	1	1	1	"Green house mode"
R13e	538079	4506486	R13e	1	1	1	"Green house mode"

ID Recettore	UTM WGS 84 Long Est [m]	UTM WGS 84 Lat Nord [m]	Altitudine	Lunghezza	Larghezza	Altezza	Direction mode
R14	539582	4505647	R14	1	1	1	"Green house mode"
R15	540241	4504922	R15	1	1	1	"Green house mode"
R16	540196	4504847	R16	1	1	1	"Green house mode"
R17	540108	4504871	R17	1	1	1	"Green house mode"
R18a	539995	4505187	R18a	1	1	1	"Green house mode"
R18b	539941	4505152	R18b	1	1	1	"Green house mode"
R18c	539918	4505182	R18c	1	1	1	"Green house mode"
R19	540001	4504784	R19	1	1	1	"Green house mode"
R20	539835	4504812	R20	1	1	1	"Green house mode"
R21	539807	4504626	R21	1	1	1	"Green house mode"
R22	539721	4504580	R22	1	1	1	"Green house mode"
R23	539517	4504737	R23	1	1	1	"Green house mode"
R24	538155	4504988	R24	1	1	1	"Green house mode"
R25a	537782	4505004	R25a	1	1	1	"Green house mode"
R25b	537819	4504991	R25b	1	1	1	"Green house mode"
R25c	537758	4505012	R25c	1	1	1	"Green house mode"
R26	536758	4504752	R26	1	1	1	"Green house mode"
R27	536264	4505227	R27	1	1	1	"Green house mode"
R28	536539	4505994	R28	1	1	1	"Green house mode"

3.6. INPUT PER LA MODELLAZIONE DEL "REAL CASE"

Per un calcolo "REAL CASE" affidabile, sono richieste le probabilità mensili di presenza di sole in aggiunta ai dati locali sul vento. I dati meteo di copertura nuvolosa sono dedotti dalla stazione meteo di Palinuro posta a circa 78 km a Sud-Est dell'area di studio. La distanza dalla stazione di riferimento risulta essere rappresentativa per le condizioni locali.
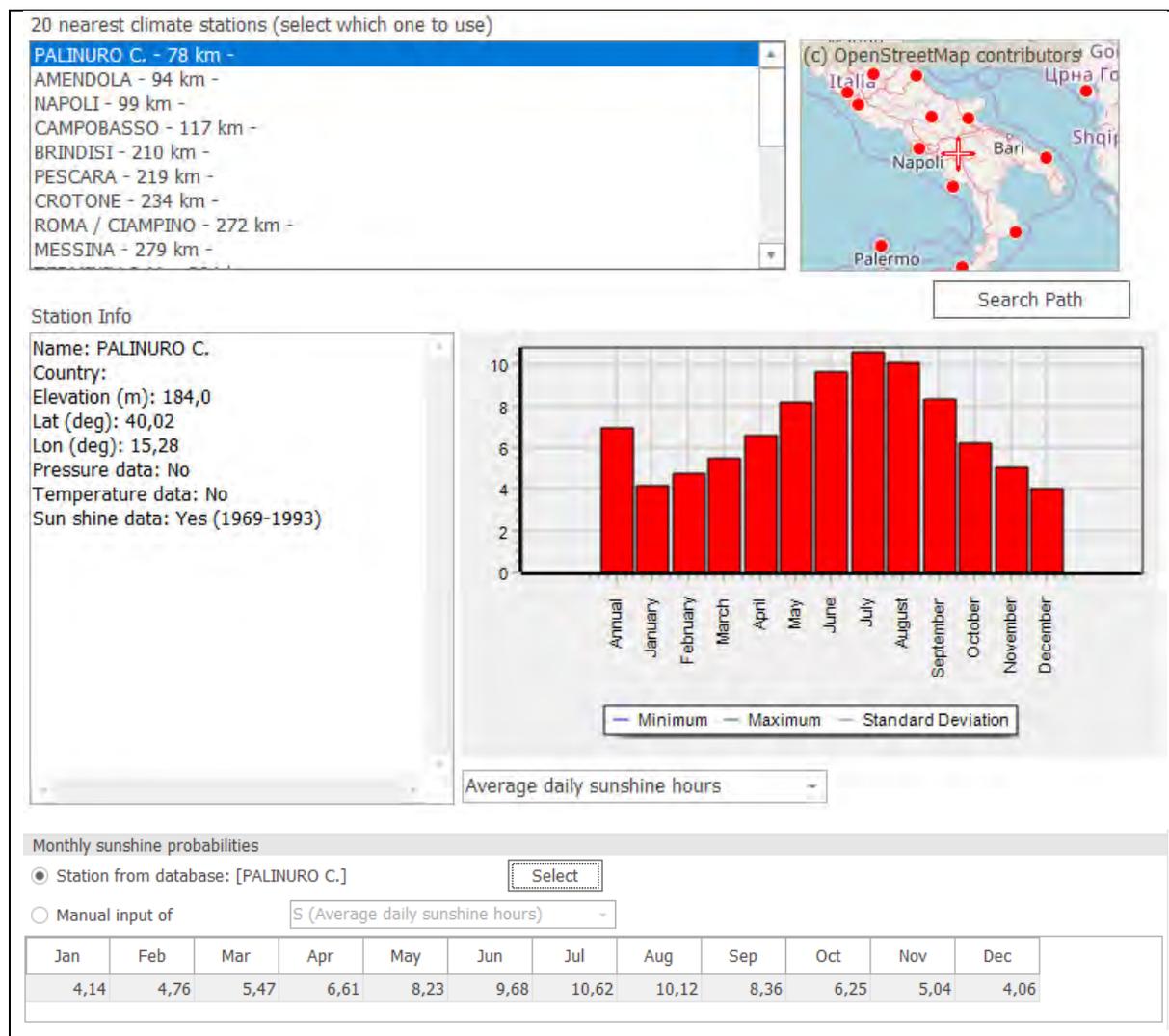
Figura 13: Valori di probabilità di soleggiamento mensile della stazione meteo di Palinuro.

I dati meteo utili al calcolo energetico e di funzionamento degli aerogeneratori sono stati ricavati da un nodo satellitare disponibile per il download dal database EMD del software WindPro. Tale stazione, ha una disponibilità di dati tale da poter esser considerata rappresentativa dell'anemologia e della climatologia dell'area ed è posta in un punto centrale del layout.

I parametri anemologici a seguire fanno riferimento al dato ad altezza 105 m s.l.t.

PARK - Wind Data Analysis

Calculation: GE.AGB01.C8 rev 02   **Wind data:** SD StrignaDora40 – SD StrignaDora40; Hub height: 105,0

Site coordinates
UTM (north)-WGS84 Zone: 33
East: 539.654   North: 4.508.147
Wind statistics
IT TP_201_Strigna Dora 40m - C1 40.00 m.wws

Weibull Data

Current site

Sector	A- parameter [m/s]	Wind speed [m/s]	k- parameter	Frequency [%]
0 N	7,47	6,62	1,939	10,5
1 NNE	8,04	7,18	1,682	8,0
2 ENE	6,70	6,00	1,635	5,7
3 E	4,29	3,85	1,580	3,5
4 ESE	5,26	4,71	1,604	5,0
5 SSE	6,27	5,57	1,861	7,5
6 S	7,03	6,29	1,662	9,2
7 SSW	10,11	8,97	1,908	14,8
8 WSW	9,77	8,66	2,037	10,1
9 W	6,87	6,12	1,732	3,6
10 WNW	6,96	6,17	2,068	8,0
11 NNW	7,80	6,91	2,271	13,9
All	7,70	6,87	1,729	100,0
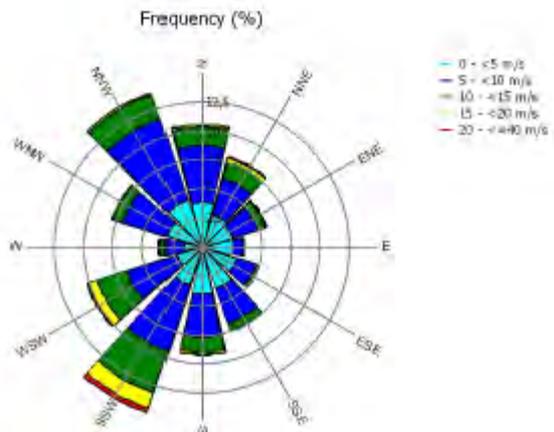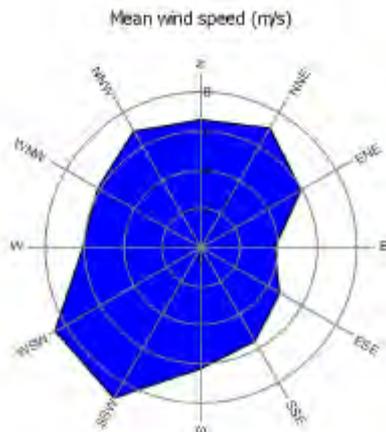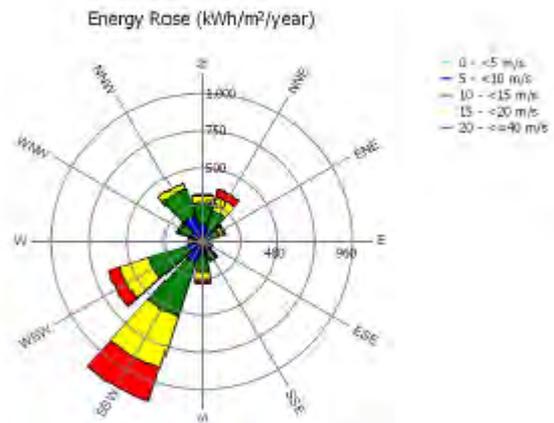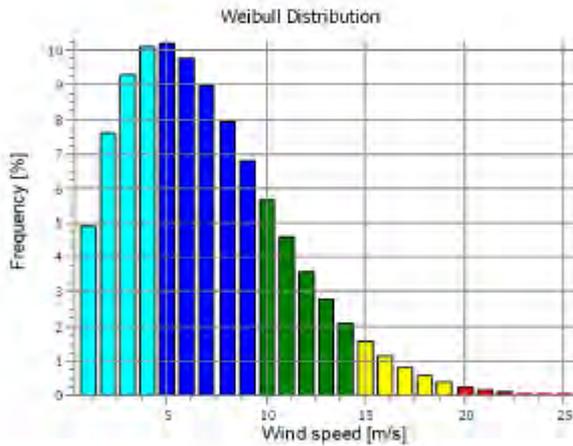
Figura 14: Informazioni sull' anemologia locale utili al calcolo dello shadow flickering.

4. RISULTATI

Si riportano di seguito sinteticamente in forma tabellare i risultati di durata del fenomeno (dovuta alla presenza dei soli aerogeneratori di progetto) per i recettori analizzati nelle le condizioni "Real Case".

Tabella 7: Risultati del calcolo relativo agli aerogeneratori di progetto

	Shadow	Max shadow	Shadow
	[days/year]	[h/day]	[h/year]
R01	129	0:25	9:44
R02	109	0:24	8:19
R03	14	0:12	0:31
R04	193	0:43	25:01
R05	143	0:53	21:06
R06	201	2:00	62:41
R07	119	0:30	13:33
R08a	0	0:00	0:00
R08b	0	0:00	0:00
R08c	0	0:00	0:00
R08d	0	0:00	0:00
R09	36	0:09	1:21
R10	17	0:20	1:13
R11	35	0:26	2:37
R12	84	0:54	15:00
R12a	73	0:56	14:09
R12b	75	0:57	15:03
R13a	104	0:36	9:54
R13b	113	0:37	10:24
R13c	112	0:38	10:04
R13d	111	0:35	10:21
R13e	44	0:34	5:10
R14	110	1:13	33:09
R15	228	1:27	55:05
R16	202	0:56	32:00
R17	213	0:50	31:54
R18a	219	1:00	38:30
R18b	240	1:07	50:28
R18c	244	1:09	52:17
R19	164	0:44	23:09
R20	80	0:37	7:54
R21	133	0:37	13:29
R22	45	0:34	5:30
R23	102	0:28	8:08
R24	91	0:57	16:48
R25a	135	1:26	40:36
R25b	133	1:22	38:23
R25c	136	0:58	30:25
R26	0	0:00	0:00
R27	48	0:37	6:48
R28	74	1:29	21:17

4.1. ANALISI DEI RISULTATI

Dalle simulazioni effettuate, si evince che gli aerogeneratori di progetto generano il fenomeno di shadow/flickering su 36 dei 41 recettori analizzati. Su 11 dei recettori il fenomeno è previsto per una durata tangibile che potrebbe superare le 30 ore anno. Il recettore R06 è quello maggiormente interessato dal fenomeno con un valore di 62:41 ore previste di shadow.

In ogni caso, tale risultato ("real case") deve ritenersi comunque a carattere cautelativo poiché non tiene conto della presenza di nubi e di vegetazione ad alto fusto.

In appendice è allegato un calendario (rif. Appendice *Calendar*), che riporta in maniera grafica giorno per giorno, per tutto l'anno, la durata giornaliera del fenomeno, l'orario di inizio e di fine del fenomeno, nelle condizioni di caso reale. Dalla lettura del *"Calendar"* si legge che il fenomeno dell'ombreggiamento, si esplica sui recettori con intensità variabile nei diversi mesi dell'anno.

Nella figura che segue è riportato a titolo di esempio il grafico "calendar" di un recettore: le macchie individuano i momenti di shadow, la posizione nel grafico individua tempo e durata del fenomeno, il colore della macchia individua la turbina che causa il fenomeno.
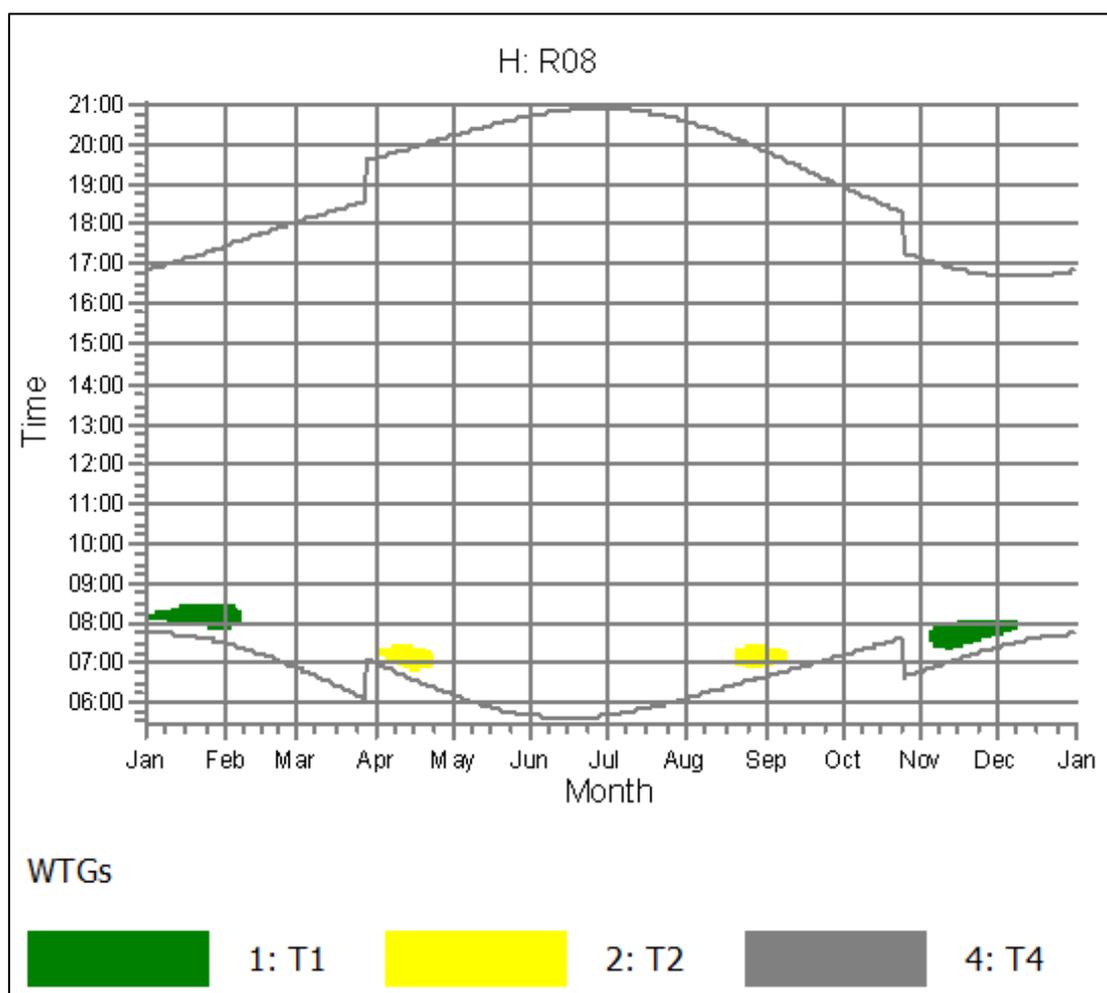
Figura 15: Rappresentazione grafica dell'ombreggiamento durante l'anno alle diverse fasce orarie e nei diversi mesi, i differenti colori sono utilizzati per distinguere le turbine che causano l'ombreggiamento.

L'allegato 2 riporta il dettaglio analitico di quanto espresso dal grafico precedente con gli specifici orari di inizio e di fine del fenomeno. A seguire è altresì riportata la sintesi grafica annuale (allegato 3, come mostra l'immagine precedente) dell'apporto di ombreggiamento a carico di ogni recettore ed il/gli aerogeneratore/i responsabile/i del fenomeno.

È stata inoltre elaborata una mappa (report *Map, Allegato 5*) in cui vengono riportate, con diverse gradazioni di colore, le zone soggette ad una determinata durata del fenomeno dell'ombreggiamento dovuto alle sole turbine di progetto oltre all'estensione areale nella quale il fenomeno risulta significativo. Il fenomeno dell'ombreggiamento interessa marginalmente tratti di strade statali, provinciali, comunali e/o private. Preme tuttavia evidenziare che nelle simulazioni non si è tenuto conto della possibile presenza di vegetazione capace di offrire un effetto "barriera" ai recettori e/o alle strade limitrofe. Inoltre, la percezione dell'impianto dalla strada risulterebbe essere "in movimento" e quindi legata alla breve permanenza delle automobili in transito, per cui il fastidio indotto sarebbe temporalmente limitato. A questo si aggiunge che le simulazioni sono state effettuate assumendo le "condizioni peggiori", sovrastimando pertanto l'effetto di flickering.

4.2. VALUTAZIONE DEGLI EFFETTI CUMULATIVI

Nell'area interessata dalle turbine di progetto sono presenti altri impianti eolici esistenti, in altro comune ed altra regione, posti a circa 1,5 km dalla posizione più a sud dell'impianto in oggetto; per il seguente studio sono state implementate le posizioni ed i modelli di aerogeneratori più vicini, tutti appartenenti all'impianto Fri-el Srl costituito da 12 aerogeneratori V90 di potenza nominale 3,0 MW. Al fine di effettuare una valutazione previsionale completa, si è tenuto conto, pertanto, di tutti gli aerogeneratori citati, unitamente a quelli di progetto, al fine di valutare al massimo le potenziali interferenze e sollecitazioni nei confronti dei recettori individuati.

Nella tabella e nelle figure seguenti è mostrato un inquadramento degli aerogeneratori esistenti e previsti da altre iniziative in iter autorizzativo rispetto agli aerogeneratori di progetto ed ai recettori sensibili individuati.

Tabella 8: Caratteristiche e coordinate geografiche dei punti di installazione previsti per gli aerogeneratori in iter autorizzativo ministeriale.

ID WTG	UTM WGS 84 Long. Est [m]	UTM WGS 84 Lat. Nord [m]	Altitudine s.l.m. [m]	Modello aerogeneratore	Potenza [KW]	Altezza mozzo s.l.t. [m]
FR01	537809	4503370	825	VESTAS V90	3,0	63
FR02	537529	4503232	857	VESTAS V90	3,0	63
FR03	537318	4503317	908	VESTAS V90	3,0	63
FR04	537173	4503489	964	VESTAS V90	3,0	63
FR05	536984	4503614	988	VESTAS V90	3,0	63
FR06	536780	4503701	982	VESTAS V90	3,0	63
FR07	536565	4503770	987	VESTAS V90	3,0	63
FR08	536348	4503831	975	VESTAS V90	3,0	63
FR09	536156	4503954	968	VESTAS V90	3,0	63
FR10	535932	4504086	1005	VESTAS V90	3,0	63

ID WTG	UTM WGS 84 Long. Est [m]	UTM WGS 84 Lat. Nord [m]	Altitudine s.l.m. [m]	Modello aerogeneratore	Potenza [KW]	Altezza mozzo s.l.t. [m]
FR11	535715	4504159	1005	VESTAS V90	3,0	63
FR12	535551	4504328	990	VESTAS V90	3,0	63

Si riportano in tabella i risultati ottenuti dalle elaborazioni effettuate considerando solo le macchine di progetto e quelle effettuate considerando l'effetto cumulativo di impianto di progetto ed impianti esistenti nell'ipotesi di modellazione "real case" dei recettori.

ID Recettore	REAL CASE VALORI REALI ATTESI AL RECETTORE [hh:mm/anno]	
	Solo impianto di progetto	Effetto cumulativo
R01	9:44	8:43
R02	8:19	7:26
R03	0:31	0:28
R04	25:01	22:33
R05	21:06	18:52
R06	62:41	57:14
R07	13:33	12:00
R08a	0:00	0:00
R08b	0:00	0:00
R08c	0:00	0:00
R08d	0:00	0:00
R09	1:21	1:15
R10	1:13	1:08
R11	2:37	2:19
R12	15:00	13:59
R12a	14:09	13:05
R12b	15:03	13:54
R13a	9:54	9:03
R13b	10:24	9:30
R13c	10:04	9:09
R13d	10:21	9:28
R13e	5:10	4:37
R14	33:09	31:21
R15	55:05	49:57
R16	32:00	29:01
R17	31:54	28:57
R18a	38:30	34:31
R18b	50:28	45:06
R18c	52:17	46:48
R19	23:09	21:00

ID Recettore	REAL CASE VALORI REALI ATTESI AL RECETTORE [hh:mm/anno]	
	Solo impianto di progetto	Effetto cumulativo
R20	7:54	7:03
R21	13:29	12:13
R22	5:30	4:55
R23	8:08	7:19
R24	16:48	15:00
R25a	40:36	36:01
R25b	38:23	34:03
R25c	30:25	26:56
R26	0:00	7:34
R27	6:48	6:04
R28	21:17	19:38

Dall'analisi dei dati riportati in tabella si può notare come l'effetto cumulativo comporti modifiche in termini di ombra intermittente indotta ai recettori: il numero di recettori con un totale di ore annue di ombreggiamento superiore a zero è pari a 37 su 41 totali; il numero di recettori che vengono interessati dal fenomeno per un numero di ore/anno superiore a 30 è pari a 8, con valore massimo atteso al recettore R06 di 57:14 h/anno di shadow flickering.

La riduzione in termini di ore di ombreggiamento che si osserva su alcuni recettori è da imputare ad un cambiamento delle condizioni di ventosità del sito dovute alla presenza delle turbine esistenti lungo le direzioni prevalenti del vento: gli effetti di scia modificano il campo di vento, riducendo le ore effettive di funzionamento delle macchine e di conseguenza le ore di ombreggiamento ad esse associato.

Per una maggiore garanzia, è stata prodotta una mappa di iso-ombreggiamento per l'area afferente ai recettori individuati e calcolata includendo nel modello di simulazione anche gli aerogeneratori esistenti ed in iter autorizzativo previsti dalle altre iniziative progettuali. In merito agli impianti in iter autorizzativo che distano più di 1000 m dai recettori individuati per l'analisi degli effetti di shadow flickering, si può affermare che l'effetto cumulativo apportato a questi ultimi può essere senza dubbio trascurato.

Esistono inoltre nelle aree limitrofe diversi impianti di tipo fotovoltaico. Gli impianti fotovoltaici non generano fenomeni di shadow che possano avere un effetto cumulato sui recettori, in tal senso si è valutato solo l'eventuale ombreggiamento che gli aerogeneratori di progetto potrebbero ingenerare sugli impianti fotovoltaici. Specifiche simulazioni hanno evidenziato che le distanze e le posizioni degli impianti sono tali da non causare nessuna interferenza effettiva che possa limitare il buon funzionamento degli impianti.
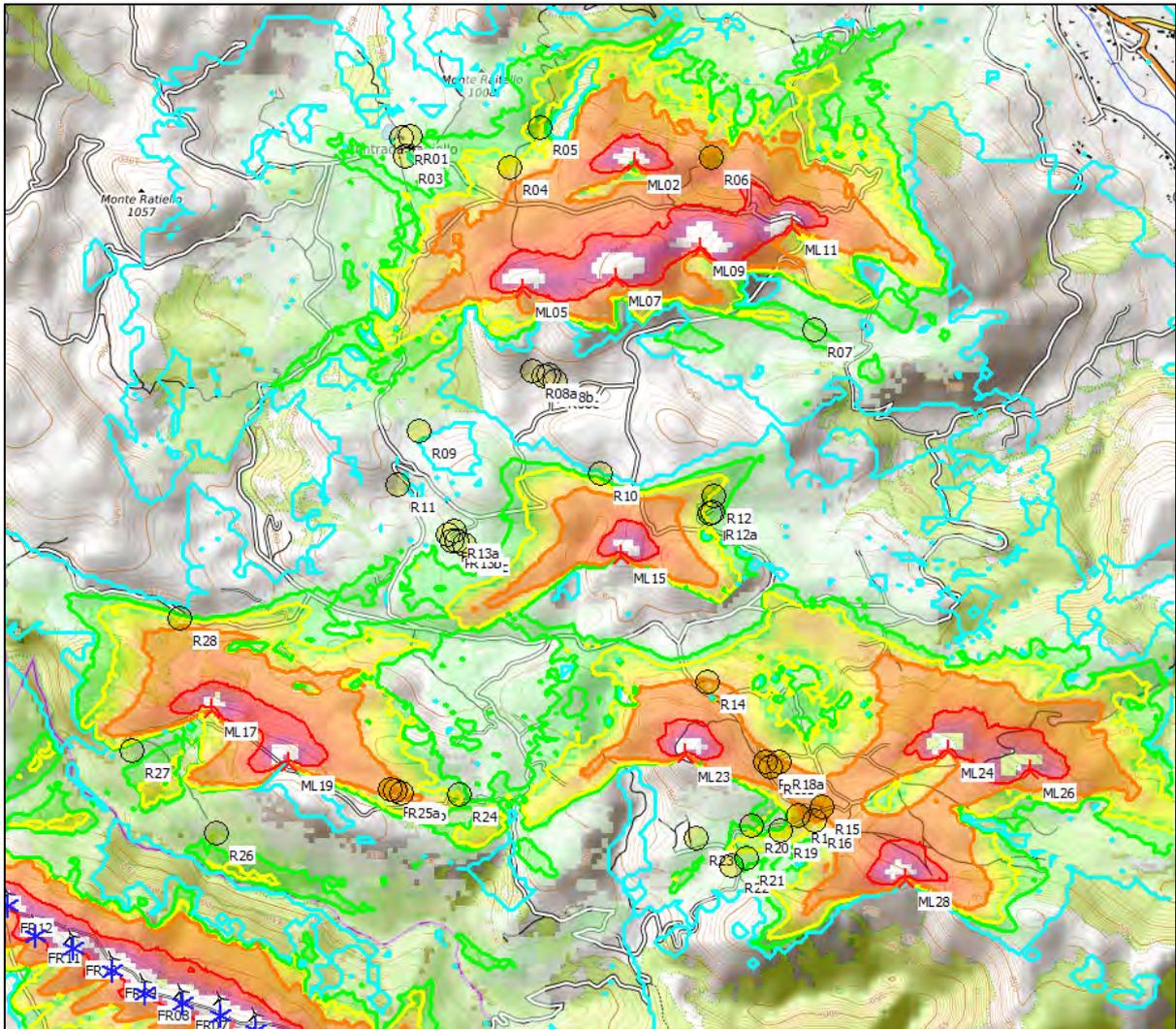
Figura 16: Mappa di iso-ombreggiamento su cartografia EMD OpenTopoMap rappresentativa delle ore/anno di fenomeno atteso ai recettori (R), procurato dell'impianto di progetto (ML) e dagli impianti esistenti (FR) individuati nell'area di interesse.

4.3. MISURE DI MITIGAZIONE

Dalle simulazioni effettuate, si evince che l'insieme di tutti gli aerogeneratori considerati genera un fenomeno tangibile (superiore alle 30 ore/anno) su 36 dei 41 recettori individuati nell'analisi, per i quali risulta come valore di durata reale atteso (ossia quello che tiene in conto anche i fattori derivati dai dati anemometrici di sito ed alla stazione meteorologica storica) dalle 0 alle 62 ore annue.

Il fenomeno dell'ombreggiamento interessa marginalmente tratti limitati della viabilità pubblica e privata. Si fa presente che anche per la viabilità, nelle simulazioni effettuate non si è tenuto conto della possibile presenza di vegetazione capace di offrire un effetto "barriera" e, in genere, sono state assunte condizioni "peggiori", sovrastimandosi pertanto l'effetto di flickering. Inoltre, la percezione dell'impianto dalla strada risulterebbe essere "in movimento" e quindi legata alla breve permanenza delle automobili in transito.

Qualora dovessero realizzarsi condizioni di disagio, potrebbero essere comunque richieste misure di mitigazione in virtù delle reali condizioni calcolate ai recettori in termini temporali e di frequenza di intermittenza. In tal senso è opportuno segnalare che esistono efficaci misure di mitigazione che potrebbero essere implementate, se necessario, quali la realizzazione di schermi artificiali o naturali (vegetazione) che esprimono la piena funzionalità solo in determinate condizioni orografiche.

Altra efficace misura di mitigazione del fenomeno dell'ombra intermittente è costituita dalla pre-programmazione attraverso il software di esercizio delle macchine, eseguita sulla base dei dati di "calendar" calcolati. Tali dati esplicitano con dettaglio del minuto tutti i momenti dell'anno in cui è previsto il verificarsi del fenomeno e, nelle ore in cui ciò avviene, la macchina potrebbe essere pre-programmata a non funzionare.

Da alcuni anni sono inoltre stati brevettati diversi sistemi che si abbinano alla pre-programmazione, basati su sensori che rilevano le effettive condizioni ambientali (ventosità e copertura nuvolosa) ed applicano la pre-programmazione solo nei casi in cui il fenomeno si dovesse realmente verificare. In tal senso le macchine sarebbero limitate nel loro funzionamento solo per un numero di ore pari a quelle stimate per il real case, e quindi con impatto economico trascurabile.

5. CONCLUSIONI E RACCOMANDAZIONI

In conclusione, si può affermare che i risultati ottenuti delle elaborazioni evidenziano, considerando le condizioni più sfavorevoli, che le turbine di progetto analizzate in tale studio generano effetti di shadow flickering su 36 dei 41 recettori analizzati. Su 11 recettori il fenomeno è previsto per una durata tangibile che potrebbe superare le 30 ore anno. Il recettore R06 è quello maggiormente interessato dal fenomeno con un valore di circa 62:41 ore previste di shadow.

Tale risultato ("real case") deve ritenersi comunque a carattere cautelativo poiché l'elaborazione ed il modello di simulazione non tiene in conto di tutte le possibili fonti di attenuazione dell'effetto cui ogni recettore è (o può essere) soggetto quali presenza di alberi, ostacoli, siepi e quant'altro possa attenuare il fenomeno dell'evoluzione giornaliera dell'ombra. Si aggiunga che ciascun recettore sensibile è stato modellato in "Greenhouse mode", vale a dire fabbricato dotato di sole superfici trasparenti, condizione molto cautelativa rispetto alla reale estensione superficiale di finestre e aperture. Inoltre, le metodologie di mitigazione oggi esistenti consentono di porre facilmente rimedio ad eventuali effettivi disturbi che dovessero nascere.

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ALLEGATO 1: "MAIN RESULT": QUADRO SINTETICO DEI RISULTATI DI CALCOLO nell'ipotesi elaborata di "Worst Case" e "Real Case"

SHADOW - Main Result

Calculation: GE.AGB01.C8 SOLO PROGETTO

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) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational hours are calculated from WTGs in calculation and wind distribution:
SD StrignaDora40

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve
A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values.
A WTG will be visible if it is visible from any part of the receiver window.
The ZVI calculation is based on the following assumptions:
Height contours used: Height Contours: DTM+CTR Muro Lucano 2018_08 Gaus
Receptor grid resolution: 10,0 m

All coordinates are in
UTM (north)-WGS84 Zone: 33

Scale 1:75.000
⅄ New WTG   🟡 Shadow receptor
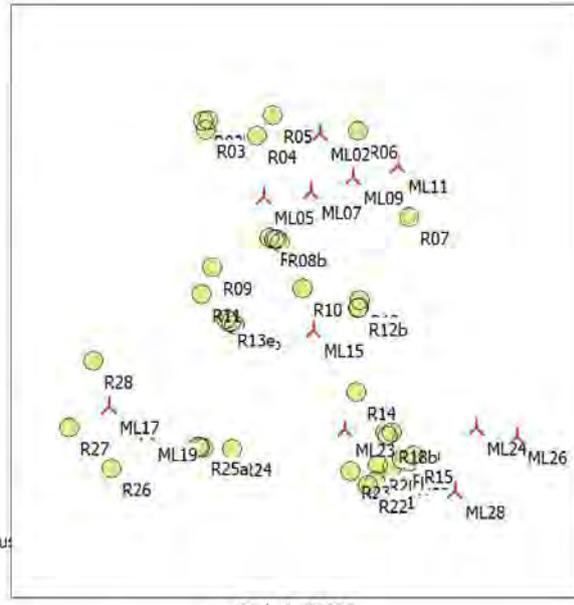
WTGs

	Easting	Northing	Z [m]	Row data/Description	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM [RPM]
ML02	539.139	4.508.646	985,0	ML02	Yes	VESTAS	V136-4.5-4.500	4.500	136,0	82,0	1.804	10,4
ML05	538.501	4.507.908	990,0	ML05	Yes	VESTAS	V150-4.5-4.500	4.500	150,0	105,0	2.500	-
ML07	539.040	4.507.970	1.010,9	ML07	Yes	VESTAS	V150-4.5-4.500	4.500	150,0	105,0	2.500	-
ML09	539.524	4.508.146	975,3	ML09	Yes	VESTAS	V150-4.5-4.500	4.500	150,0	105,0	2.500	-
ML11	540.047	4.508.276	922,3	ML11	Yes	VESTAS	V150-4.5-4.500	4.500	150,0	105,0	2.500	-
ML15	539.078	4.506.374	872,8	ML15	Yes	VESTAS	V150-4.5-4.500	4.500	150,0	105,0	2.500	-
ML17	536.724	4.505.473	914,5	ML17	Yes	VESTAS	V150-4.5-4.500	4.500	150,0	105,0	2.500	-
ML19	537.165	4.505.164	938,9	ML19	Yes	VESTAS	V150-4.5-4.500	4.500	150,0	105,0	2.500	-
ML23	539.453	4.505.221	904,3	ML23	Yes	VESTAS	V150-4.5-4.500	4.500	150,0	105,0	2.500	-
ML24	540.967	4.505.252	785,0	ML24	Yes	VESTAS	V150-4.5-4.500	4.500	150,0	105,0	2.500	-
ML26	541.437	4.505.144	782,8	ML26	Yes	VESTAS	V150-4.5-4.500	4.500	150,0	105,0	2.500	-
ML28	540.722	4.504.511	815,0	ML28	Yes	VESTAS	V150-4.5-4.500	4.500	150,0	105,0	2.500	-

Shadow receptor-Input

No.	Name	Easting	Northing	Z [m]	Width [m]	Height [m]	Elevation a.g.l. [m]	Slope of window [°]	Direction mode	Eye height (ZVI) a.g.l. [m]
R01	R01	537.851	4.508.794	928,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R02	R02	537.801	4.508.785	919,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R03	R03	537.822	4.508.678	927,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R04	R04	538.422	4.508.611	931,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R05	R05	538.599	4.508.848	927,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R06	R06	539.587	4.508.676	894,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R07	R07	540.181	4.507.681	793,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R08a	R08a	538.564	4.507.435	845,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R08b	R08b	538.658	4.507.416	857,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R08c	R08c	538.694	4.507.378	847,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R08d	R08d	538.629	4.507.411	851,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R09	R09	537.914	4.507.088	872,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R10	R10	538.955	4.506.846	829,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R11	R11	537.792	4.506.775	855,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

SHADOW - Main Result

Calculation: GE.AGB01.C8 SOLO PROGETTO

...continued from previous page

No.	Name	Easting	Northing	Z [m]	Width [m]	Height [m]	Elevation a.g.l. [m]	Slope of window [°]	Direction mode	Eye height (ZVI) a.g.l. [m]
R12	R12	539.609	4.506.718	814,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R12a	R12a	539.606	4.506.629	787,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R12b	R12b	539.590	4.506.617	789,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R13a	R13a	538.120	4.506.510	857,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R13b	R13b	538.133	4.506.455	864,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R13c	R13c	538.174	4.506.428	867,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R13d	R13d	538.105	4.506.450	862,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R13e	R13e	538.079	4.506.486	858,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R14	R14	539.582	4.505.647	778,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R15	R15	540.241	4.504.922	788,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R16	R16	540.196	4.504.847	785,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R17	R17	540.108	4.504.871	797,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R18a	R18a	539.995	4.505.187	806,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R18b	R18b	539.941	4.505.152	818,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R18c	R18c	539.918	4.505.182	815,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R19	R19	540.001	4.504.784	767,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R20	R20	539.835	4.504.812	770,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R21	R21	539.807	4.504.626	775,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R22	R22	539.721	4.504.580	761,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R23	R23	539.517	4.504.737	790,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R24	R24	538.155	4.504.988	855,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R25a	R25a	537.782	4.505.004	870,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R25b	R25b	537.819	4.504.991	864,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R25c	R25c	537.758	4.505.012	870,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R26	R26	536.758	4.504.752	747,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R27	R27	536.264	4.505.227	820,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R28	R28	536.539	4.505.994	795,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

No.	Name	Shadow, worst case			Shadow, expected values
		Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
R01	R01	37:54	129	0:25	9:44
R02	R02	31:56	109	0:24	8:19
R03	R03	2:07	14	0:12	0:31
R04	R04	92:39	193	0:43	25:01
R05	R05	82:54	143	0:53	21:06
R06	R06	229:56	201	2:00	62:41
R07	R07	43:25	119	0:30	13:33
R08a	R08a	0:00	0	0:00	0:00
R08b	R08b	0:00	0	0:00	0:00
R08c	R08c	0:00	0	0:00	0:00
R08d	R08d	0:00	0	0:00	0:00
R09	R09	3:56	36	0:09	1:21
R10	R10	4:29	17	0:20	1:13
R11	R11	10:39	35	0:26	2:37
R12	R12	57:59	84	0:54	15:00
R12a	R12a	52:47	73	0:56	14:09
R12b	R12b	55:52	75	0:57	15:03
R13a	R13a	39:04	104	0:36	9:54
R13b	R13b	40:02	113	0:37	10:24
R13c	R13c	37:41	112	0:38	10:04
R13d	R13d	39:58	111	0:35	10:21
R13e	R13e	18:52	44	0:34	5:10
R14	R14	120:03	110	1:13	33:09
R15	R15	185:49	228	1:27	55:05
R16	R16	110:58	202	0:56	32:00
R17	R17	108:04	213	0:50	31:54
R18a	R18a	125:43	219	1:00	38:30
R18b	R18b	165:01	240	1:07	50:28
R18c	R18c	169:30	244	1:09	52:17

To be continued on next page...

SHADOW - Main Result

Calculation: GE.AGB01.C8 SOLO PROGETTO

...continued from previous page

		Shadow, worst case			Shadow, expected values
No.	Name	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
R19	R19	77:32	164	0:44	23:09
R20	R20	30:09	80	0:37	7:54
R21	R21	44:12	133	0:37	13:29
R22	R22	19:26	45	0:34	5:30
R23	R23	28:18	102	0:28	8:08
R24	R24	53:55	91	0:57	16:48
R25a	R25a	127:09	135	1:26	40:36
R25b	R25b	120:14	133	1:22	38:23
R25c	R25c	97:20	136	0:58	30:25
R26	R26	0:00	0	0:00	0:00
R27	R27	23:30	48	0:37	6:48
R28	R28	76:58	74	1:29	21:17

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

No.	Name	Worst case [h/year]	Expected [h/year]
ML02	ML02	172:12	50:01
ML05	ML05	31:18	8:11
ML07	ML07	128:40	34:13
ML09	ML09	63:08	15:55
ML11	ML11	99:04	25:15
ML15	ML15	148:23	39:20
ML17	ML17	139:41	40:27
ML19	ML19	144:23	43:49
ML23	ML23	328:54	100:13
ML24	ML24	78:40	25:54
ML26	ML26	28:47	8:44
ML28	ML28	224:11	56:55

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

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

ALLEGATO 2: "CALENDAR": DETTAGLIO ANALITICO GIORNALIERO DELL'EFFETTO "FLICKERING" PER OGNI RECETTORE

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R01 - R01
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January			February		March			April	May	June
1	07:23		07:54 (ML07)	07:10		06:34			06:44	05:59	05:30
	16:41	12	08:06 (ML07)	17:15		17:49			19:23	19:54	20:23
2	07:23		07:54 (ML07)	07:09		06:33			06:42	05:57	05:30
	16:42	13	08:07 (ML07)	17:16		17:50			19:24	19:55	20:24
3	07:23		07:54 (ML07)	07:08		06:31			06:41	05:56	05:29
	16:43	14	08:08 (ML07)	17:18		17:51			19:25	19:56	20:25
4	07:23		07:54 (ML07)	07:07		06:30			06:39	05:55	05:29
	16:44	15	08:09 (ML07)	17:19		17:52			19:26	19:57	20:25
5	07:23		07:54 (ML07)	07:06		06:28			06:37	05:54	05:29
	16:45	16	08:10 (ML07)	17:20		17:53			19:27	19:58	20:26
6	07:23		07:54 (ML07)	07:05		06:27			06:36	05:52	05:28
	16:46	17	08:11 (ML07)	17:21		17:55			19:28	19:59	20:27
7	07:23		07:54 (ML07)	07:04		06:25			06:34	05:51	05:28
	16:47	19	08:13 (ML07)	17:23		17:56			19:29	20:00	20:27
8	07:23		07:54 (ML07)	07:03		06:23			06:33	05:50	05:28
	16:48	20	08:14 (ML07)	17:24	6	07:22 (ML09) 17:57			19:30	20:01	20:28
9	07:23		07:53 (ML07)	07:01		07:21 (ML09) 06:22			06:31	05:49	05:27
	16:49	21	08:14 (ML07)	17:25	9	07:30 (ML09) 17:58			19:31	20:02	20:28
10	07:23		07:53 (ML07)	07:00		07:20 (ML09) 06:20		06:42 (ML02)	06:29	05:48	05:27
	16:50	22	08:15 (ML07)	17:26	12	07:32 (ML09) 17:59	6	06:48 (ML02)	19:32	20:03	20:29
11	07:22		07:54 (ML07)	06:59		07:18 (ML09) 06:19		06:38 (ML02)	06:28	05:47	05:27
	16:51	22	08:16 (ML07)	17:28	14	07:32 (ML09) 18:00	13	06:51 (ML02)	19:33	20:04	20:29
12	07:22		07:54 (ML07)	06:58		07:17 (ML09) 06:17		06:36 (ML02)	06:26	05:46	05:27
	16:52	23	08:17 (ML07)	17:29	16	07:33 (ML09) 18:01	17	06:53 (ML02)	19:34	20:05	20:30
13	07:22		07:53 (ML07)	06:57		07:16 (ML09) 06:15		06:34 (ML02)	06:25	05:45	05:27
	16:53	24	08:17 (ML07)	17:30	18	07:34 (ML09) 18:02	20	06:54 (ML02)	19:35	20:06	20:30
14	07:22		07:54 (ML07)	06:55		07:15 (ML09) 06:14		06:33 (ML02)	06:23	05:44	05:27
	16:54	24	08:18 (ML07)	17:31	19	07:34 (ML09) 18:03	21	06:54 (ML02)	19:36	20:07	20:31
15	07:21		07:54 (ML07)	06:54		07:14 (ML09) 06:12		06:32 (ML02)	06:22	05:43	05:27
	16:55	24	08:18 (ML07)	17:32	19	07:33 (ML09) 18:04	23	06:55 (ML02)	19:37	20:08	20:31
16	07:21		07:54 (ML07)	06:53		07:14 (ML09) 06:10		06:31 (ML02)	06:20	05:42	05:27
	16:56	25	08:19 (ML07)	17:34	20	07:34 (ML09) 18:06	24	06:55 (ML02)	19:38	20:09	20:32
17	07:20		07:54 (ML07)	06:51		07:15 (ML09) 06:09		06:31 (ML02)	06:18	05:41	05:27
	16:57	25	08:19 (ML07)	17:35	18	07:33 (ML09) 18:07	24	06:55 (ML02)	19:39	20:10	20:32
18	07:20		07:55 (ML07)	06:50		07:15 (ML09) 06:07		06:31 (ML02)	06:17	05:40	05:27
	16:58	25	08:20 (ML07)	17:36	17	07:32 (ML09) 18:08	24	06:55 (ML02)	19:40	20:11	20:32
19	07:19		07:55 (ML07)	06:49		07:16 (ML09) 06:06		06:31 (ML02)	06:15	05:39	05:27
	17:00	25	08:20 (ML07)	17:37	15	07:31 (ML09) 18:09	23	06:54 (ML02)	19:41	20:12	20:33
20	07:19		07:56 (ML07)	06:47		07:17 (ML09) 06:04		06:30 (ML02)	06:14	05:38	05:27
	17:01	25	08:21 (ML07)	17:38	12	07:29 (ML09) 18:10	23	06:53 (ML02)	19:42	20:13	20:33
21	07:18		07:56 (ML07)	06:46		07:20 (ML09) 06:02		06:31 (ML02)	06:13	05:37	05:27
	17:02	25	08:21 (ML07)	17:40	7	07:27 (ML09) 18:11	22	06:53 (ML02)	19:43	20:14	20:33
22	07:18		07:56 (ML07)	06:45		18:01		06:32 (ML02)	06:11	05:36	05:28
	17:03	24	08:20 (ML07)	17:41		18:12	19	06:51 (ML02)	19:44	20:15	20:33
23	07:17		07:57 (ML07)	06:43		05:59		06:33 (ML02)	06:10	05:36	05:28
	17:04	24	08:21 (ML07)	17:42		18:13	16	06:49 (ML02)	19:46	20:16	20:34
24	07:16		07:58 (ML07)	06:42		05:57		06:35 (ML02)	06:08	05:35	05:28
	17:05	23	08:21 (ML07)	17:43		18:14	12	06:47 (ML02)	19:47	20:17	20:34
25	07:16		07:58 (ML07)	06:40		05:56		06:40 (ML02)	06:07	05:34	05:28
	17:07	22	08:20 (ML07)	17:44		18:15	1	06:41 (ML02)	19:48	20:17	20:34
26	07:15		07:59 (ML07)	06:39		05:54			06:05	05:34	05:29
	17:08	21	08:20 (ML07)	17:45		18:16			19:49	20:18	20:34
27	07:14		08:00 (ML07)	06:37		05:52			06:04	05:33	05:29
	17:09	19	08:19 (ML07)	17:47		18:17			19:50	20:19	20:34
28	07:13		08:01 (ML07)	06:36		05:51			06:03	05:32	05:29
	17:10	17	08:18 (ML07)	17:48		18:18			19:51	20:20	20:34
29	07:12		08:03 (ML07)			06:49			06:01	05:32	05:30
	17:12	14	08:17 (ML07)			19:19			19:52	20:21	20:34
30	07:12		08:05 (ML07)			06:47			06:00	05:31	05:30
	17:13	11	08:16 (ML07)			19:20			19:53	20:22	20:34
31	07:11					06:46				05:31	
	17:14					19:21				20:22	
Potential sun hours	298			298		370			398	447	451
Total, worst case		611			202		288				
Sun reduction		0,43			0,45		0,46				
Oper. time red.		0,88			0,88		0,88				
Wind dir. red.		0,62			0,57		0,56				
Total reduction		0,24			0,23		0,23				
Total, real		144			46		66				

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk   14/11/2023 15:50 / 1   windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R01 - R01

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

		July		August		September			October			November			December		
1		05:31		05:54		06:25			06:54			07:14 (ML02)		06:28		06:49 (ML09)		07:02		07:36 (ML07)
		20:34		20:15		19:33		18:42	19	07:33 (ML02)		16:56	11	07:00 (ML09)		16:32	22	07:58 (ML07)
2		05:31		05:55		06:26			06:55			07:15 (ML02)		06:29		06:51 (ML09)		07:03		07:36 (ML07)
		20:34		20:14		19:31		18:41	16	07:31 (ML02)		16:55	9	07:00 (ML09)		16:32	22	07:58 (ML07)
3		05:32		05:56		06:27			06:56			07:18 (ML02)		06:30		06:52 (ML09)		07:05		07:37 (ML07)
		20:34		20:13		19:29		18:39	10	07:26 (ML02)		16:54	5	06:57 (ML09)		16:32	21	07:55 (ML07)
4		05:32		05:57		06:28			06:57					06:31				07:05		07:38 (ML07)
		20:33		20:12		19:28		18:38				16:53				16:32	20	07:58 (ML07)
5		05:33		05:58		06:29			06:58					06:33				07:06		07:39 (ML07)
		20:33		20:11		19:26		18:36				16:52				16:31	19	07:58 (ML07)
6		05:33		05:59		06:30			06:59					06:34				07:07		07:40 (ML07)
		20:33		20:10		19:24		18:34				16:50				16:31	18	07:58 (ML07)
7		05:34		06:00		06:31			07:00					06:35				07:08		07:41 (ML07)
		20:33		20:08		19:23		18:33				16:49				16:31	16	07:57 (ML07)
8		05:35		06:01		06:32			07:01					06:36				07:09		07:42 (ML07)
		20:32		20:07		19:21		18:31				16:48				16:31	15	07:57 (ML07)
9		05:35		06:02		06:32			07:02					06:37				07:10		07:43 (ML07)
		20:32		20:06		19:19		18:29				16:47				16:31	14	07:57 (ML07)
10		05:36		06:03		06:33			07:04					06:39				07:11		07:44 (ML07)
		20:32		20:05		19:18		18:28				16:46				16:31	13	07:57 (ML07)
11		05:37		06:04		06:34			07:05					06:40		07:41 (ML07)		07:12		07:44 (ML07)
		20:31		20:03		19:16		18:26				16:45	1	07:42 (ML07)		16:31	12	07:56 (ML07)
12		05:37		06:05		06:35			07:06					06:41		07:36 (ML07)		07:13		07:46 (ML07)
		20:31		20:02		19:14		18:25				16:44	11	07:47 (ML07)		16:31	10	07:56 (ML07)
13		05:38		06:06		06:36			07:07					06:42		07:35 (ML07)		07:14		07:47 (ML07)
		20:30		20:01		19:13		18:23				16:43	14	07:49 (ML07)		16:31	9	07:56 (ML07)
14		05:39		06:07		06:37			07:08					06:43		07:34 (ML07)		07:14		07:49 (ML07)
		20:30		19:59		19:11		18:22				16:42	17	07:51 (ML07)		16:32	7	07:56 (ML07)
15		05:40		06:08		06:38			07:09					06:44		07:33 (ML07)		07:15		07:49 (ML07)
		20:29		19:58		19:09		18:20				16:42	19	07:52 (ML07)		16:32	6	07:55 (ML07)
16		05:40		06:09		06:39			07:10					06:46		07:32 (ML07)		07:16		07:52 (ML07)
		20:29		19:57		19:08		18:18				16:41	21	07:53 (ML07)		16:32	2	07:54 (ML07)
17		05:41		06:10		06:40			07:11					06:47		07:32 (ML07)		07:16		
		20:28		19:55		19:06		18:17				16:40	22	07:54 (ML07)		16:32		
18		05:42		06:11		06:41			07:12					06:48		07:32 (ML07)		07:17		
		20:27		19:54		19:04		18:15				16:39	23	07:55 (ML07)		16:33		
19		05:43		06:12		06:42		07:22 (ML02)	07:13					06:49		07:31 (ML07)		07:18		
		20:27		19:52		19:03	11	07:33 (ML02)	18:14				16:38	24	07:55 (ML07)		16:33		
20		05:44		06:13		06:43		07:19 (ML02)	07:14					06:50		07:31 (ML07)		07:18		
		20:26		19:51		19:01	16	07:35 (ML02)	18:12				16:38	24	07:55 (ML07)		16:34		
21		05:44		06:14		06:44		07:18 (ML02)	07:15		07:50 (ML09)		06:51		07:31 (ML07)		07:19		
		20:25		19:50		18:59	18	07:36 (ML02)	18:11	9	07:59 (ML09)		16:37	25	07:56 (ML07)		16:34		
22		05:45		06:15		06:45		07:16 (ML02)	07:17		07:47 (ML09)		06:53		07:32 (ML07)		07:19		
		20:25		19:48		18:58	21	07:37 (ML02)	18:10	13	08:00 (ML09)		16:36	25	07:57 (ML07)		16:34		
23		05:46		06:16		06:46		07:15 (ML02)	07:18		07:46 (ML09)		06:54		07:32 (ML07)		07:20		
		20:24		19:47		18:56	22	07:37 (ML02)	18:08	15	08:01 (ML09)		16:36	25	07:57 (ML07)		16:35		
24		05:47		06:17		06:47		07:14 (ML02)	07:19		07:45 (ML09)		06:55		07:32 (ML07)		07:20		
		20:23		19:45		18:54	23	07:37 (ML02)	18:07	18	08:03 (ML09)		16:35	25	07:57 (ML07)		16:36		
25		05:48		06:18		06:48		07:13 (ML02)	06:20		06:45 (ML09)		06:56		07:32 (ML07)		07:21		
		20:22		19:44		18:53	24	07:37 (ML02)	17:05	18	07:03 (ML09)		16:35	25	07:57 (ML07)		16:36		
26		05:49		06:19		06:49		07:13 (ML02)	06:21		06:44 (ML09)		06:57		07:32 (ML07)		07:21		
		20:21		19:42		18:51	24	07:37 (ML02)	17:04	19	07:03 (ML09)		16:34	25	07:57 (ML07)		16:37		
27		05:50		06:20		06:50		07:13 (ML02)	06:22		06:43 (ML09)		06:58		07:34 (ML07)		07:22		
		20:20		19:40		18:49	24	07:37 (ML02)	17:03	20	07:03 (ML09)		16:34	24	07:58 (ML07)		16:37		
28		05:51		06:21		06:51		07:13 (ML02)	06:23		06:44 (ML09)		06:59		07:34 (ML07)		07:22		07:57 (ML07)
		20:19		19:39		18:47	23	07:36 (ML02)	17:01	19	07:03 (ML09)		16:33	24	07:58 (ML07)		16:38	4	08:01 (ML07)
29		05:52		06:22		06:52		07:13 (ML02)	06:24		06:46 (ML09)		07:00		07:34 (ML07)		07:22		07:56 (ML07)
		20:18		19:37		18:46	22	07:35 (ML02)	17:00	17	07:03 (ML09)		16:33	24	07:58 (ML07)		16:39	6	08:02 (ML07)
30		05:52		06:23		06:53		07:13 (ML02)	06:26		06:47 (ML09)		07:01		07:35 (ML07)		07:22		07:55 (ML07)
		20:17		19:36		18:44	21	07:34 (ML02)	16:59	16	07:03 (ML09)		16:33	23	07:58 (ML07)		16:40	9	08:04 (ML07)
31		05:53		06:24					06:27		06:48 (ML09)						07:23		07:55 (ML07)
		20:16		19:34				16:58	14	07:02 (ML09)						16:40	10	08:05 (ML07)

	July	August	September	October	November	December
Potential sun hours	458	427	375	346	299	289
Total, worst case			249	223	446	255
Sun reduction			0,67	0,56	0,51	0,44
Oper. time red.			0,88	0,88	0,88	0,88
Wind dir. red.			0,56	0,57	0,62	0,62
Total reduction			0,33	0,28	0,28	0,24
Total, real			83	63	123	61

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R02 - R02
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January		February		March		April	May	June
1	07:23		07:10		07:59 (ML07)	06:34	06:44	05:59	05:30
	16:41		17:15 16		08:15 (ML07)	17:49	19:23	19:54	20:23
2	07:23		07:09		08:01 (ML07)	06:33	06:42	05:57	05:30
	16:42		17:16 12		08:13 (ML07)	17:50	19:24	19:55	20:24
3	07:23		07:08		08:04 (ML07)	06:31	06:41	05:56	05:29
	16:43		17:18 6		08:10 (ML07)	17:51	19:25	19:56	20:25
4	07:23		07:07			06:30	06:39	05:55	05:29
	16:44		17:19			17:52	19:26	19:57	20:25
5	07:23		07:06			06:28	06:37	05:54	05:29
	16:45		17:20			17:53	19:27	19:58	20:26
6	07:23		07:05			06:27	06:36	05:52	05:28
	16:46		17:21			17:55	19:28	19:59	20:27
7	07:23		07:04			06:25	06:34	05:51	05:28
	16:47		17:23			17:56	19:29	20:00	20:27
8	07:23		07:03			06:23	06:33	05:50	05:28
	16:48		17:24			17:57	19:30	20:01	20:28
9	07:23	07:56 (ML07)	07:01			06:22	06:31	05:49	05:27
	16:49 7	08:03 (ML07)	17:25			17:58	19:31	20:02	20:28
10	07:23	07:55 (ML07)	07:00	07:20 (ML09)	06:20	06:29	05:48	05:27
	16:50 10	08:05 (ML07)	17:26 5	07:25 (ML09)	17:59	19:32	20:03	20:29
11	07:22	07:55 (ML07)	06:59	07:18 (ML09)	06:19	06:28	05:47	05:27
	16:51 12	08:07 (ML07)	17:28 9	07:27 (ML09)	18:00	19:33	20:04	20:29
12	07:22	07:54 (ML07)	06:58	07:17 (ML09)	06:17	06:39 (ML02)	06:26	05:46	05:27
	16:52 15	08:09 (ML07)	17:29 12	07:29 (ML09)	18:01 9	06:48 (ML02)	19:34	20:05	20:30
13	07:22	07:53 (ML07)	06:57	07:16 (ML09)	06:15	06:36 (ML02)	06:25	05:45	05:27
	16:53 17	08:10 (ML07)	17:30 14	07:30 (ML09)	18:02 14	06:50 (ML02)	19:35	20:06	20:30
14	07:22	07:53 (ML07)	06:55	07:15 (ML09)	06:14	06:34 (ML02)	06:23	05:44	05:27
	16:54 18	08:11 (ML07)	17:31 16	07:31 (ML09)	18:03 17	06:51 (ML02)	19:36	20:07	20:31
15	07:21	07:52 (ML07)	06:54	07:13 (ML09)	06:12	06:33 (ML02)	06:22	05:43	05:27
	16:55 20	08:12 (ML07)	17:32 18	07:31 (ML09)	18:04 20	06:31 (ML02)	19:37	20:08	20:31
16	07:21	07:53 (ML07)	06:53	07:13 (ML09)	06:10	06:30 (ML02)	06:20	05:42	05:27
	16:56 20	08:13 (ML07)	17:34 19	07:32 (ML09)	18:06 22	06:30 (ML02)	19:38	20:09	20:32
17	07:20	07:52 (ML07)	06:51	07:13 (ML09)	06:09	06:30 (ML02)	06:18	05:41	05:27
	16:57 21	08:13 (ML07)	17:35 19	07:32 (ML09)	18:07 23	06:53 (ML02)	19:39	20:10	20:32
18	07:20	07:52 (ML07)	06:50	07:12 (ML09)	06:07	06:30 (ML02)	06:17	05:40	05:27
	16:58 23	08:15 (ML07)	17:36 19	07:31 (ML09)	18:08 23	06:53 (ML02)	19:40	20:11	20:32
19	07:19	07:52 (ML07)	06:49	07:13 (ML09)	06:06	06:30 (ML02)	06:15	05:39	05:27
	17:00 23	08:15 (ML07)	17:37 18	07:31 (ML09)	18:09 23	06:53 (ML02)	19:41	20:12	20:33
20	07:19	07:52 (ML07)	06:47	07:13 (ML09)	06:04	06:29 (ML02)	06:14	05:38	05:27
	17:01 24	08:16 (ML07)	17:38 17	07:30 (ML09)	18:10 23	06:52 (ML02)	19:42	20:13	20:33
21	07:18	07:52 (ML07)	06:46	07:15 (ML09)	06:02	06:30 (ML02)	06:13	05:37	05:27
	17:02 24	08:16 (ML07)	17:40 14	07:29 (ML09)	18:11 22	06:52 (ML02)	19:43	20:14	20:33
22	07:18	07:52 (ML07)	06:45	07:16 (ML09)	06:01	06:30 (ML02)	06:11	05:36	05:28
	17:03 24	08:16 (ML07)	17:41 12	07:28 (ML09)	18:12 21	06:51 (ML02)	19:44	20:15	20:33
23	07:17	07:53 (ML07)	06:43	07:19 (ML09)	05:59	06:30 (ML02)	06:10	05:36	05:28
	17:04 24	08:17 (ML07)	17:42 5	07:24 (ML09)	18:13 19	06:49 (ML02)	19:46	20:16	20:34
24	07:16	07:53 (ML07)	06:42		05:57	06:32 (ML02)	06:08	05:35	05:28
	17:05 24	08:17 (ML07)	17:43		18:14 16	06:48 (ML02)	19:47	20:17	20:34
25	07:16	07:53 (ML07)	06:40		05:56	06:33 (ML02)	06:07	05:34	05:28
	17:07 24	08:17 (ML07)	17:44		18:15 12	06:45 (ML02)	19:48	20:17	20:34
26	07:15	07:53 (ML07)	06:39		05:54	06:36 (ML02)	06:05	05:34	05:29
	17:08 24	08:17 (ML07)	17:45		18:16 5	06:41 (ML02)	19:49	20:18	20:34
27	07:14	07:54 (ML07)	06:37		05:52		06:04	05:33	05:29
	17:09 23	08:17 (ML07)	17:47		18:17		19:50	20:19	20:34
28	07:13	07:54 (ML07)	06:36		05:51		06:03	05:32	05:29
	17:10 23	08:17 (ML07)	17:48		18:18		19:51	20:20	20:34
29	07:12	07:56 (ML07)			06:49		06:01	05:32	05:30
	17:12 21	08:17 (ML07)			19:19		19:52	20:21	20:34
30	07:12	07:57 (ML07)			06:47		06:00	05:31	05:30
	17:13 20	08:17 (ML07)			19:20		19:53	20:22	20:34
31	07:11	07:58 (ML07)			06:46			05:31	
	17:14 18	08:16 (ML07)			19:21			20:22	
Potential sun hours	298		298		370		398	447	451
Total, worst case	459		231		269				
Sun reduction	0,43		0,45		0,46				
Oper. time red.	0,88		0,88		0,88				
Wind dir. red.	0,62		0,58		0,56				
Total reduction	0,23		0,23		0,23				
Total, real	107		53		61				

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk   14/11/2023 15:50 / 3   windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R02 - R02
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July	August	September			October				November			December		
1	05:31	05:54	06:25			06:54		07:17 (ML02)	06:28		06:49 (ML09)	07:02		07:37 (ML07)
	20:34	20:15	19:33			18:42	11	07:28 (ML02)	16:56	4	06:53 (ML09)	16:32	12	07:49 (ML07)
2	05:31	05:55	06:26			06:55			06:29			07:03		07:38 (ML07)
	20:34	20:14	19:31			18:41			16:55			16:32	10	07:48 (ML07)
3	05:32	05:56	06:27			06:56			06:30			07:05		07:40 (ML07)
	20:34	20:13	19:29			18:39			16:54			16:32	7	07:47 (ML07)
4	05:32	05:57	06:28			06:57			06:31			07:06		
	20:33	20:12	19:28			18:38			16:53			16:32		
5	05:33	05:58	06:29			06:58			06:33			07:06		
	20:33	20:11	19:26			18:36			16:52			16:31		
6	05:33	05:59	06:30			06:59			06:34			07:07		
	20:33	20:10	19:24			18:34			16:50			16:31		
7	05:34	06:00	06:31			07:00			06:35			07:08		
	20:33	20:08	19:23			18:33			16:49			16:31		
8	05:35	06:01	06:32			07:01			06:36		07:34 (ML07)	07:09		
	20:32	20:07	19:21			18:31			16:48	6	07:40 (ML07)	16:31		
9	05:35	06:02	06:32			07:02			06:37		07:31 (ML07)	07:10		
	20:32	20:06	19:19			18:29			16:47	12	07:43 (ML07)	16:31		
10	05:36	06:03	06:33			07:04			06:39		07:30 (ML07)	07:11		
	20:32	20:05	19:18			18:28			16:46	16	07:46 (ML07)	16:31		
11	05:37	06:04	06:34			07:05			06:40		07:29 (ML07)	07:12		
	20:31	20:03	19:16			18:26			16:45	18	07:47 (ML07)	16:31		
12	05:37	06:05	06:35			07:06			06:41		07:28 (ML07)	07:13		
	20:31	20:02	19:14			18:25			16:44	20	07:48 (ML07)	16:31		
13	05:38	06:06	06:36			07:07			06:42		07:28 (ML07)	07:14		
	20:30	20:01	19:13			18:23			16:43	21	07:49 (ML07)	16:31		
14	05:39	06:07	06:37			07:08			06:43		07:27 (ML07)	07:14		
	20:30	19:59	19:11			18:22			16:42	23	07:50 (ML07)	16:32		
15	05:40	06:08	06:38			07:09			06:44		07:27 (ML07)	07:15		
	20:29	19:58	19:09			18:20			16:42	23	07:50 (ML07)	16:32		
16	05:40	06:09	06:39			07:10			06:46		07:26 (ML07)	07:16		
	20:29	19:57	19:08			18:18			16:41	24	07:50 (ML07)	16:32		
17	05:41	06:10	06:40			07:11			06:47		07:27 (ML07)	07:16		
	20:28	19:55	19:06			18:17			16:40	24	07:51 (ML07)	16:32		
18	05:42	06:11	06:41	07:21 (ML02)		07:12			06:48		07:27 (ML07)	07:17		
	20:27	19:54	19:04	11	07:32 (ML02)	18:15			16:39	24	07:51 (ML07)	16:33		
19	05:43	06:12	06:42	07:18 (ML02)		07:13		07:49 (ML09)	06:49		07:27 (ML07)	07:18		
	20:27	19:52	19:03	16	07:34 (ML02)	18:14	8	07:57 (ML09)	16:38	24	07:51 (ML07)	16:33		
20	05:44	06:13	06:43	07:17 (ML02)		07:14		07:46 (ML09)	06:50		07:27 (ML07)	07:18		
	20:26	19:51	19:01	18	07:35 (ML02)	18:12	13	07:59 (ML09)	16:38	24	07:51 (ML07)	16:34		
21	05:44	06:14	06:44	07:15 (ML02)		07:15		07:45 (ML09)	06:51		07:27 (ML07)	07:19		
	20:25	19:50	18:59	21	07:36 (ML02)	18:11	15	08:00 (ML09)	16:37	24	07:51 (ML07)	16:34		
22	05:45	06:15	06:45	07:14 (ML02)		07:17		07:43 (ML09)	06:53		07:29 (ML07)	07:19		
	20:25	19:48	18:58	22	07:36 (ML02)	18:10	17	08:00 (ML09)	16:36	23	07:52 (ML07)	16:34		
23	05:46	06:16	06:46	07:14 (ML02)		07:18		07:43 (ML09)	06:54		07:29 (ML07)	07:20		
	20:24	19:47	18:56	22	07:36 (ML02)	18:08	18	08:01 (ML09)	16:36	23	07:52 (ML07)	16:35		
24	05:47	06:17	06:47	07:13 (ML02)		07:19		07:43 (ML09)	06:55		07:29 (ML07)	07:20		
	20:23	19:45	18:54	23	07:36 (ML02)	18:07	19	08:02 (ML09)	16:35	23	07:52 (ML07)	16:36		
25	05:48	06:18	06:48	07:13 (ML02)		06:20		06:42 (ML09)	06:56		07:30 (ML07)	07:21		
	20:22	19:44	18:53	23	07:36 (ML02)	17:05	20	07:02 (ML09)	16:35	21	07:51 (ML07)	16:36		
26	05:49	06:19	06:49	07:13 (ML02)		06:21		06:42 (ML09)	06:57		07:31 (ML07)	07:21		
	20:21	19:42	18:51	22	07:35 (ML02)	17:04	19	07:01 (ML09)	16:34	20	07:51 (ML07)	16:37		
27	05:50	06:20	06:50	07:13 (ML02)		06:22		06:43 (ML09)	06:58		07:32 (ML07)	07:22		
	20:20	19:40	18:49	22	07:35 (ML02)	17:03	18	07:01 (ML09)	16:34	20	07:52 (ML07)	16:37		
28	05:51	06:21	06:51	07:13 (ML02)		06:23		06:44 (ML09)	06:59		07:33 (ML07)	07:22		
	20:19	19:39	18:47	21	07:34 (ML02)	17:01	16	07:00 (ML09)	16:33	18	07:51 (ML07)	16:38		
29	05:52	06:22	06:52	07:14 (ML02)		06:24		06:46 (ML09)	07:00		07:34 (ML07)	07:22		
	20:18	19:37	18:46	18	07:32 (ML02)	17:00	14	07:00 (ML09)	16:33	17	07:51 (ML07)	16:39		
30	05:52	06:23	06:53	07:15 (ML02)		06:26		06:47 (ML09)	07:01		07:35 (ML07)	07:22		
	20:17	19:36	18:44	15	07:30 (ML02)	16:59	11	06:58 (ML09)	16:33	15	07:50 (ML07)	16:40		
31	05:53	06:24				06:27		06:48 (ML09)				07:23		
	20:16	19:34				16:58	8	06:56 (ML09)				16:40		
Potential sun hours	458	427	375			346			299			289		
Total, worst case				254			207			467			29		
Sun reduction				0,67			0,56			0,51			0,44		
Oper. time red.				0,88			0,88			0,88			0,88		
Wind dir. red.				0,56			0,57			0,62			0,62		
Total reduction				0,33			0,28			0,27			0,24		
Total, real				84			58			128			7		

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R03 - R03
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

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

	December (ML05)
15	4 08:42 (ML05)
	08:46 (ML05)
16	7 08:41 (ML05)
	08:48 (ML05)
17	9 08:41 (ML05)
	08:50 (ML05)
18	10 08:40 (ML05)
	08:50 (ML05)
19	10 08:41 (ML05)
	08:51 (ML05)
20	11 08:42 (ML05)
	08:53 (ML05)
21	12 08:41 (ML05)
	08:53 (ML05)
22	12 08:42 (ML05)
	08:54 (ML05)
23	11 08:43 (ML05)
	08:54 (ML05)
24	10 08:43 (ML05)
	08:53 (ML05)
25	10 08:44 (ML05)
	08:54 (ML05)
26	9 08:45 (ML05)
	08:54 (ML05)
27	7 08:46 (ML05)
	08:53 (ML05)
28	5 08:48 (ML05)
	08:53 (ML05)

Total, worst case	127
Sun reduction	0,44
Oper. time red.	0,88
Wind dir. red.	0,65
Total reduction	0,25
Total, real	32

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

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

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R04 - R04
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May	June
1	07:23		08:29 (ML07)	07:10			06:34			06:53 (ML11)	06:44		07:14 (ML02)	05:59	05:30
	16:41	41	09:10 (ML07)	17:15			17:49	9	07:02 (ML11)	19:22	27	07:41 (ML02)	19:54	20:23
2	07:23		08:30 (ML07)	07:09			06:33			06:52 (ML11)	06:42		07:13 (ML02)	05:57	05:30
	16:42	40	09:10 (ML07)	17:16			17:50	11	07:03 (ML11)	19:24	30	07:43 (ML02)	19:55	20:24
3	07:23		08:30 (ML07)	07:08			06:31			06:50 (ML11)	06:41		07:11 (ML02)	05:56	05:29
	16:43	40	09:10 (ML07)	17:18			17:51	12	07:02 (ML11)	19:25	33	07:44 (ML02)	19:56	20:24
4	07:23		08:31 (ML07)	07:07			06:30			06:48 (ML11)	06:39		07:09 (ML02)	05:55	05:29
	16:44	40	08:31 (ML07)	17:19			17:52	13	07:01 (ML11)	19:26	35	07:44 (ML02)	19:57	20:25
5	07:23		08:31 (ML07)	07:06		07:30 (ML09)	06:28			06:47 (ML11)	06:37		07:08 (ML02)	05:54	05:29
	16:45	40	09:11 (ML07)	17:20	9	07:39 (ML09)	17:53	14	07:01 (ML11)	19:27	38	07:46 (ML02)	19:58	20:26
6	07:23		08:32 (ML07)	07:05		07:27 (ML09)	06:27			06:45 (ML11)	06:36		07:07 (ML02)	05:52	05:28
	16:46	39	09:11 (ML07)	17:21	15	07:42 (ML09)	17:55	15	07:00 (ML11)	19:28	39	07:46 (ML02)	19:59	20:27
7	07:23		08:33 (ML07)	07:04		07:26 (ML09)	06:25			06:44 (ML11)	06:34		07:06 (ML02)	05:51	05:28
	16:47	39	09:12 (ML07)	17:23	18	07:44 (ML09)	17:56	15	06:59 (ML11)	19:29	41	07:47 (ML02)	20:00	20:27
8	07:23		08:34 (ML07)	07:02		07:46 (ML09)	06:23			06:44 (ML11)	06:33		07:05 (ML02)	05:50	05:28
	16:48	38	09:12 (ML07)	17:24	22	07:46 (ML09)	17:57	13	06:57 (ML11)	19:30	41	07:46 (ML02)	20:01	20:28
9	07:23		08:34 (ML07)	07:01		07:24 (ML09)	06:22			06:45 (ML11)	06:31		07:04 (ML02)	05:49	05:27
	16:49	37	09:11 (ML07)	17:25	23	07:47 (ML09)	17:58	9	06:54 (ML11)	19:31	42	07:46 (ML02)	20:02	20:26
10	07:23		08:35 (ML07)	07:00		07:23 (ML09)	06:20				06:29		07:04 (ML02)	05:48	05:27
	16:50	37	09:12 (ML07)	17:26	25	07:48 (ML09)	17:59			19:32	43	07:47 (ML02)	20:03	20:29
11	07:22		08:36 (ML07)	06:59		07:21 (ML09)	06:19				06:28		07:03 (ML02)	05:47	05:27
	16:51	36	09:12 (ML07)	17:28	27	07:48 (ML09)	18:00			19:33	43	07:46 (ML02)	20:04	20:29
12	07:22		08:37 (ML07)	06:58		07:21 (ML09)	06:17				06:26		07:03 (ML02)	05:46	05:27
	16:52	35	09:12 (ML07)	17:29	28	07:49 (ML09)	18:01			19:34	43	07:46 (ML02)	20:05	20:30
13	07:22		08:37 (ML07)	06:57		07:21 (ML09)	06:15				06:25		07:02 (ML02)	05:45	05:27
	16:53	34	09:11 (ML07)	17:30	29	07:50 (ML09)	18:02			19:35	43	07:45 (ML02)	20:06	20:30
14	07:22		08:38 (ML07)	06:55		07:21 (ML09)	06:14				06:23		07:03 (ML02)	05:44	05:27
	16:54	34	09:12 (ML07)	17:31	29	07:50 (ML09)	18:03			19:36	43	07:46 (ML02)	20:07	20:31
15	07:21		08:38 (ML07)	06:54		07:20 (ML09)	06:12				06:22		07:02 (ML02)	05:43	05:27
	16:55	33	09:11 (ML07)	17:32	30	07:50 (ML09)	18:04			19:37	43	07:45 (ML02)	20:08	20:31
16	07:21		08:40 (ML07)	06:53		07:21 (ML09)	06:10				06:20		07:03 (ML02)	05:42	05:27
	16:56	31	09:11 (ML07)	17:34	29	07:50 (ML09)	18:06			19:38	41	07:44 (ML02)	20:09	20:32
17	07:20		08:41 (ML07)	06:51		07:21 (ML09)	06:09				06:18		07:02 (ML02)	05:41	05:27
	16:57	29	09:10 (ML07)	17:35	29	07:50 (ML09)	18:07			19:39	41	07:43 (ML02)	20:10	20:32
18	07:20		08:42 (ML07)	06:50		07:21 (ML09)	06:07				06:17		07:03 (ML02)	05:40	05:27
	16:58	28	09:10 (ML07)	17:36	28	07:49 (ML09)	18:08			19:40	40	07:43 (ML02)	20:11	20:32
19	07:19		08:43 (ML07)	06:49		07:21 (ML09)	06:05				06:15		07:03 (ML02)	05:39	05:27
	17:00	26	09:09 (ML07)	17:37	28	07:49 (ML09)	18:09			19:41	38	07:41 (ML02)	20:12	20:33
20	07:19		08:45 (ML07)	06:47		07:21 (ML09)	06:04				06:14		07:04 (ML02)	05:38	05:27
	17:01	23	09:08 (ML07)	17:38	27	07:48 (ML09)	18:10			19:42	37	07:41 (ML02)	20:13	20:33
21	07:18		08:47 (ML07)	06:46		07:23 (ML09)	06:02				06:12		07:04 (ML02)	05:37	05:27
	17:02	20	09:07 (ML07)	17:40	24	07:47 (ML09)	18:11			19:43	35	07:39 (ML02)	20:14	20:33
22	07:18		08:48 (ML07)	06:45		07:24 (ML09)	06:01				06:11		07:05 (ML02)	05:36	05:28
	17:03	17	09:05 (ML07)	17:41	22	07:46 (ML09)	18:12			19:44	33	07:38 (ML02)	20:15	20:33
23	07:17		08:52 (ML07)	06:43		07:25 (ML09)	05:59				06:10		07:06 (ML02)	05:36	05:28
	17:04	11	09:03 (ML07)	17:42	19	07:44 (ML09)	18:13			19:46	30	07:36 (ML02)	20:16	20:34
24	07:16			06:42		07:27 (ML09)	05:57				06:08		07:07 (ML02)	05:35	05:28
	17:05			17:43	16	07:43 (ML09)	18:14			19:47	28	07:35 (ML02)	20:16	20:34
25	07:16			06:40		07:30 (ML09)	05:56				06:07		07:09 (ML02)	05:34	05:28
	17:07			17:44	9	07:39 (ML09)	18:15			19:48	24	07:33 (ML02)	20:17	20:34
26	07:15			06:39		06:58 (ML11)	05:54				06:05		07:11 (ML02)	05:34	05:29
	17:08			17:45	2	07:00 (ML11)	18:16			19:49	19	07:30 (ML02)	20:18	20:34
27	07:14			06:37		06:56 (ML11)	05:52				06:04		07:14 (ML02)	05:33	05:29
	17:09			17:47	5	07:01 (ML11)	18:17			19:50	13	07:27 (ML02)	20:19	20:34
28	07:13			06:36		06:55 (ML11)	05:51				06:03			05:32	05:29
	17:10			17:48	7	07:02 (ML11)	18:18			19:51			20:20	20:34
29	07:12						06:49				06:01			05:32	05:30
	17:12						19:19				19:52			20:21	20:34
30	07:12						06:47		07:21 (ML02)		06:00			05:31	05:30
	17:13						19:20	16	07:37 (ML02)		19:53			20:21	20:34
31	07:11						06:46		07:17 (ML02)					05:31	
	17:14						19:21	22	07:39 (ML02)					20:22	
Potential sun hours	298			298			369			398				447	451
Total, worst case		748			500			149			963				
Sun reduction		0,43			0,45			0,46			0,50				
Oper. time red.		0,88			0,88			0,88			0,88				
Wind dir. red.		0,64			0,58			0,56			0,57				
Total reduction		0,24			0,23			0,23			0,25				
Total, real		181			115			34			241				

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R04 - R04
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July	August	September		October		November		December	
1	05:31 / 20:34	05:54 / 20:15	06:25 / 19:33 43 07:45 (ML02)		07:02 (ML02) / 06:54 / 18:42 07:45 (ML02)		06:28 / 16:56 25 07:17 (ML09)		06:52 (ML09) / 16:32 36 / 07:02 / 08:18 (ML07) / 16:32 08:54 (ML07)	
2	05:31 / 20:34	05:55 / 20:14	06:26 / 19:31 43 07:45 (ML02)		07:02 (ML02) / 06:55 / 18:41 07:44 (ML02)		06:29 / 16:55 23 07:17 (ML09)		06:54 (ML09) / 16:32 37 / 07:03 / 08:18 (ML07) / 16:32 08:55 (ML07)	
3	05:32 / 20:34	05:56 / 20:13	06:27 / 19:29 42 07:44 (ML02)		07:02 (ML02) / 06:56 / 18:39 07:43 (ML02)		06:30 / 16:54 21 07:15 (ML09)		06:54 (ML09) / 16:32 37 / 07:04 / 08:18 (ML07) / 16:32 08:55 (ML07)	
4	05:32 / 20:33	05:57 / 20:12	06:28 / 19:28 41 07:43 (ML02)		07:02 (ML02) / 06:57 / 18:37 5 07:43 (ML02) 07:25 (ML11) / 07:30 (ML11)		06:31 / 16:53 18 07:14 (ML09)		06:56 (ML09) / 16:32 38 / 07:05 / 08:18 (ML07) / 16:32 08:56 (ML07)	
5	05:33 / 20:33	05:58 / 20:11	06:29 / 19:26 41 07:43 (ML02)		07:02 (ML02) / 06:58 / 18:36 12 07:43 (ML02) 07:21 (ML11) / 07:33 (ML11)		06:33 / 16:52 14 07:11 (ML09)		06:57 (ML09) / 16:31 39 / 07:06 / 08:18 (ML07) / 16:31 08:57 (ML07)	
6	05:33 / 20:33	05:59 / 20:10	06:30 / 19:24 39 07:42 (ML02)		07:03 (ML02) / 06:59 / 18:34 15 07:42 (ML02) 07:19 (ML11) / 07:34 (ML11)		06:34 / 16:50 8 07:09 (ML09)		/ 16:31 39 / 07:07 / 08:18 (ML07) / 16:31 08:57 (ML07)	
7	05:34 / 20:33	06:00 / 20:08	06:31 / 19:23 38 07:41 (ML02)		07:03 (ML02) / 07:00 / 18:33 15 07:41 (ML02) 07:20 (ML11) / 07:35 (ML11)		06:35 / 16:49		/ 07:08 / 08:18 (ML07) / 16:31 40 08:58 (ML07)	
8	05:35 / 20:32	06:01 / 20:07	06:31 / 19:21 36 07:40 (ML02)		07:04 (ML02) / 07:01 / 18:31 15 07:40 (ML02) 07:21 (ML11) / 07:36 (ML11)		06:36 / 16:48		/ 07:09 / 08:19 (ML07) / 16:31 40 08:59 (ML07)	
9	05:35 / 20:32	06:02 / 20:06	06:32 / 19:19 33 07:38 (ML02)		07:05 (ML02) / 07:02 / 18:29 14 07:38 (ML02) 07:23 (ML11) / 07:37 (ML11)		06:37 / 16:47		/ 07:10 / 08:19 (ML07) / 16:31 40 08:59 (ML07)	
10	05:36 / 20:32	06:03 / 20:05	06:33 / 19:18 30 07:36 (ML02)		07:06 (ML02) / 07:03 / 18:28 13 07:36 (ML02) 07:24 (ML11) / 07:37 (ML11)		06:39 / 16:46		/ 07:11 / 08:20 (ML07) / 16:31 40 09:00 (ML07)	
11	05:37 / 20:31	06:04 / 20:03	06:34 / 19:16 27 07:34 (ML02)		07:07 (ML02) / 07:05 / 18:26 11 07:34 (ML02) 07:25 (ML11) / 07:36 (ML11)		06:40 / 16:45		/ 07:12 / 08:19 (ML07) / 16:31 41 09:00 (ML07)	
12	05:37 / 20:31	06:05 / 20:02	06:35 / 19:14 23 07:32 (ML02)		07:09 (ML02) / 07:06 / 18:25 10 07:32 (ML02) 07:26 (ML11) / 07:36 (ML11)		06:41 / 16:44		/ 07:13 / 08:20 (ML07) / 16:31 40 09:00 (ML07)	
13	05:38 / 20:30	06:06 / 20:01	06:36 / 19:13 17 07:29 (ML02)		07:12 (ML02) / 07:07 / 18:23 8 07:29 (ML02) 07:27 (ML11) / 07:35 (ML11)		06:42 / 16:43		/ 07:13 / 08:20 (ML07) / 16:31 41 09:01 (ML07)	
14	05:39 / 20:30	06:07 / 19:59	06:37 / 19:11 6 07:23 (ML02)		07:17 (ML02) / 07:08 / 18:21 6 07:23 (ML02) 07:28 (ML11) / 07:34 (ML11)		06:43 / 16:42		/ 07:14 / 08:21 (ML07) / 16:32 41 09:02 (ML07)	
15	05:39 / 20:29	06:08 / 19:58 3 07:26 (ML02) / 07:29 (ML02)	06:38 / 19:09		/ 07:09 / 18:20 4 07:29 (ML11) / 07:33 (ML11)		06:44 / 16:42		/ 07:15 / 08:21 (ML07) / 16:32 41 09:02 (ML07)	
16	05:40 / 20:29	06:09 / 19:57 15 07:20 (ML02) / 07:35 (ML02)	06:39 / 19:08		/ 07:10 / 18:18 1 07:30 (ML11) / 07:31 (ML11)		06:46 / 16:41		/ 07:16 / 08:21 (ML07) / 16:32 41 09:02 (ML07)	
17	05:41 / 20:28	06:10 / 19:55 20 07:17 (ML02) / 07:37 (ML02)	06:40 / 19:06		/ 07:11 / 18:17 12 08:00 (ML09) / 08:12 (ML09)		06:47 / 16:40		/ 07:16 / 08:22 (ML07) / 16:32 41 09:03 (ML07)	
18	05:42 / 20:27	06:11 / 19:54 24 07:15 (ML02) / 07:39 (ML02)	06:41 / 19:04		/ 07:12 / 18:15 17 07:58 (ML09) / 08:15 (ML09)		06:48 / 16:39		/ 07:17 / 08:22 (ML07) / 16:33 41 09:03 (ML07)	
19	05:43 / 20:27	06:12 / 19:52 28 07:13 (ML02) / 07:41 (ML02)	06:42 / 19:03		/ 07:13 / 18:14 20 07:56 (ML09) / 08:16 (ML09)		06:49 / 16:38 11 08:26 (ML07) / 08:37 (ML07)		/ 07:18 / 08:23 (ML07) / 16:33 41 09:04 (ML07)	
20	05:43 / 20:26	06:13 / 19:51 31 07:11 (ML02) / 07:42 (ML02)	06:43 / 19:01		/ 07:14 / 18:12 23 07:54 (ML09) / 08:17 (ML09)		06:50 / 16:38 17 08:23 (ML07) / 08:40 (ML07)		/ 07:18 / 08:23 (ML07) / 16:34 41 09:04 (ML07)	
21	05:44 / 20:25	06:14 / 19:50 33 07:10 (ML02) / 07:43 (ML02)	06:44 / 18:59		/ 07:15 / 18:11 25 07:53 (ML09) / 08:18 (ML09)		06:51 / 16:37 20 08:22 (ML07) / 08:42 (ML07)		/ 07:19 / 08:24 (ML07) / 16:34 41 09:05 (ML07)	
22	05:45 / 20:24	06:15 / 19:48 35 07:09 (ML02) / 07:44 (ML02)	06:45 / 18:58		/ 07:16 / 18:10 26 07:52 (ML09) / 08:18 (ML09)		06:53 / 16:36 23 08:21 (ML07) / 08:44 (ML07)		/ 07:19 / 08:24 (ML07) / 16:34 41 09:05 (ML07)	
23	05:46 / 20:24	06:16 / 19:47 37 07:08 (ML02) / 07:45 (ML02)	06:46 / 18:56		/ 07:18 / 18:08 28 07:51 (ML09) / 08:19 (ML09)		06:54 / 16:36 26 08:20 (ML07) / 08:46 (ML07)		/ 07:20 / 08:25 (ML07) / 16:35 41 09:06 (ML07)	
24	05:47 / 20:23	06:17 / 19:45 38 07:07 (ML02) / 07:45 (ML02)	06:47 / 18:54		/ 07:19 / 18:07 29 07:51 (ML09) / 08:20 (ML09)		06:55 / 16:35 28 08:19 (ML07) / 08:47 (ML07)		/ 07:20 / 08:25 (ML07) / 16:36 41 09:06 (ML07)	
25	05:48 / 20:22	06:18 / 19:44 40 07:06 (ML02) / 07:46 (ML02)	06:48 / 18:52		/ 07:20 / 17:05 29 06:51 (ML09) / 07:20 (ML09)		06:56 / 16:35 29 08:19 (ML07) / 08:48 (ML07)		/ 07:21 / 08:26 (ML07) / 16:36 41 09:07 (ML07)	
26	05:49 / 20:21	06:19 / 19:42 41 07:05 (ML02) / 07:46 (ML02)	06:49 / 18:51		/ 07:21 / 06:21 / 17:04 30 06:50 (ML09) / 07:20 (ML09)		06:57 / 16:34 31 08:18 (ML07) / 08:49 (ML07)		/ 07:21 / 08:26 (ML07) / 16:37 41 09:07 (ML07)	
27	05:50 / 20:20	06:20 / 19:40 41 07:05 (ML02) / 07:46 (ML02)	06:50 / 18:49		/ 06:22 / 17:03 29 06:50 (ML09) / 07:19 (ML09)		06:58 / 16:34 32 08:18 (ML07) / 08:50 (ML07)		/ 07:21 / 08:26 (ML07) / 16:37 41 09:07 (ML07)	
28	05:51 / 20:19	06:21 / 19:39 42 07:04 (ML02) / 07:46 (ML02)	06:51 / 18:47		/ 06:23 / 17:01 29 06:50 (ML09) / 07:19 (ML09)		06:59 / 16:33 34 08:18 (ML07) / 08:52 (ML07)		/ 07:22 / 08:28 (ML07) / 16:38 41 09:09 (ML07)	
29	05:51 / 20:18	06:22 / 19:37 43 07:04 (ML02) / 07:47 (ML02)	06:52 / 18:46		/ 06:24 / 17:00 28 06:51 (ML09) / 07:19 (ML09)		07:00 / 16:33 34 08:18 (ML07) / 08:52 (ML07)		/ 07:22 / 08:28 (ML07) / 16:39 41 09:09 (ML07)	
30	05:52 / 20:17	06:23 / 19:36 43 07:02 (ML02) / 07:45 (ML02)	06:53 / 18:44		/ 06:26 / 16:59 28 06:51 (ML09) / 07:19 (ML09)		07:01 / 16:33 35 08:18 (ML07) / 08:53 (ML07)		/ 07:22 / 08:28 (ML07) / 16:39 41 09:09 (ML07)	
31	05:53 / 20:16	06:24 / 19:34 43 07:02 (ML02) / 07:45 (ML02)			/ 06:27 / 16:57 27 06:51 (ML09) / 07:18 (ML09)				/ 07:23 / 08:29 (ML07) / 16:40 41 09:09 (ML07)	

	July		August		September		October		November		December	
Potential sun hours	458		427		375		346		299		289	
Total, worst case		557			459		509		429		1245	
Sun reduction		0,71			0,67		0,56		0,51		0,44	
Oper. time red.		0,88			0,88		0,88		0,88		0,88	
Wind dir. red.		0,57			0,57		0,57		0,62		0,64	
Total reduction		0,37			0,34		0,29		0,28		0,25	
Total, real		206			154		145		120		306	

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk   14/11/2023 15:50 / 7   windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R05 - R05
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January			February		March			April	May	June
1	07:23		07:53 (ML09)	07:10		06:34		07:20 (ML02)	06:44	05:59	05:30
	16:41	31	08:24 (ML09)	17:15		17:49	52	08:12 (ML02)	19:22	19:54	20:23
2	07:23		07:53 (ML09)	07:09		06:33		07:20 (ML02)	06:42	05:57	05:30
	16:42	31	08:24 (ML09)	17:16		17:50	52	08:12 (ML02)	19:24	19:55	20:24
3	07:23		07:54 (ML09)	07:08		06:31		07:19 (ML02)	06:41	05:56	05:29
	16:43	31	08:25 (ML09)	17:18		17:51	53	08:12 (ML02)	19:25	19:56	20:24
4	07:23		07:54 (ML09)	07:07		06:30		07:18 (ML02)	06:39	05:55	05:29
	16:44	31	08:25 (ML09)	17:19		17:52	53	08:11 (ML02)	19:26	19:57	20:25
5	07:23		07:55 (ML09)	07:06		06:28		07:19 (ML02)	06:37	05:54	05:29
	16:45	31	08:26 (ML09)	17:20		17:53	52	08:11 (ML02)	19:27	19:58	20:26
6	07:23		07:55 (ML09)	07:05		06:27		07:18 (ML02)	06:36	05:52	05:28
	16:46	32	08:27 (ML09)	17:21		17:55	52	08:10 (ML02)	19:28	19:59	20:27
7	07:23		07:55 (ML09)	07:04		06:25		07:19 (ML02)	06:34	05:51	05:28
	16:47	32	08:27 (ML09)	17:23		17:56	52	08:11 (ML02)	19:29	20:00	20:27
8	07:23		07:56 (ML09)	07:02		06:23		07:18 (ML02)	06:33	05:50	05:28
	16:48	32	08:28 (ML09)	17:24		17:57	51	08:09 (ML02)	19:30	20:01	20:28
9	07:23		07:56 (ML09)	07:01		06:22		07:18 (ML02)	06:31	05:49	05:27
	16:49	31	08:27 (ML09)	17:25		17:58	50	08:08 (ML02)	19:31	20:02	20:28
10	07:23		07:56 (ML09)	07:00		06:20		07:19 (ML02)	06:29	05:48	05:27
	16:50	32	08:28 (ML09)	17:26		17:59	49	08:08 (ML02)	19:32	20:03	20:29
11	07:22		07:57 (ML09)	06:59		06:19		07:19 (ML02)	06:28	05:47	05:27
	16:51	32	08:29 (ML09)	17:28		18:00	48	08:07 (ML02)	19:33	20:04	20:29
12	07:22		07:58 (ML09)	06:58		06:17		07:20 (ML02)	06:26	05:46	05:27
	16:52	31	08:29 (ML09)	17:29		18:01	46	08:06 (ML02)	19:34	20:05	20:30
13	07:22		07:58 (ML09)	06:57		06:15		07:20 (ML02)	06:25	05:45	05:27
	16:53	31	08:29 (ML09)	17:30		18:02	44	08:04 (ML02)	19:35	20:06	20:30
14	07:22		07:58 (ML09)	06:55		06:14		07:21 (ML02)	06:23	05:44	05:27
	16:54	32	08:30 (ML09)	17:31		18:03	42	08:03 (ML02)	19:36	20:07	20:31
15	07:21		07:58 (ML09)	06:54	07:40 (ML02)	06:12		07:22 (ML02)	06:22	05:43	05:27
	16:55	31	08:29 (ML09)	17:32	14 07:54 (ML02)	18:04	40	08:02 (ML02)	19:37	20:08	20:31
16	07:21		07:59 (ML09)	06:53	07:36 (ML02)	06:10		07:23 (ML02)	06:20	05:42	05:27
	16:56	31	08:30 (ML09)	17:34	23 07:59 (ML02)	18:06	37	08:00 (ML02)	19:38	20:09	20:32
17	07:20		08:00 (ML09)	06:51	07:34 (ML02)	06:09		07:24 (ML02)	06:18	05:41	05:27
	16:57	30	08:30 (ML09)	17:35	28 08:02 (ML02)	18:07	33	07:57 (ML02)	19:39	20:10	20:32
18	07:20		08:01 (ML09)	06:50	07:31 (ML02)	06:07		07:26 (ML02)	06:17	05:40	05:27
	16:58	29	08:30 (ML09)	17:36	32 08:03 (ML02)	18:08	29	07:55 (ML02)	19:40	20:11	20:32
19	07:19		08:01 (ML09)	06:49	07:30 (ML02)	06:05		07:28 (ML02)	06:15	05:39	05:27
	17:00	29	08:30 (ML09)	17:37	35 08:05 (ML02)	18:09	24	07:52 (ML02)	19:41	20:12	20:33
20	07:19		08:03 (ML09)	06:47	07:28 (ML02)	06:04		07:31 (ML02)	06:14	05:38	05:27
	17:01	27	08:30 (ML09)	17:38	38 08:06 (ML02)	18:10	17	07:48 (ML02)	19:42	20:13	20:33
21	07:18		08:03 (ML09)	06:46	07:27 (ML02)	06:02			06:12	05:37	05:27
	17:02	26	08:29 (ML09)	17:40	41 08:08 (ML02)	18:11			19:43	20:14	20:33
22	07:18		08:04 (ML09)	06:45	07:26 (ML02)	06:01			06:11	05:36	05:28
	17:03	25	08:29 (ML09)	17:41	43 08:09 (ML02)	18:12			19:44	20:15	20:33
23	07:17		08:06 (ML09)	06:43	07:24 (ML02)	05:59			06:10	05:36	05:28
	17:04	23	08:29 (ML09)	17:42	45 08:09 (ML02)	18:13			19:46	20:16	20:34
24	07:16		08:07 (ML09)	06:42	07:24 (ML02)	05:57			06:08	05:35	05:28
	17:05	21	08:26 (ML09)	17:43	47 08:11 (ML02)	18:14			19:47	20:16	20:34
25	07:16		08:08 (ML09)	06:40	07:22 (ML02)	05:56			06:07	05:34	05:28
	17:07	18	08:26 (ML09)	17:44	49 08:11 (ML02)	18:15			19:48	20:17	20:34
26	07:15		08:09 (ML09)	06:39	07:22 (ML02)	05:54			06:05	05:33	05:29
	17:08	16	08:25 (ML09)	17:45	50 08:12 (ML02)	18:16			19:49	20:18	20:34
27	07:14		08:12 (ML09)	06:37	07:21 (ML02)	05:52			06:04	05:33	05:29
	17:09	11	08:23 (ML09)	17:47	50 08:11 (ML02)	18:17			19:50	20:19	20:34
28	07:13			06:36	07:21 (ML02)	05:51			06:03	05:32	05:29
	17:10			17:48	51 08:12 (ML02)	18:18			19:51	20:20	20:34
29	07:12					06:49			06:01	05:32	05:30
	17:12					19:19			19:52	20:21	20:34
30	07:12					06:47			06:00	05:31	05:30
	17:13					19:20			19:53	20:21	20:34
31	07:11					06:46				05:31	
	17:14					19:21				20:22	
Potential sun hours	298			298		369			398	447	451
Total, worst case		757			546		876				
Sun reduction		0,43			0,45		0,46				
Oper. time red.		0,88			0,88		0,88				
Wind dir. red.		0,62			0,57		0,57				
Total reduction		0,24			0,23		0,23				
Total, real		179			123		203				

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R05 - R05
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July	August	September		October		November		December	
1	05:31 / 20:34	05:54 / 20:15	06:25 / 19:33		06:54 / 18:42	45	07:59 (ML02) / 08:44 (ML02)	06:28 / 16:56	07:02 / 16:32	32	07:39 (ML09) / 08:11 (ML09)
2	05:31 / 20:34	05:55 / 20:14	06:26 / 19:31		06:55 / 18:41	47	07:58 (ML02) / 08:45 (ML02)	06:29 / 16:55	07:03 / 16:32	32	07:39 (ML09) / 08:11 (ML09)
3	05:32 / 20:34	05:56 / 20:13	06:27 / 19:29		06:56 / 18:39	48	07:57 (ML02) / 08:45 (ML02)	06:30 / 16:54	07:04 / 16:32	32	07:40 (ML09) / 08:12 (ML09)
4	05:32 / 20:33	05:57 / 20:12	06:28 / 19:28		06:57 / 18:37	50	07:56 (ML02) / 08:46 (ML02)	06:31 / 16:53	07:05 / 16:32	32	07:40 (ML09) / 08:12 (ML09)
5	05:33 / 20:33	05:58 / 20:11	06:29 / 19:26		06:58 / 18:36	51	07:55 (ML02) / 08:46 (ML02)	06:33 / 16:51	07:06 / 16:31	31	07:41 (ML09) / 08:12 (ML09)
6	05:33 / 20:33	05:59 / 20:10	06:30 / 19:24		06:59 / 18:34	51	07:55 (ML02) / 08:46 (ML02)	06:34 / 16:50	07:07 / 16:31	32	07:41 (ML09) / 08:13 (ML09)
7	05:34 / 20:33	06:00 / 20:08	06:31 / 19:23		07:00 / 18:33	52	07:54 (ML02) / 08:46 (ML02)	06:35 / 16:49	07:08 / 16:31	31	07:42 (ML09) / 08:13 (ML09)
8	05:35 / 20:32	06:01 / 20:07	06:31 / 19:21		07:01 / 18:31	53	07:53 (ML02) / 08:46 (ML02)	06:36 / 16:48	07:09 / 16:31	31	07:42 (ML09) / 08:13 (ML09)
9	05:35 / 20:32	06:02 / 20:06	06:32 / 19:19		07:02 / 18:29	53	07:53 (ML02) / 08:46 (ML02)	06:37 / 16:47	07:10 / 16:31	31	07:43 (ML09) / 08:14 (ML09)
10	05:36 / 20:32	06:03 / 20:05	06:33 / 19:18		07:03 / 18:28	52	07:54 (ML02) / 08:46 (ML02)	06:39 / 16:46	07:11 / 16:31	31	07:43 (ML09) / 08:14 (ML09)
11	05:37 / 20:31	06:04 / 20:03	06:34 / 19:16		07:05 / 18:26	53	07:53 (ML02) / 08:46 (ML02)	06:40 / 16:45	07:12 / 16:31	31	07:43 (ML09) / 08:14 (ML09)
12	05:37 / 20:31	06:05 / 20:02	06:35 / 19:14		07:06 / 18:25	53	07:53 (ML02) / 08:46 (ML02)	06:41 / 16:44	07:13 / 16:31	30	07:44 (ML09) / 08:14 (ML09)
13	05:38 / 20:30	06:06 / 20:01	06:36 / 19:13		07:07 / 18:23	52	07:53 (ML02) / 08:45 (ML02)	06:42 / 16:43	07:13 / 16:31	30	07:45 (ML09) / 08:15 (ML09)
14	05:39 / 20:30	06:07 / 19:59	06:37 / 19:11		07:08 / 18:21	51	07:53 (ML02) / 08:44 (ML02)	06:43 / 16:42	07:14 / 16:32	30	07:45 (ML09) / 08:15 (ML09)
15	05:39 / 20:29	06:08 / 19:58	06:38 / 19:09		07:09 / 18:20	51	07:53 (ML02) / 08:44 (ML02)	06:44 / 16:42	11	07:45 (ML09) / 07:56 (ML09)	07:15 / 16:32	30	07:45 (ML09) / 08:15 (ML09)
16	05:40 / 20:29	06:09 / 19:57	06:39 / 19:08		07:10 / 18:18	49	07:54 (ML02) / 08:43 (ML02)	06:46 / 16:41	16	07:42 (ML09) / 07:58 (ML09)	07:16 / 16:32	30	07:46 (ML09) / 08:16 (ML09)
17	05:41 / 20:28	06:10 / 19:55	06:40 / 19:06		07:11 / 18:17	48	07:54 (ML02) / 08:42 (ML02)	06:47 / 16:40	18	07:41 (ML09) / 07:59 (ML09)	07:16 / 16:32	30	07:47 (ML09) / 08:17 (ML09)
18	05:42 / 20:27	06:11 / 19:54	06:41 / 19:04		07:12 / 18:15	47	07:55 (ML02) / 08:42 (ML02)	06:48 / 16:39	21	07:41 (ML09) / 06:02 (ML09)	07:17 / 16:33	29	07:47 (ML09) / 08:16 (ML09)
19	05:43 / 20:27	06:12 / 19:52	06:42 / 19:03		07:13 / 18:14	45	07:56 (ML02) / 08:41 (ML02)	06:49 / 16:38	23	07:40 (ML09) / 08:03 (ML09)	07:18 / 16:33	29	07:48 (ML09) / 08:17 (ML09)
20	05:43 / 20:26	06:13 / 19:51	06:43 / 19:01		07:14 / 18:12	42	07:57 (ML02) / 08:39 (ML02)	06:50 / 16:38	25	07:39 (ML09) / 08:04 (ML09)	07:18 / 16:34	29	07:48 (ML09) / 08:17 (ML09)
21	05:44 / 20:25	06:14 / 19:50	06:44 / 18:59		07:15 / 18:11	41	07:57 (ML02) / 08:38 (ML02)	06:51 / 16:37	26	07:38 (ML09) / 08:04 (ML09)	07:19 / 16:34	29	07:49 (ML09) / 08:18 (ML09)
22	05:45 / 20:24	06:15 / 19:48	06:45 / 18:58		07:16 / 18:10	37	07:59 (ML02) / 08:36 (ML02)	06:53 / 16:36	27	07:39 (ML09) / 08:06 (ML09)	07:19 / 16:34	29	07:49 (ML09) / 08:18 (ML09)
23	05:46 / 20:24	06:16 / 19:47	06:46 / 18:56	14	08:17 (ML02) / 08:31 (ML02)	07:18 / 18:08	34	08:00 (ML02) / 08:34 (ML02)	06:54 / 16:36	29	07:38 (ML09) / 08:07 (ML09)	07:20 / 16:35	29	07:50 (ML09) / 08:19 (ML09)
24	05:47 / 20:23	06:17 / 19:45	06:47 / 18:54	21	08:13 (ML02) / 08:34 (ML02)	07:19 / 18:07	31	08:02 (ML02) / 08:33 (ML02)	06:55 / 16:35	29	07:38 (ML09) / 08:07 (ML09)	07:20 / 16:36	29	07:50 (ML09) / 08:19 (ML09)
25	05:48 / 20:22	06:18 / 19:44	06:48 / 18:52	27	08:10 (ML02) / 08:37 (ML02)	06:20 / 17:05	27	07:04 (ML02) / 07:31 (ML02)	06:56 / 16:35	30	07:38 (ML09) / 08:08 (ML09)	07:21 / 16:36	29	07:51 (ML09) / 08:20 (ML09)
26	05:49 / 20:21	06:19 / 19:42	06:49 / 18:51	32	08:07 (ML02) / 08:39 (ML02)	06:21 / 17:04	20	07:07 (ML02) / 07:27 (ML02)	06:57 / 16:34	30	07:38 (ML09) / 08:08 (ML09)	07:21 / 16:37	29	07:51 (ML09) / 08:20 (ML09)
27	05:50 / 20:20	06:20 / 19:40	06:50 / 18:49	35	08:05 (ML02) / 08:40 (ML02)	06:22 / 17:03	12	07:11 (ML02) / 07:23 (ML02)	06:58 / 16:34	31	07:37 (ML09) / 08:08 (ML09)	07:21 / 16:37	30	07:51 (ML09) / 08:21 (ML09)
28	05:51 / 20:19	06:21 / 19:39	06:51 / 18:47	39	08:03 (ML02) / 08:42 (ML02)	06:23 / 17:01			06:59 / 16:33	31	07:39 (ML09) / 08:10 (ML09)	07:22 / 16:38	30	07:52 (ML09) / 08:22 (ML09)
29	05:51 / 20:18	06:22 / 19:37	06:52 / 18:46	41	08:02 (ML02) / 08:43 (ML02)	06:24 / 17:00			07:00 / 16:33	31	07:39 (ML09) / 08:10 (ML09)	07:22 / 16:39	30	07:52 (ML09) / 08:22 (ML09)
30	05:52 / 20:17	06:23 / 19:36	06:53 / 18:44	44	08:00 (ML02) / 08:44 (ML02)	06:26 / 16:59			07:01 / 16:33	32	07:39 (ML09) / 08:11 (ML09)	07:22 / 16:39	30	07:53 (ML09) / 08:23 (ML09)
31	05:53 / 20:16	06:24 / 19:34			06:27 / 16:57						07:23 / 16:40	30	07:53 (ML09) / 08:23 (ML09)

	July	August	September	October	November	December
Potential sun hours	458	427	375	346	299	289
Total, worst case			253	1195	410	937
Sun reduction			0,67	0,56	0,51	0,44
Oper. time red.			0,88	0,88	0,88	0,88
Wind dir. red.			0,57	0,57	0,62	0,62
Total reduction			0,34	0,28	0,28	0,24
Total, real			85	338	114	225

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R06 - R06
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June
1	07:23		08:06 (ML11)	07:10		08:19 (ML11)	06:34			06:44		17:28 (ML02)	05:59		17:18 (ML02)	05:30
	16:41	105	15:04 (ML07)	17:15	69	16:18 (ML05)	17:49			19:22	40	18:08 (ML02)	19:54	53	18:11 (ML02)	20:23
2	07:23		08:06 (ML11)	07:09		08:20 (ML11)	06:33			06:42		17:26 (ML02)	05:57		17:18 (ML02)	05:30
	16:42	97	15:05 (ML07)	17:16	63	16:16 (ML05)	17:50			19:23	44	18:10 (ML02)	19:55	51	18:09 (ML02)	20:24
3	07:23		08:06 (ML11)	07:08		08:21 (ML11)	06:31			06:41		17:24 (ML02)	05:56		17:19 (ML02)	05:29
	16:43	93	15:05 (ML07)	17:18	57	16:14 (ML05)	17:51			19:25	47	18:11 (ML02)	19:56	49	18:08 (ML02)	20:24
4	07:23		08:07 (ML11)	07:07		08:22 (ML11)	06:30			06:39		17:22 (ML02)	05:55		17:20 (ML02)	05:29
	16:44	92	15:05 (ML07)	17:19	44	09:06 (ML11)	17:52			19:26	50	18:12 (ML02)	19:57	48	18:08 (ML02)	20:25
5	07:23		08:07 (ML11)	07:06		08:23 (ML11)	06:28			06:37		17:21 (ML02)	05:54		17:21 (ML02)	05:28
	16:45	95	16:01 (ML05)	17:20	41	09:04 (ML11)	17:53			19:27	53	18:14 (ML02)	19:58	46	18:07 (ML02)	20:26
6	07:23		08:08 (ML11)	07:05		08:24 (ML11)	06:26			06:36		17:20 (ML02)	05:52		17:22 (ML02)	05:28
	16:46	99	16:04 (ML05)	17:21	39	09:03 (ML11)	17:55			19:28	54	18:14 (ML02)	19:59	44	18:06 (ML02)	20:26
7	07:23		08:08 (ML11)	07:04		08:26 (ML11)	06:25			06:34		17:19 (ML02)	05:51		17:24 (ML02)	05:28
	16:47	102	16:06 (ML05)	17:23	36	09:02 (ML11)	17:56			19:29	56	18:15 (ML02)	20:00	41	18:05 (ML02)	20:27
8	07:23		08:08 (ML11)	07:02		08:28 (ML11)	06:23			06:33		17:18 (ML02)	05:50		17:25 (ML02)	05:28
	16:48	104	16:08 (ML05)	17:24	32	09:00 (ML11)	17:57			19:30	58	18:16 (ML02)	20:01	39	18:04 (ML02)	20:28
9	07:23		08:08 (ML11)	07:01		08:30 (ML11)	06:22			06:31		17:16 (ML02)	05:49		17:25 (ML02)	05:27
	16:49	104	16:08 (ML05)	17:25	28	08:58 (ML11)	17:58			19:31	60	18:16 (ML02)	20:02	36	18:01 (ML02)	20:28
10	07:23		08:08 (ML11)	07:00		08:33 (ML11)	06:20			06:29		17:16 (ML02)	05:48		17:27 (ML02)	05:27
	16:50	106	16:10 (ML05)	17:26	22	08:55 (ML11)	17:59			19:32	61	18:17 (ML02)	20:03	33	18:00 (ML02)	20:29
11	07:22		08:09 (ML11)	06:59		08:36 (ML11)	06:19			06:28		17:15 (ML02)	05:47		17:29 (ML02)	05:27
	16:51	105	16:11 (ML05)	17:28	15	08:51 (ML11)	18:00			19:33	62	18:17 (ML02)	20:04	29	17:58 (ML02)	20:29
12	07:22		08:09 (ML11)	06:58			06:17			06:26		17:15 (ML02)	05:46		17:31 (ML02)	05:27
	16:52	105	16:12 (ML05)	17:29			18:01			19:34	62	18:17 (ML02)	20:05	25	17:56 (ML02)	20:30
13	07:22		08:09 (ML11)	06:56			06:15			06:25		17:14 (ML02)	05:45		17:33 (ML02)	05:27
	16:53	105	16:13 (ML05)	17:30			18:02			19:35	63	18:17 (ML02)	20:06	21	17:54 (ML02)	20:30
14	07:21		08:10 (ML11)	06:55			06:14			06:23		17:14 (ML02)	05:44		17:37 (ML02)	05:27
	16:54	104	16:14 (ML05)	17:31			18:03			19:36	64	18:18 (ML02)	20:07	15	17:52 (ML02)	20:31
15	07:21		08:10 (ML11)	06:54			06:12			06:21		17:13 (ML02)	05:43			05:27
	16:55	104	16:15 (ML05)	17:32			18:04			19:37	64	18:17 (ML02)	20:08			20:31
16	07:21		08:11 (ML11)	06:53			06:10			06:20		17:13 (ML02)	05:42			05:27
	16:56	101	16:16 (ML05)	17:34			18:05			19:38	64	18:17 (ML02)	20:09			20:32
17	07:20		08:10 (ML11)	06:51			06:09			06:18		17:13 (ML02)	05:41			05:27
	16:57	99	16:16 (ML05)	17:35			18:07			19:39	64	18:17 (ML02)	20:10			20:32
18	07:20		08:11 (ML11)	06:50			06:07			06:17		17:13 (ML02)	05:40			05:27
	16:58	92	16:17 (ML05)	17:36			18:08			19:40	64	18:17 (ML02)	20:11			20:32
19	07:19		08:11 (ML11)	06:49			06:05			06:15		17:13 (ML02)	05:39			05:27
	16:59	86	16:18 (ML05)	17:37			18:09			19:41	64	18:17 (ML02)	20:12			20:33
20	07:19		08:12 (ML11)	06:47			06:04			06:14		17:13 (ML02)	05:38			05:27
	17:01	86	16:19 (ML05)	17:38			18:10			19:42	64	18:17 (ML02)	20:13			20:33
21	07:18		08:12 (ML11)	06:46			06:02			06:12		17:13 (ML02)	05:37			05:27
	17:02	86	16:19 (ML05)	17:40			18:11			19:43	63	18:16 (ML02)	20:14			20:33
22	07:18		08:12 (ML11)	06:44			06:00			06:11		17:13 (ML02)	05:36			05:27
	17:03	86	16:19 (ML05)	17:41			18:12			19:44	63	18:16 (ML02)	20:15			20:33
23	07:17		08:13 (ML11)	06:43			05:59			06:10		17:13 (ML02)	05:36			05:28
	17:04	84	16:19 (ML05)	17:42			18:13			19:45	62	18:15 (ML02)	20:16			20:34
24	07:16		08:14 (ML11)	06:42			05:57			06:08		17:14 (ML02)	05:35			05:28
	17:05	84	16:20 (ML11)	17:43			18:14			19:47	61	18:15 (ML02)	20:16			20:34
25	07:16		08:14 (ML11)	06:40			05:55			06:07		17:14 (ML02)	05:34			05:29
	17:07	84	16:20 (ML05)	17:44			18:15			19:48	61	18:15 (ML02)	20:17			20:34
26	07:15		08:14 (ML11)	06:39			05:54			06:05		17:14 (ML02)	05:33			05:29
	17:08	84	16:20 (ML05)	17:45			18:16			19:49	60	18:14 (ML02)	20:18			20:34
27	07:14		08:15 (ML11)	06:37			05:52			06:04		17:15 (ML02)	05:33			05:29
	17:09	81	16:20 (ML05)	17:47			18:17			19:50	58	18:13 (ML02)	20:19			20:34
28	07:13		08:15 (ML11)	06:36			05:51		16:43 (ML02)	06:03		17:16 (ML02)	05:32			05:29
	17:10	80	16:19 (ML05)	17:48			18:18	13	16:56 (ML02)	19:51	57	18:13 (ML02)	20:20			20:34
29	07:12		08:17 (ML11)				06:49		17:37 (ML02)	06:01		17:16 (ML02)	05:32			05:30
	17:11	77	16:20 (ML05)				19:19	24	18:01 (ML02)	19:52	56	18:12 (ML02)	20:21			20:34
30	07:12		08:18 (ML11)				06:47		17:34 (ML02)	06:00		17:17 (ML02)	05:31			05:30
	17:13	74	16:19 (ML05)				19:20	31	18:05 (ML02)	19:53	54	18:11 (ML02)	20:21			20:34
31	07:11		08:18 (ML11)				06:46		17:31 (ML02)				05:31			
	17:14	71	16:18 (ML05)				19:21	36	18:07 (ML02)				20:22			
Potential sun hours	298			298			370			398			447			451
Total, worst case	2875			446			104			1753			530			
Sun reduction	0,43			0,45			0,46			0,50			0,57			
Oper. time red.	0,88			0,88			0,88			0,88			0,88			
Wind dir. red.	0,63			0,63			0,57			0,57			0,57			
Total reduction	0,24			0,25			0,23			0,25			0,29			
Total, real	686			111			24			439			152			

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R06 - R06
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:31	05:54	17:41 (ML02) 06:25	17:14 (ML02) 06:54	06:28	06:01 (ML11) 07:02
	20:34	20:15 27	18:08 (ML02) 19:37 61	18:15 (ML02) 18:42	16:56 24	08:25 (ML11) 16:32 105	15:53 (ML05)
2	05:31	05:55	17:39 (ML02) 06:26	17:14 (ML02) 06:55	06:29	07:59 (ML11) 07:03	07:52 (ML11)
	20:31	20:14 30	18:09 (ML02) 19:31 61	18:15 (ML02) 18:41	16:55 29	08:28 (ML11) 16:32 105	15:53 (ML05)
3	05:32	05:56	17:37 (ML02) 06:27	17:14 (ML02) 06:56	06:30	07:57 (ML11) 07:04	07:57 (ML11)
	20:34	20:13 34	18:11 (ML02) 19:29 60	18:14 (ML02) 18:39	16:54 33	08:30 (ML11) 16:32 104	15:52 (ML05)
4	05:32	05:57	17:36 (ML02) 06:28	17:15 (ML02) 06:57	06:31	07:55 (ML11) 07:05	07:52 (ML11)
	20:33	20:12 36	18:12 (ML02) 19:28 58	18:13 (ML02) 18:37	16:53 37	08:32 (ML11) 16:31 104	15:52 (ML05)
5	05:33	05:58	17:34 (ML02) 06:29	17:15 (ML02) 06:58	06:33	07:54 (ML11) 07:06	07:53 (ML11)
	20:33	20:11 40	18:14 (ML02) 19:26 57	18:12 (ML02) 18:36	16:51 39	08:33 (ML11) 16:31 102	15:51 (ML05)
6	05:33	05:59	17:33 (ML02) 06:29	17:16 (ML02) 06:59	06:34	07:53 (ML11) 07:07	07:54 (ML11)
	20:33	20:10 42	18:15 (ML02) 19:24 54	18:10 (ML02) 18:34	16:50 42	08:35 (ML11) 16:31 100	15:50 (ML05)
7	05:34	06:00	17:31 (ML02) 06:30	17:16 (ML02) 07:00	06:35	07:52 (ML11) 07:08	07:54 (ML11)
	20:33	20:08 45	18:16 (ML02) 19:23 53	18:09 (ML02) 18:33	16:49 48	15:41 (ML05) 16:31 96	15:49 (ML05)
8	05:35	06:01	17:30 (ML02) 06:31	17:17 (ML02) 07:01	06:36	07:51 (ML11) 07:09	07:54 (ML11)
	20:32	20:07 47	18:17 (ML02) 19:21 50	18:07 (ML02) 18:31	16:48 57	15:44 (ML05) 16:31 92	14:53 (ML07)
9	05:35	06:02	17:29 (ML02) 06:32	17:18 (ML02) 07:02	06:37	07:50 (ML11) 07:10	07:55 (ML11)
	20:32	20:06 48	18:17 (ML02) 19:19 48	18:06 (ML02) 18:29	16:47 63	15:46 (ML05) 16:31 93	14:54 (ML07)
10	05:36	06:03	17:28 (ML02) 06:33	17:19 (ML02) 07:03	06:38	07:50 (ML11) 07:11	07:56 (ML11)
	20:32	20:05 50	18:18 (ML02) 19:18 45	18:04 (ML02) 18:28	16:46 69	15:49 (ML05) 16:31 95	14:55 (ML07)
11	05:37	06:04	17:27 (ML02) 06:34	17:21 (ML02) 07:04	06:40	07:49 (ML11) 07:12	07:56 (ML11)
	20:31	20:03 52	18:19 (ML02) 19:16 41	18:02 (ML02) 18:26	16:45 71	15:49 (ML05) 16:31 105	14:55 (ML07)
12	05:37	06:05	17:25 (ML02) 06:35	17:23 (ML02) 07:06	06:41	07:48 (ML11) 07:13	07:57 (ML11)
	20:31	20:02 54	18:19 (ML02) 19:14 36	17:59 (ML02) 18:25	16:44 75	15:50 (ML05) 16:31 108	14:55 (ML07)
13	05:38	06:06	17:24 (ML02) 06:36	17:25 (ML02) 07:07	06:42	07:48 (ML11) 07:13	07:57 (ML11)
	20:30	20:01 55	18:19 (ML02) 19:13 31	17:56 (ML02) 18:23	16:43 77	15:51 (ML05) 16:31 112	14:56 (ML07)
14	05:39	06:07	17:23 (ML02) 06:37	17:27 (ML02) 07:08	06:43	07:48 (ML11) 07:14	07:58 (ML11)
	20:30	19:59 56	18:19 (ML02) 19:11 25	17:52 (ML02) 18:21	16:42 80	15:52 (ML05) 16:32 115	14:57 (ML07)
15	05:39	06:08	17:22 (ML02) 06:38	17:31 (ML02) 07:09	06:44	07:48 (ML11) 07:15	07:58 (ML11)
	20:29	19:58 58	18:19 (ML02) 19:09 16	17:47 (ML02) 18:20	16:41 81	15:53 (ML05) 16:32 116	14:57 (ML07)
16	05:40	06:09	17:21 (ML02) 06:39	07:10	06:46	07:47 (ML11) 07:16	07:59 (ML11)
	20:29	19:57 59	18:20 (ML02) 19:08	18:18	16:41 84	15:53 (ML05) 16:32 117	14:58 (ML07)
17	05:41	06:10	17:23 (ML02) 06:40	07:11	06:47	07:47 (ML11) 07:16	08:00 (ML11)
	20:28	19:55 59	18:20 (ML02) 19:06	18:17	06:47 84	15:53 (ML05) 16:32 120	14:59 (ML07)
18	05:42	06:11	19:54 61	07:12	06:48	07:48 (ML11) 07:17	08:00 (ML11)
	20:27	19:54 61	17:20 (ML02) 06:41	18:15	16:39 84	15:54 (ML05) 16:33 119	14:59 (ML07)
19	05:43	06:12	17:19 (ML02) 06:42	18:14	06:49	07:48 (ML11) 07:18	08:01 (ML11)
	20:27	19:52 62	17:19 (ML02) 19:03	07:13	16:38 84	15:54 (ML05) 16:33 119	14:59 (ML07)
20	05:43	06:13	17:19 (ML02) 06:43	07:14	06:50	07:47 (ML11) 07:18	08:01 (ML11)
	20:26	19:51 62	19:01	18:12	16:38 86	15:54 (ML05) 16:33 119	14:59 (ML07)
21	05:44	06:14	17:18 (ML02) 06:44	07:15	06:51	07:47 (ML11) 07:19	08:02 (ML11)
	20:25	19:49 63	18:59	18:11	16:37 86	15:54 (ML05) 16:34 120	15:00 (ML07)
22	05:45	06:15	17:17 (ML02) 06:45	18:10	06:52	07:48 (ML11) 07:19	08:02 (ML11)
	20:24	19:48 64	18:58	07:16	16:36 86	15:55 (ML05) 16:34 120	15:00 (ML07)
23	05:46	06:16	17:17 (ML02) 06:46	18:08	06:54	07:48 (ML11) 07:20	08:03 (ML11)
	20:24	19:46 64	18:56	07:18	16:36 86	15:55 (ML05) 16:35 120	15:01 (ML07)
24	05:47	06:17	17:16 (ML02) 06:47	18:07	06:55	07:48 (ML11) 07:20	08:03 (ML11)
	20:23	19:45 64	18:54	07:19	16:35 92	15:54 (ML05) 16:35 119	15:04 (ML07)
25	05:48	06:18	17:16 (ML02) 06:48	07:05	06:56	07:48 (ML11) 07:21	08:04 (ML11)
	20:22	19:43 64	18:52	06:20	16:35 99	15:54 (ML05) 16:36 119	15:02 (ML07)
26	05:49	06:19	17:16 (ML02) 06:49	06:21	06:57	07:49 (ML11) 07:21	08:04 (ML11)
	20:21	19:42 64	18:51	17:04	16:34 101	15:54 (ML05) 16:37 119	15:02 (ML07)
27	05:50	06:20	17:15 (ML02) 06:50	17:03	06:58	07:49 (ML11) 07:21	08:04 (ML11)
	20:20	19:40 65	18:49	06:22	16:34 104	15:54 (ML05) 16:37 118	15:03 (ML07)
28	05:50	06:21	17:15 (ML02) 06:51	17:01	06:59	07:50 (ML11) 07:22	08:04 (ML11)
	20:19	19:39 64	18:47	06:23	16:33 104	15:54 (ML05) 16:38 117	15:03 (ML07)
29	05:51	17:50 (ML02) 06:22	17:14 (ML02) 06:52	17:00	07:00	07:50 (ML11) 07:22	08:05 (ML11)
	20:18 8	17:58 (ML02) 19:37 64	18:46	06:24	16:33 105	15:54 (ML05) 16:39 115	15:04 (ML07)
30	05:52	17:46 (ML02) 06:23	17:14 (ML02) 06:53	16:59	07:01	07:51 (ML11) 07:22	08:05 (ML11)
	20:17 17	18:03 (ML02) 19:36 63	18:17 (ML02) 18:44	06:26	16:32 105	15:54 (ML05) 16:39 113	15:04 (ML07)
31	05:53	17:43 (ML02) 06:24	18:16 (ML02)	06:27		07:22	08:06 (ML11)
	20:16 22	18:05 (ML02) 19:34 62		16:57 16	08:05 (ML11)	16:40 110	15:04 (ML07)
Potential sun hours	458	427	375	346	299	289
Total, worst case	47	1678	696	16	2215	3436
Sun reduction	0,72	0,73	0,67	0,56	0,51	0,44
Oper. time red.	0,88	0,88	0,88	0,88	0,88	0,88
Wind dir. red.	0,57	0,57	0,57	0,63	0,62	0,64
Total reduction	0,36	0,37	0,34	0,31	0,28	0,25
Total, real	17	620	234	5	619	854

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R07 - R07
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May		June	
1	07:23	07:10	06:34	06:44	05:59	18:44 (ML05)	05:30	18:31 (ML07)
	16:41	17:15	17:49	19:22	19:54 2	18:46 (ML05)	20:23 28	18:59 (ML07)
2	07:23	07:09	06:33	06:42	05:57		05:30	18:32 (ML07)
	16:42	17:16	17:50	19:23	19:55		20:24 27	18:59 (ML07)
3	07:23	07:08	06:31	06:41	05:56		05:29	18:32 (ML07)
	16:43	17:18	17:51	19:24	19:56		20:24 27	18:59 (ML07)
4	07:23	07:07	06:30	06:39	05:55		05:29	18:32 (ML07)
	16:44	17:19	17:52	19:26	19:57		20:25 26	18:58 (ML07)
5	07:23	07:06	06:28	06:37	05:54		05:28	18:33 (ML07)
	16:45	17:20	17:53	19:27	19:58		20:26 26	18:59 (ML07)
6	07:23	07:05	06:26	06:36	05:52		05:28	18:34 (ML07)
	16:46	17:21	17:54	19:28	19:59		20:26 25	18:59 (ML07)
7	07:23	07:04	06:25	06:34	05:51		05:28	18:34 (ML07)
	16:47	17:23	17:56	19:29	20:00		20:27 25	18:59 (ML07)
8	07:23	07:02	06:23	06:32	05:50		05:28	18:34 (ML07)
	16:48	17:24	17:57	19:30	20:01		20:28 24	18:58 (ML07)
9	07:23	07:01	06:22	06:31	05:49	18:40 (ML07)	05:27	18:35 (ML07)
	16:49	17:25	17:58	19:31	20:02 6	18:46 (ML07)	20:28 23	18:58 (ML07)
10	07:23	07:00	06:20	06:29	05:48	18:37 (ML07)	05:27	18:35 (ML07)
	16:50	17:26	17:59	19:32	20:03 12	18:49 (ML07)	20:29 23	18:58 (ML07)
11	07:22	06:59	06:18	06:28	05:47	18:35 (ML07)	05:27	18:36 (ML07)
	16:51	17:28	18:00	19:33	20:04 16	18:51 (ML07)	20:29 22	18:58 (ML07)
12	07:22	06:58	06:17	06:26	05:46	18:33 (ML07)	05:27	18:36 (ML07)
	16:52	17:29	18:01	19:34	20:05 19	18:52 (ML07)	20:30 22	18:58 (ML07)
13	07:22	06:56	06:15	06:25	05:45	18:32 (ML07)	05:27	18:37 (ML07)
	16:53	17:30	18:02	19:35	20:06 22	18:54 (ML07)	20:30 21	18:58 (ML07)
14	07:21	06:55	06:14	06:23	05:43	18:31 (ML07)	05:27	18:37 (ML07)
	16:54	17:31	18:03	19:36	20:07 23	18:54 (ML07)	20:31 21	18:58 (ML07)
15	07:21	06:54	06:12	06:21	05:43	18:31 (ML07)	05:27	18:38 (ML07)
	16:55	17:32	18:04	19:37	20:08 25	18:56 (ML07)	20:31 20	18:58 (ML07)
16	07:21	06:53	06:10	06:20	18:45 (ML05) 05:42	18:31 (ML07)	05:27	18:38 (ML07)
	16:56	17:34	18:05	19:38 4	18:49 (ML05) 20:09 26	18:57 (ML07)	20:32 20	18:58 (ML07)
17	07:20	06:51	06:09	06:18	18:42 (ML05) 05:41	18:30 (ML07)	05:27	18:38 (ML07)
	16:57	17:35	18:07	19:39 11	18:53 (ML05) 20:10 27	18:57 (ML07)	20:32 20	18:58 (ML07)
18	07:20	06:50	06:07	06:17	18:39 (ML05) 05:40	18:29 (ML07)	05:27	18:39 (ML07)
	16:58	17:36	18:08	19:40 15	18:54 (ML05) 20:11 28	18:57 (ML07)	20:32 19	18:58 (ML07)
19	07:19	06:49	06:05	06:15	18:38 (ML05) 05:39	18:29 (ML07)	05:27	18:39 (ML07)
	16:59	17:37	18:09	19:41 17	18:55 (ML05) 20:12 28	18:57 (ML07)	20:33 19	18:58 (ML07)
20	07:19	06:47	06:04	06:14	18:38 (ML05) 05:38	18:29 (ML07)	05:27	18:39 (ML07)
	17:01	17:38	18:10	19:42 18	18:56 (ML05) 20:13 29	18:58 (ML07)	20:33 19	18:58 (ML07)
21	07:18	06:46	06:02	06:12	18:36 (ML05) 05:37	18:29 (ML07)	05:27	18:40 (ML07)
	17:02	17:40	18:11	19:43 20	18:56 (ML05) 20:14 30	18:59 (ML07)	20:33 19	18:59 (ML07)
22	07:18	06:44	06:00	06:11	18:36 (ML05) 05:36	18:29 (ML07)	05:27	18:40 (ML07)
	17:03	17:41	18:12	19:44 21	18:57 (ML05) 20:15 30	18:59 (ML07)	20:33 19	18:59 (ML07)
23	07:17	06:43	05:59	06:10	18:35 (ML05) 05:36	18:29 (ML07)	05:28	18:40 (ML07)
	17:04	17:42	18:13	19:45 21	18:56 (ML05) 20:15 29	18:58 (ML07)	20:33 19	18:59 (ML07)
24	07:16	06:42	05:57	06:08	18:36 (ML05) 05:35	18:29 (ML07)	05:28	18:40 (ML07)
	17:05	17:43	18:14	19:46 20	18:56 (ML05) 20:16 30	18:59 (ML07)	20:34 19	18:59 (ML07)
25	07:16	06:40	05:55	06:07	18:36 (ML05) 05:34	18:29 (ML07)	05:28	18:41 (ML07)
	17:07	17:44	18:15	19:48 20	18:56 (ML05) 20:17 30	18:59 (ML07)	20:34 19	19:00 (ML07)
26	07:15	06:39	05:54	06:05	18:36 (ML05) 05:33	18:29 (ML07)	05:29	18:40 (ML07)
	17:08	17:45	18:16	19:49 19	18:55 (ML05) 20:18 30	18:59 (ML07)	20:34 20	19:00 (ML07)
27	07:14	06:37	05:52	06:04	18:37 (ML05) 05:33	18:30 (ML07)	05:29	18:40 (ML07)
	17:09	17:47	18:17	19:50 17	18:54 (ML05) 20:19 29	18:59 (ML07)	20:34 20	19:00 (ML07)
28	07:13	06:36	05:50	06:03	18:38 (ML05) 05:32	18:30 (ML07)	05:29	18:41 (ML07)
	17:10	17:48	18:18	19:51 16	18:54 (ML05) 20:20 29	18:59 (ML07)	20:34 20	19:01 (ML07)
29	07:12		06:49	06:01	18:38 (ML05) 05:32	18:30 (ML07)	05:30	18:40 (ML07)
	17:11		19:19	19:52 13	18:51 (ML05) 20:21 29	18:59 (ML07)	20:34 21	19:01 (ML07)
30	07:11		06:47	06:00	18:40 (ML05) 05:31	18:30 (ML07)	05:30	18:41 (ML07)
	17:13		19:20	19:53 10	18:50 (ML05) 20:21 29	18:59 (ML07)	20:34 21	19:02 (ML07)
31	07:11		06:46		05:31	18:31 (ML07)		
	17:14		19:21		20:22 28	18:59 (ML07)		
Potential sun hours	298	298	370	398	447		451	
Total, worst case				242	586		654	
Sun reduction				0,50	0,57		0,64	
Oper. time red.				0,88	0,88		0,88	
Wind dir. red.				0,56	0,55		0,55	
Total reduction				0,25	0,27		0,31	
Total, real				59	160		202	

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R07 - R07
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July		August		September	October	November	December
1	05:31	18:40 (ML07)	05:54	18:44 (ML07)	06:25	06:54	06:28	07:02
	20:34	22 19:02 (ML07)	20:15	19 19:03 (ML07)	19:32	18:42	16:56	16:32
2	05:31	18:41 (ML07)	05:55	18:46 (ML07)	06:26	06:55	06:29	07:03
	20:34	22 19:03 (ML07)	20:14	15 19:01 (ML07)	19:31	18:41	16:55	16:32
3	05:32	18:40 (ML07)	05:56	18:48 (ML07)	06:27	06:56	06:30	07:04
	20:34	23 19:03 (ML07)	20:13	11 18:59 (ML07)	19:29	18:39	16:54	16:32
4	05:32	18:40 (ML07)	05:57		06:28	06:57	06:31	07:05
	20:33	24 19:04 (ML07)	20:12		19:28	18:37	16:53	16:31
5	05:33	18:40 (ML07)	05:58		06:28	06:58	06:33	07:06
	20:33	24 19:04 (ML07)	20:11		19:26	18:36	16:51	16:31
6	05:33	18:40 (ML07)	05:59		06:29	06:59	06:34	07:07
	20:33	25 19:05 (ML07)	20:09		19:24	18:34	16:50	16:31
7	05:34	18:39 (ML07)	06:00		06:30	07:00	06:35	07:08
	20:33	26 19:05 (ML07)	20:08		19:23	18:33	16:49	16:31
8	05:35	18:40 (ML07)	06:01		06:31	07:01	06:36	07:09
	20:32	26 19:06 (ML07)	20:07		19:21	18:31	16:48	16:31
9	05:35	18:40 (ML07)	06:02		06:32	07:02	06:37	07:10
	20:32	26 19:06 (ML07)	20:06		19:19	18:29	16:47	16:31
10	05:36	18:39 (ML07)	06:03		06:33	07:03	06:38	07:11
	20:32	27 19:06 (ML07)	20:05		19:18	18:28	16:46	16:31
11	05:37	18:39 (ML07)	06:04		06:34	07:04	06:40	07:12
	20:31	28 19:07 (ML07)	20:03		19:16	18:26	16:45	16:31
12	05:37	18:39 (ML07)	06:05	18:50 (ML05)	06:35	07:06	06:41	07:13
	20:31	28 19:07 (ML07)	20:02	5 18:55 (ML05)	19:14	18:25	16:44	16:31
13	05:38	18:39 (ML07)	06:06	18:47 (ML05)	06:36	07:07	06:42	07:13
	20:30	28 19:07 (ML07)	20:01	11 18:58 (ML05)	19:13	18:23	16:43	16:31
14	05:39	18:39 (ML07)	06:07	18:45 (ML05)	06:37	07:08	06:43	07:14
	20:30	29 19:08 (ML07)	19:59	15 19:00 (ML05)	19:11	18:21	16:42	16:32
15	05:39	18:39 (ML07)	06:08	18:44 (ML05)	06:38	07:09	06:44	07:15
	20:29	29 19:08 (ML07)	19:58	17 19:01 (ML05)	19:09	18:20	16:41	16:32
16	05:40	18:39 (ML07)	06:09	18:43 (ML05)	06:39	07:10	06:45	07:16
	20:29	30 19:09 (ML07)	19:57	18 19:01 (ML05)	19:08	18:18	16:41	16:32
17	05:41	18:38 (ML07)	06:10	18:42 (ML05)	06:40	07:11	06:47	07:16
	20:28	30 19:08 (ML07)	19:55	20 19:02 (ML05)	19:06	18:17	16:40	16:32
18	05:42	18:39 (ML07)	06:11	18:42 (ML05)	06:41	07:12	06:48	07:17
	20:27	29 19:08 (ML07)	19:54	20 19:02 (ML05)	19:04	18:15	16:39	16:33
19	05:43	18:39 (ML07)	06:12	18:41 (ML05)	06:42	07:13	06:49	07:18
	20:27	30 19:09 (ML07)	19:52	21 19:02 (ML05)	19:03	18:14	16:38	16:33
20	05:43	18:39 (ML07)	06:13	18:41 (ML05)	06:43	07:14	06:50	07:18
	20:26	30 19:09 (ML07)	19:51	21 19:02 (ML05)	19:01	18:12	16:38	16:33
21	05:44	18:39 (ML07)	06:14	18:41 (ML05)	06:44	07:15	06:51	07:19
	20:25	30 19:09 (ML07)	19:49	20 19:01 (ML05)	18:59	18:11	16:37	16:34
22	05:45	18:39 (ML07)	06:15	18:41 (ML05)	06:45	07:16	06:52	07:19
	20:24	29 19:08 (ML07)	19:48	20 19:01 (ML05)	18:57	18:09	16:36	16:34
23	05:46	18:39 (ML07)	06:16	18:42 (ML05)	06:46	07:18	06:54	07:20
	20:24	29 19:08 (ML07)	19:46	18 19:00 (ML05)	18:56	18:08	16:36	16:35
24	05:47	18:39 (ML07)	06:17	18:42 (ML05)	06:47	07:19	06:55	07:20
	20:23	29 19:08 (ML07)	19:45	17 18:59 (ML05)	18:54	18:07	16:35	16:35
25	05:48	18:40 (ML07)	06:18	18:43 (ML05)	06:48	06:20	06:56	07:21
	20:22	28 19:08 (ML07)	19:43	14 18:57 (ML05)	18:52	17:05	16:35	16:36
26	05:49	18:40 (ML07)	06:19	18:45 (ML05)	06:49	06:21	06:57	07:21
	20:21	28 19:08 (ML07)	19:42	10 18:55 (ML05)	18:51	17:04	16:34	16:37
27	05:50	18:41 (ML07)	06:20	18:49 (ML05)	06:50	06:22	06:58	07:21
	20:20	26 19:07 (ML07)	19:40	2 18:51 (ML05)	18:49	17:03	16:34	16:37
28	05:50	18:41 (ML07)	06:21		06:51	06:23	06:59	07:22
	20:19	26 19:07 (ML07)	19:39		18:47	17:01	16:33	16:38
29	05:51	18:41 (ML07)	06:22		06:52	06:24	07:00	07:22
	20:18	24 19:05 (ML07)	19:37		18:46	17:00	16:33	16:39
30	05:52	18:42 (ML07)	06:23		06:53	06:26	07:01	07:22
	20:17	23 19:05 (ML07)	19:36		18:44	16:59	16:32	16:39
31	05:53	18:43 (ML07)	06:24			06:27		07:22
	20:16	21 19:04 (ML07)	19:34			16:57		16:40
Potential sun hours	458		427		375	346	299	289
Total, worst case	829		294					
Sun reduction	0,72		0,73					
Oper. time red.	0,88		0,88					
Wind dir. red.	0,55		0,56					
Total reduction	0,34		0,36					
Total, real	286		106					

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk   14/11/2023 15:50 / 13   **windPRO**

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R08a - R08a
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

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

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

Day in month	Sun rise (hh:mm)		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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R08b - R08b
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

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

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

Day in month	Sun rise (hh:mm)		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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R08c - R08c

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

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

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

Day in month	Sun rise (hh:mm)		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)

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SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R08d - R08d
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

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

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

Day in month	Sun rise (hh:mm)		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)

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Ten Project S.r.l: Sede legale ed operativa: Loc.Chianarile Z I., 82010 San Martino Sannita (BN) - **Sede Operativa**: Via Alfonso la Cava 114- 71036 Lucera (FG)

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R09 - R09
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June		July		August	September	October	November	December
1	07:23 / 16:41	07:10 / 17:15	06:34 / 17:49	06:44 / 19:22	05:59 / 19:54	05:30 / 20:23		05:31 / 20:34	7	05:53 (ML11) / 06:00 (ML11)	05:54 / 20:15	06:25 / 19:33	06:54 / 18:42	06:28 / 16:56	07:02 / 16:32
2	07:23 / 16:42	07:09 / 17:17	06:33 / 17:50	06:42 / 19:24	05:57 / 19:55	05:30 / 20:24		05:31 / 20:34	7	05:54 (ML11) / 06:01 (ML11)	05:55 / 20:14	06:26 / 19:31	06:55 / 18:41	06:29 / 16:55	07:03 / 16:32
3	07:23 / 16:43	07:08 / 17:18	06:31 / 17:51	06:41 / 19:25	05:56 / 19:56	05:29 / 20:24		05:32 / 20:34	6	05:54 (ML11) / 06:00 (ML11)	05:56 / 20:13	06:27 / 19:29	06:56 / 18:39	06:30 / 16:54	07:04 / 16:32
4	07:23 / 16:44	07:07 / 17:52	06:30 / 17:52	06:39 / 19:57	05:55 /	05:29 / 20:25	1 05:50 (ML11) 05:51 (ML11)	05:32 / 20:33	5	05:55 (ML11) / 06:00 (ML11)	05:57 / 20:12	06:28 / 19:28	06:57 / 18:38	06:31 / 16:53	07:05 / 16:32
5	07:23 / 16:45	07:06 / 17:53	06:28 /	06:37 / 19:58	05:54 /	05:29 / 20:26	3 05:53 (ML11)	05:33 / 20:33	5	05:55 (ML11) / 06:00 (ML11)	05:58 / 20:11	06:29 / 19:26	06:58 / 18:36	06:33 / 16:52	07:06 / 16:31
6	07:23 / 16:46	07:05 / 17:55	06:27 /	06:36 / 19:59	05:52 /	05:28 / 20:26	4 05:54 (ML11)	05:33 / 20:33	4	05:56 (ML11) / 06:00 (ML11)	05:59 / 20:10	06:30 / 19:24	06:59 / 18:34	06:34 / 16:50	07:07 / 16:31
7	07:23 / 16:47	07:04 / 17:56	06:25 /	06:34 / 20:00	05:51 /	05:28 / 20:27	4 05:54 (ML11)	05:34 / 20:33	3	05:56 (ML11) / 06:00	06:00 / 20:08	06:31 / 19:23	07:00 / 18:33	06:35 / 16:49	07:08 / 16:31
8	07:23 / 16:48	07:02 / 17:24	06:23 / 17:57	06:33 / 19:30	05:50 / 20:01	05:28 / 20:28	5 05:49 (ML11) / 05:54 (ML11)	05:35 / 20:32	2	05:57 (ML11) / 05:59 (ML11)	06:01 / 20:07	06:32 / 19:21	07:01 / 18:31	06:36 / 16:48	07:09 / 16:31
9	07:23 / 16:49	07:01 / 17:25	06:22 / 17:58	06:31 / 19:31	05:49 / 20:02	05:28 / 20:28	6 05:49 (ML11) / 05:55 (ML11)	05:35 / 20:32	1	05:59 (ML11)	06:02 / 20:06	06:33 / 19:19	07:03 / 18:29	06:37 / 16:47	07:10 / 16:31
10	07:23 / 16:50	07:00 / 17:26	06:20 / 17:59	06:29 / 19:32	05:48 / 20:03	05:27 / 20:29	6 05:49 (ML11) / 05:55 (ML11)	05:36 / 20:32			06:03 / 20:05	06:33 / 19:18	07:03 / 18:28	06:39 / 16:46	07:11 / 16:31
11	07:22 / 16:51	06:59 / 17:28	06:19 / 18:00	06:28 / 19:33	05:47 / 20:04	05:27 / 20:29	7 05:49 (ML11) / 05:56 (ML11)	05:37 / 20:31			06:04 / 20:03	06:34 / 19:16	07:05 / 18:26	06:40 / 16:45	07:12 / 16:31
12	07:22 / 16:52	06:57 / 17:29	06:17 / 18:01	06:26 / 19:34	05:46 / 20:05	05:27 / 20:30	7 05:49 (ML11) / 05:56 (ML11)	05:37 / 20:31			06:05 / 20:02	06:35 / 19:14	07:06 / 18:25	06:41 / 16:44	07:13 / 16:31
13	07:22 / 16:53	06:57 / 17:30	06:15 / 18:02	06:25 / 19:35	05:45 / 20:06	05:27 / 20:30	8 05:49 (ML11) / 05:57 (ML11)	05:38 / 20:30			06:06 / 20:01	06:36 / 19:13	07:07 / 18:23	06:42 / 16:43	07:13 / 16:32
14	07:22 / 16:54	06:55 / 17:31	06:14 / 18:03	06:23 / 19:36	05:44 / 20:07	05:27 / 20:31	8 05:49 (ML11) / 05:57 (ML11)	05:39 / 20:30			06:07 / 19:59	06:37 / 19:11	07:08 / 18:22	06:43 / 16:42	07:14 / 16:32
15	07:21 / 16:55	06:54 / 17:32	06:12 / 18:04	06:22 / 19:37	05:43 / 20:08	05:27 / 20:31	8 05:49 (ML11) / 05:57 (ML11)	05:40 / 20:29			06:08 / 19:58	06:38 / 19:09	07:09 / 18:20	06:44 / 16:42	07:15 / 16:32
16	07:21 / 16:56	06:53 / 17:34	06:10 / 18:06	06:20 / 19:38	05:42 / 20:09	05:27 / 20:32	8 05:49 (ML11) / 05:57 (ML11)	05:40 / 20:29			06:09 / 19:57	06:39 / 19:08	07:10 / 18:18	06:46 / 16:41	07:16 / 16:32
17	07:20 / 16:57	06:51 / 17:35	06:09 / 18:07	06:19 / 19:39	05:41 / 20:10	05:27 / 20:32	9 05:49 (ML11) / 05:58 (ML11)	05:41 / 20:28			06:10 / 19:55	06:40 / 19:06	07:11 / 18:17	06:47 / 16:40	07:16 / 16:32
18	07:20 / 16:58	06:50 / 17:36	06:07 / 18:08	06:17 / 19:40	05:40 / 20:11	05:27 / 20:32	9 05:49 (ML11) / 05:58 (ML11)	05:42 / 20:27			06:11 / 19:54	06:41 / 19:04	07:12 / 18:15	06:48 / 16:39	07:17 / 16:33
19	07:19 / 17:00	06:49 / 17:37	06:06 / 18:09	06:16 / 19:41	05:39 / 20:12	05:27 / 20:33	9 05:49 (ML11) / 05:58 (ML11)	05:43 / 20:27			06:12 / 19:52	06:42 / 19:03	07:13 / 18:14	06:49 / 16:38	07:18 / 16:33
20	07:19 / 17:01	06:47 / 17:38	06:04 / 18:10	06:14 / 19:42	05:38 / 20:13	05:27 / 20:33	9 05:49 (ML11) / 05:58 (ML11)	05:44 / 20:26			06:13 / 19:51	06:43 / 19:01	07:14 / 18:13	06:50 / 16:38	07:18 / 16:34
21	07:18 / 17:02	06:46 / 17:40	06:02 / 18:11	06:13 / 19:43	05:37 / 20:14	05:27 / 20:33	9 05:50 (ML11) / 05:59 (ML11)	05:44 / 20:25			06:14 / 19:50	06:44 / 18:59	07:15 / 18:11	06:51 / 16:37	07:19 / 16:34
22	07:18 / 17:03	06:45 / 17:41	06:01 / 18:12	06:11 / 19:44	05:36 / 20:15	05:28 / 20:33	9 05:50 (ML11) / 05:59 (ML11)	05:45 / 20:24			06:15 / 19:48	06:45 / 18:58	07:16 / 18:10	06:53 / 16:36	07:19 / 16:35
23	07:17 / 17:04	06:43 / 17:42	05:59 / 18:13	06:10 / 19:46	05:36 / 20:16	05:28 / 20:34	9 05:50 (ML11) / 05:59 (ML11)	05:46 / 20:24			06:16 / 19:47	06:46 / 18:56	07:18 / 18:08	06:54 / 16:36	07:20 / 16:35
24	07:16 / 17:06	06:42 / 17:43	05:57 / 18:14	06:08 / 19:47	05:35 / 20:16	05:28 / 20:34	9 05:50 (ML11) / 05:59 (ML11)	05:47 / 20:23			06:17 / 19:45	06:47 / 18:54	07:19 / 18:07	06:55 / 16:35	07:20 / 16:36
25	07:16 / 17:07	06:40 / 17:44	05:56 / 18:15	06:07 / 19:48	05:34 / 20:17	05:28 / 20:34	9 05:51 (ML11) / 06:00 (ML11)	05:48 / 20:22			06:18 / 19:44	06:48 / 18:53	07:05 / 18:20	06:56 / 16:35	07:21 / 16:36
26	07:15 / 17:08	06:39 / 17:45	05:54 / 18:16	06:05 / 19:49	05:34 / 20:18	05:29 / 20:34	9 05:51 (ML11) / 06:00 (ML11)	05:49 / 20:21			06:19 / 19:42	06:49 / 18:51	07:06 / 18:21	06:57 / 16:34	07:21 / 16:37
27	07:14 / 17:09	06:37 / 17:47	05:52 / 18:17	06:04 / 19:50	05:33 / 20:19	05:29 / 20:34	8 05:51 (ML11) / 05:59 (ML11)	05:50 / 20:20			06:20 / 19:40	06:50 / 18:49	07:03 / 18:22	06:58 / 16:34	07:21 / 16:37
28	07:13 / 17:10	06:36 / 17:48	05:51 / 18:18	06:03 / 19:51	05:32 / 20:20	05:29 / 20:34	8 05:52 (ML11) / 06:00 (ML11)	05:51 / 20:19			06:21 / 19:39	06:51 / 18:47	06:23 / 17:01	06:59 / 16:33	07:22 / 16:38
29	07:12 / 17:12		06:49 / 19:19	06:01 / 19:52	05:32 / 20:21	05:30 / 20:34	8 05:52 (ML11) / 06:00 (ML11)	05:52 / 20:18			06:22 / 19:37	06:52 / 18:46	06:24 / 17:00	07:00 / 16:33	07:22 / 16:39
30	07:12 / 17:13		06:47 / 19:20	06:00 / 19:53	05:31 / 20:21	05:30 / 20:34	7 05:53 (ML11) / 06:00 (ML11)	05:52 / 20:17			06:23 / 19:36	06:53 / 18:44	06:26 / 16:59	07:01 / 16:33	07:22 / 16:40
31	07:11 / 17:14		06:46 / 19:21		05:31 / 20:22			05:53 / 20:16			06:24 / 19:34	06:27 / 16:58			07:23 / 16:40

	January	February	March	April	May	June	July	August	September	October	November	December
Potential sun hours	298	298	370	398	447	451	458	427	375	346	299	289
Total, worst case						196	40					
Sun reduction						0,64	0,72					
Oper. time red.						0,88	0,88					
Wind dir. red.						0,60	0,60					
Total reduction						0,34	0,38					
Total, real						66	15					

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R10 - R10
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:23 16:41	07:10 17:15	06:34 17:49	06:44 19:22	05:59 19:54	05:30 20:23	05:31 20:34	05:54 20:15	06:25 19:33	06:54 18:42	06:28 16:56	07:02 16:32
2	07:23 16:42	07:09 17:16	06:33 17:50	06:42 19:23	05:57 19:55	05:30 20:24	05:31 20:34	05:55 20:14	06:26 19:31	06:55 18:41	06:29 16:55	07:03 16:32
3	07:23 16:43	07:08 17:18	06:31 17:51	06:41 19:25	05:56 19:56	05:29 20:24	05:32 20:34	05:56 20:13	06:27 19:29	06:56 18:39	06:30 16:54	07:04 16:32
4	07:23 16:44	07:07 17:19	06:30 17:52	06:39 19:26	05:55 19:57	05:29 20:25	05:32 20:33	05:57 20:12	06:28 19:28	06:57 18:37	06:31 16:53	07:05 16:32
5	07:23 16:45	07:06 17:20	06:28 17:53	06:37 19:27	05:54 19:58	05:29 20:26	05:33 20:33	05:58 20:11	06:29 19:26	06:58 18:36	06:33 16:52	07:06 16:31
6	07:23 16:46	07:05 17:21	06:26 17:55	06:36 19:28	05:52 19:59	05:28 20:26	05:33 20:33	05:59 20:10	06:30 19:24	06:59 18:34	06:34 16:50	07:07 16:31
7	07:23 16:47	07:04 17:23	06:25 17:56	06:34 19:29	05:51 20:00	05:28 20:27	05:34 20:34	06:00 20:08	06:31 19:23	07:00 18:33	06:35 16:49	07:08 16:31
8	07:23 16:48	07:02 17:24	06:23 17:57	06:33 19:30	05:50 20:01	05:28 20:28	05:35 20:32	06:01 20:07	06:31 19:21	07:01 18:31	06:36 16:48	07:09 16:31
9	07:23 16:49	07:01 17:25	06:22 17:58	06:31 19:31	05:49 20:02	05:27 20:28	05:35 20:32	06:02 20:06	06:32 19:19	07:02 18:29	06:37 16:47	07:10 16:31
10	07:23 16:50	07:00 17:26	06:20 17:59	06:29 19:32	05:48 20:03	05:27 20:29	05:36 20:32	06:03 20:05	06:33 19:18	07:03 18:28	06:38 16:46	07:11 16:31
11	07:22 16:51	06:59 17:28	06:19 18:00	06:28 19:33	05:47 20:04	05:27 20:29	05:37 20:31	06:04 20:03	06:34 19:16	07:04 18:26	06:40 16:45	07:12 16:31
12	07:22 16:52	06:58 17:29	06:17 18:01	06:26 19:34	05:46 20:05	05:27 20:30	05:37 20:31	06:05 20:02	06:35 19:14	07:06 18:25	06:41 16:44	07:13 16:31
13	07:22 16:53	06:56 17:30	06:15 18:02	06:25 19:35	05:45 20:06	05:27 20:30	05:38 20:30	06:06 20:01	06:36 19:13	07:07 18:23	06:42 16:43	07:13 16:31
14	07:21 16:54	06:55 17:31	06:14 18:03	06:23 19:36	05:44 20:07	05:27 20:31	05:39 20:30	06:07 19:59	06:37 19:11	07:08 18:21	06:43 16:42	07:14 16:32 8 10:42 (ML15) 10:50 (ML15)
15	07:21 16:55	06:54 17:32	06:12 18:04	06:22 19:37	05:43 20:08	05:27 20:31	05:40 20:29	06:08 19:58	06:38 19:09	07:09 18:20	06:44 16:42	07:15 16:32 13 10:39 (ML15) 10:52 (ML15)
16	07:21 16:56	06:53 17:34	06:10 18:06	06:20 19:38	05:42 20:09	05:27 20:32	05:40 20:29	06:09 19:57	06:39 19:08	07:10 18:18	06:46 16:41	07:16 16:32 15 10:39 (ML15) 10:54 (ML15)
17	07:20 16:57	06:51 17:35	06:09 18:07	06:18 19:39	05:41 20:10	05:27 20:32	05:41 20:28	06:10 19:55	06:40 19:06	07:11 18:17	06:47 16:40	07:16 16:32 17 10:39 (ML15) 10:56 (ML15)
18	07:20 16:58	06:50 17:36	06:07 18:08	06:17 19:40	05:40 20:11	05:27 20:32	05:42 20:27	06:11 19:54	06:41 19:04	07:12 18:15	06:48 16:39	07:17 16:33 18 10:38 (ML15) 10:56 (ML15)
19	07:19 17:00	06:49 17:37	06:05 18:09	06:15 19:41	05:39 20:12	05:27 20:33	05:43 20:27	06:12 19:52	06:42 19:03	07:13 18:14	06:49 16:38	07:18 16:33 20 10:38 (ML15) 10:58 (ML15)
20	07:19 17:01	06:47 17:38	06:04 18:10	06:14 19:42	05:38 20:13	05:27 20:33	05:44 20:26	06:13 19:51	06:43 19:01	07:14 18:12	06:50 16:38	07:18 16:34 20 10:38 (ML15) 10:58 (ML15)
21	07:18 17:02	06:46 17:40	06:02 18:11	06:12 19:43	05:37 20:14	05:27 20:33	05:44 20:25	06:14 19:49	06:44 18:59	07:15 18:11	06:51 16:37	07:19 16:34 20 10:39 (ML15) 10:59 (ML15)
22	07:18 17:03	06:44 17:41	06:00 18:12	06:11 19:44	05:36 20:15	05:28 20:33	05:45 20:24	06:15 19:48	06:45 18:58	07:16 18:10	06:52 16:36	07:19 16:34 20 10:39 (ML15) 10:59 (ML15)
23	07:17 17:04	06:43 17:42	05:59 18:13	06:10 19:45	05:36 20:16	05:28 20:34	05:46 20:24	06:16 19:46	06:46 18:56	07:18 18:08	06:54 16:36	07:20 16:35 20 10:40 (ML15) 11:00 (ML15)
24	07:16 17:05	06:42 17:43	05:57 18:14	06:08 19:47	05:35 20:16	05:28 20:34	05:47 20:23	06:17 19:45	06:47 18:54	07:19 18:07	06:55 16:35	07:20 16:36 20 10:40 (ML15) 11:00 (ML15)
25	07:16 17:07	06:40 17:44	05:56 18:15	06:07 19:48	05:34 20:17	05:28 20:34	05:48 20:22	06:18 19:43	06:48 18:52	06:20 17:05	06:56 16:35	07:21 16:36 19 10:42 (ML15) 11:01 (ML15)
26	07:15 17:08	06:39 17:45	05:54 18:16	06:05 19:49	05:34 20:18	05:29 20:34	05:49 20:21	06:19 19:42	06:49 18:51	06:21 17:04	06:57 16:34	07:21 16:37 18 10:42 (ML15) 11:00 (ML15)
27	07:14 17:09	06:37 17:47	05:52 18:17	06:04 19:50	05:33 20:19	05:29 20:34	05:50 20:20	06:20 19:40	06:50 18:49	06:22 17:03	06:58 16:34	07:21 16:37 16 10:43 (ML15) 10:59 (ML15)
28	07:13 17:10	06:36 17:48	05:51 18:18	06:03 19:51	05:32 20:20	05:29 20:34	05:51 20:19	06:21 19:39	06:51 18:47	06:23 17:01	06:59 16:33	07:22 16:38 13 10:45 (ML15) 10:58 (ML15)
29	07:12 17:12		06:49 19:19	06:01 19:52	05:32 20:21	05:30 20:34	05:51 20:18	06:22 19:37	06:52 18:46	06:24 17:00	07:00 16:33	07:22 16:39 10 10:48 (ML15) 10:58 (ML15)
30	07:12 17:13		06:47 19:20	06:00 19:53	05:31 20:21	05:30 20:34	05:52 20:17	06:23 19:36	06:53 18:44	06:26 16:59	07:01 16:33	07:22 16:40 2 10:52 (ML15) 10:54 (ML15)
31	07:11 17:14		06:46 19:21		05:31 20:22		05:53 20:16	06:24 19:34		06:27 16:57		07:22 16:40
Potential sun hours	298	298	370	398	447	451	458	427	375	346	299	289
Total, worst case												269
Sun reduction												0,44
Oper. time red.												0,88
Wind dir. red.												0,72
Total reduction												0,27
Total, real												74

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R11 - R11
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

(Daily shadow flicker calendar table for each month — columns January through December, each showing sun rise / sun set times and flicker data)

	January	February	March	April	May	June	July	August	September	October	November	December
Potential sun hours	298	284	370	398	447	451	458	427	375	346	299	299
Total, worst case		274		45						320		
Sun reduction		0,45		0,46						0,56		
Oper. time red.		0,88		0,88						0,68		
Wind dir. red.		0,56		0,56						0,56		
Total reduction		0,22		0,22						0,27		
Total, real		60		10						88		

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R12 - R12
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January		February		March			April	May	June
1	07:23		07:10	15:36 (ML15)	06:34		15:50 (ML15)	06:44	05:59	05:30
	16:41		17:15 46	16:22 (ML15)	17:49	20	16:10 (ML15)	19:22	19:54	20:23
2	07:23		07:09	15:36 (ML15)	06:33		15:56 (ML15)	06:42	05:57	05:30
	16:42		17:16 47	16:23 (ML15)	17:50	10	16:06 (ML15)	19:23	19:55	20:24
3	07:23		07:08	15:35 (ML15)	06:31			06:41	05:56	05:29
	16:43		17:18 49	16:24 (ML15)	17:51			19:25	19:56	20:24
4	07:23		07:07	15:34 (ML15)	06:30			06:39	05:55	05:29
	16:44		17:19 50	16:24 (ML15)	17:52			19:26	19:57	20:25
5	07:23		07:06	15:34 (ML15)	06:28			06:37	05:54	05:29
	16:45		17:20 51	16:25 (ML15)	17:53			19:27	19:58	20:26
6	07:23		07:05	15:33 (ML15)	06:26			06:36	05:52	05:28
	16:46		17:21 52	16:25 (ML15)	17:55			19:28	19:59	20:26
7	07:23		07:04	15:33 (ML15)	06:25			06:34	05:51	05:28
	16:47		17:23 53	16:26 (ML15)	17:56			19:29	20:00	20:27
8	07:23		07:02	15:33 (ML15)	06:23			06:33	05:50	05:28
	16:48		17:24 54	16:27 (ML15)	17:57			19:30	20:01	20:28
9	07:23		07:01	15:33 (ML15)	06:22			06:31	05:49	05:27
	16:49		17:25 54	16:27 (ML15)	17:58			19:31	20:02	20:28
10	07:23		07:00	15:34 (ML15)	06:20			06:29	05:48	05:27
	16:50		17:26 53	16:27 (ML15)	17:59			19:32	20:03	20:29
11	07:22		06:59	15:33 (ML15)	06:18			06:28	05:47	05:27
	16:51		17:28 54	16:27 (ML15)	18:00			19:33	20:04	20:29
12	07:22		06:58	15:33 (ML15)	06:17			06:26	05:46	05:27
	16:52		17:29 54	16:27 (ML15)	18:01			19:34	20:05	20:30
13	07:22		06:56	15:34 (ML15)	06:15			06:25	05:45	05:27
	16:53		17:30 53	16:27 (ML15)	18:02			19:35	20:06	20:30
14	07:21		06:55	15:34 (ML15)	06:14			06:23	05:44	05:27
	16:54		17:31 54	16:28 (ML15)	18:03			19:36	20:07	20:31
15	07:21		06:54	15:34 (ML15)	06:12			06:22	05:43	05:27
	16:55		17:32 53	16:27 (ML15)	18:04			19:37	20:08	20:31
16	07:21		06:53	15:34 (ML15)	06:10			06:20	05:42	05:27
	16:56		17:34 53	16:27 (ML15)	18:05			19:38	20:09	20:32
17	07:20		06:51	15:35 (ML15)	06:09			06:18	05:41	05:27
	16:57		17:35 52	16:27 (ML15)	18:07			19:39	20:10	20:32
18	07:20		06:50	15:35 (ML15)	06:07			06:17	05:40	05:27
	16:58		17:36 51	16:26 (ML15)	18:08			19:40	20:11	20:32
19	07:19		06:49	15:36 (ML15)	06:05			06:15	05:39	05:27
	17:00		17:37 50	16:26 (ML15)	18:09			19:41	20:12	20:33
20	07:19	15:53 (ML15)	06:47	15:36 (ML15)	06:04			06:14	05:38	05:27
	17:01	5 15:58 (ML15)	17:38 48	16:24 (ML15)	18:10			19:42	20:13	20:33
21	07:18	15:49 (ML15)	06:46	15:37 (ML15)	06:02			06:12	05:37	05:27
	17:02	15 16:04 (ML15)	17:40 47	16:24 (ML15)	18:11			19:43	20:14	20:33
22	07:18	15:46 (ML15)	06:44	15:39 (ML15)	06:00			06:11	05:36	05:28
	17:03	21 16:07 (ML15)	17:41 45	16:24 (ML15)	18:12			19:44	20:15	20:33
23	07:17	15:44 (ML15)	06:43	15:39 (ML15)	05:59			06:10	05:36	05:28
	17:04	25 16:09 (ML15)	17:42 43	16:22 (ML15)	18:13			19:45	20:15	20:33
24	07:16	15:43 (ML15)	06:42	15:41 (ML15)	05:57			06:08	05:35	05:28
	17:05	29 16:12 (ML15)	17:43 40	16:21 (ML15)	18:14			19:46	20:16	20:34
25	07:16	15:42 (ML15)	06:40	15:42 (ML15)	05:55			06:07	05:34	05:28
	17:07	31 16:13 (ML15)	17:44 37	16:19 (ML15)	18:15			19:48	20:17	20:34
26	07:15	15:40 (ML15)	06:39	15:44 (ML15)	05:54			06:05	05:34	05:29
	17:08	35 16:15 (ML15)	17:45 34	16:18 (ML15)	18:16			19:49	20:18	20:34
27	07:14	15:39 (ML15)	06:37	15:45 (ML15)	05:52			06:04	05:33	05:29
	17:09	37 16:16 (ML15)	17:47 31	16:16 (ML15)	18:17			19:50	20:19	20:34
28	07:13	15:38 (ML15)	06:36	15:48 (ML15)	05:51			06:03	05:32	05:29
	17:10	39 16:17 (ML15)	17:48 26	16:14 (ML15)	18:18			19:51	20:20	20:34
29	07:12	15:37 (ML15)			06:49			06:01	05:32	05:30
	17:12	41 16:18 (ML15)			19:19			19:52	20:21	20:34
30	07:11	15:38 (ML15)			06:47			06:00	05:31	05:30
	17:13	43 16:21 (ML15)			19:20			19:53	20:21	20:34
31	07:11	15:37 (ML15)			06:46				05:31	
	17:14	45 16:22 (ML15)			19:21				20:22	
Potential sun hours	298		298		370			398	447	451
Total, worst case	366		1334		30					
Sun reduction	0,43		0,45		0,46					
Oper. time red.	0,88		0,88		0,88					
Wind dir. red.	0,60		0,60		0,60					
Total reduction	0,23		0,24		0,24					
Total, real	83		316		7					

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R12 - R12
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October		November		December
1	05:31 / 20:34	05:54 / 20:15	06:25 / 19:32	06:54 / 18:42		06:28 / 16:56	54	15:02 (ML15) / 07:02
								15:56 (ML15) / 16:32
2	05:31 / 20:34	05:55 / 20:14	06:26 / 19:31	06:55 / 18:41		06:29 / 16:55	54	15:03 (ML15) / 07:03
								15:57 (ML15) / 16:32
3	05:32 / 20:34	05:56 / 20:13	06:27 / 19:29	06:56 / 18:39		06:30 / 16:54	53	15:03 (ML15) / 07:04
								15:56 (ML15) / 16:32
4	05:32 / 20:33	05:57 / 20:12	06:28 / 19:28	06:57 / 18:37		06:31 / 16:53	53	15:03 (ML15) / 07:05
								15:56 (ML15) / 16:32
5	05:33 / 20:33	05:58 / 20:11	06:29 / 19:26	06:58 / 18:36		06:33 / 16:51	52	15:03 (ML15) / 07:06
								15:55 (ML15) / 16:31
6	05:33 / 20:33	05:59 / 20:09	06:29 / 19:24	06:59 / 18:34		06:34 / 16:50	50	15:05 (ML15) / 07:07
								15:55 (ML15) / 16:31
7	05:34 / 20:33	06:00 / 20:08	06:30 / 19:23	07:00 / 18:33		06:35 / 16:49	50	15:05 (ML15) / 07:08
								15:55 (ML15) / 16:31
8	05:35 / 20:32	06:01 / 20:07	06:31 / 19:21	07:01 / 18:31		06:36 / 16:48	49	15:05 (ML15) / 07:09
								15:54 (ML15) / 16:31
9	05:35 / 20:32	06:02 / 20:06	06:32 / 19:19	07:02 / 18:29		06:37 / 16:47	47	15:06 (ML15) / 07:10
								15:53 (ML15) / 16:31
10	05:36 / 20:32	06:03 / 20:05	06:33 / 19:18	07:03 / 18:28		06:38 / 16:46	46	15:07 (ML15) / 07:11
								15:53 (ML15) / 16:31
11	05:37 / 20:31	06:04 / 20:03	06:34 / 19:16	07:04 / 18:26		06:40 / 16:45	44	15:08 (ML15) / 07:12
								15:52 (ML15) / 16:31
12	05:37 / 20:31	06:05 / 20:02	06:35 / 19:14	07:06 / 18:25	15	16:27 (ML15) / 06:41		15:08 (ML15) / 07:13
						16:42 (ML15) / 16:44	43	15:51 (ML15) / 16:31
13	05:38 / 20:30	06:06 / 20:01	06:36 / 19:13	07:07 / 18:23	23	16:22 (ML15) / 06:42		15:09 (ML15) / 07:13
						16:45 (ML15) / 16:43	41	15:50 (ML15) / 16:31
14	05:39 / 20:30	06:07 / 19:59	06:37 / 19:11	07:08 / 18:21	28	16:19 (ML15) / 06:43		15:11 (ML15) / 07:14
						16:47 (ML15) / 16:42	39	15:50 (ML15) / 16:32
15	05:39 / 20:29	06:08 / 19:58	06:38 / 19:09	07:09 / 18:20	32	16:17 (ML15) / 06:44		15:12 (ML15) / 07:15
						16:49 (ML15) / 16:42	37	15:49 (ML15) / 16:32
16	05:40 / 20:29	06:09 / 19:57	06:39 / 19:08	07:10 / 18:18	36	16:14 (ML15) / 06:45		15:13 (ML15) / 07:16
						16:50 (ML15) / 16:41	35	15:48 (ML15) / 16:32
17	05:41 / 20:28	06:10 / 19:55	06:40 / 19:06	07:11 / 18:17	38	16:13 (ML15) / 06:47		15:15 (ML15) / 07:16
						16:51 (ML15) / 16:40	31	15:46 (ML15) / 16:32
18	05:42 / 20:27	06:11 / 19:54	06:41 / 19:04	07:12 / 18:15	41	16:11 (ML15) / 06:48		15:17 (ML15) / 07:17
						16:52 (ML15) / 16:39	29	15:46 (ML15) / 16:33
19	05:43 / 20:27	06:12 / 19:52	06:42 / 19:03	07:13 / 18:14	44	16:10 (ML15) / 06:49		15:19 (ML15) / 07:18
						16:54 (ML15) / 16:38	25	15:44 (ML15) / 16:33
20	05:43 / 20:26	06:13 / 19:51	06:43 / 19:01	07:14 / 18:12	46	16:09 (ML15) / 06:50		15:21 (ML15) / 07:18
						16:55 (ML15) / 16:38	21	15:42 (ML15) / 16:34
21	05:44 / 20:25	06:14 / 19:49	06:44 / 18:59	07:15 / 18:11	47	16:08 (ML15) / 06:51		15:24 (ML15) / 07:19
						16:55 (ML15) / 16:37	15	15:39 (ML15) / 16:34
22	05:45 / 20:24	06:15 / 19:48	06:45 / 18:57	07:16 / 18:10	49	16:06 (ML15) / 06:52		15:30 (ML15) / 07:19
						16:55 (ML15) / 16:36	6	15:36 (ML15) / 16:34
23	05:46 / 20:24	06:16 / 19:46	06:46 / 18:56	07:18 / 18:08	50	16:05 (ML15) / 06:54		07:20
						16:55 (ML15) / 16:36		16:35
24	05:47 / 20:23	06:17 / 19:45	06:47 / 18:54	07:19 / 18:07	52	16:04 (ML15) / 06:55		07:20
						16:56 (ML15) / 16:35		16:36
25	05:48 / 20:22	06:18 / 19:43	06:48 / 18:52	06:20 / 17:05	52	15:05 (ML15) / 06:56		07:21
						15:57 (ML15) / 16:35		16:36
26	05:49 / 20:21	06:19 / 19:42	06:49 / 18:51	06:21 / 17:04	53	15:04 (ML15) / 06:57		07:21
						15:57 (ML15) / 16:34		16:37
27	05:50 / 20:20	06:20 / 19:40	06:50 / 18:49	06:22 / 17:03	54	15:03 (ML15) / 06:58		07:21
						15:57 (ML15) / 16:34		16:37
28	05:51 / 20:19	06:21 / 19:39	06:51 / 18:47	06:23 / 17:01	53	15:03 (ML15) / 06:59		07:22
						15:56 (ML15) / 16:33		16:38
29	05:51 / 20:18	06:22 / 19:37	06:52 / 18:46	06:24 / 17:00	54	15:03 (ML15) / 07:00		07:22
						15:57 (ML15) / 16:33		16:39
30	05:52 / 20:17	06:23 / 19:36	06:53 / 18:44	06:26 / 16:59	54	15:03 (ML15) / 07:01		07:22
						15:57 (ML15) / 16:33		16:39
31	05:53 / 20:16	06:24 / 19:34		06:27 / 16:57	54	15:03 (ML15)		07:22
						15:57 (ML15)		16:40
Potential sun hours	458	427	375	346		299		289
Total, worst case				875		874		
Sun reduction				0,56		0,51		
Oper. time red.				0,88		0,88		
Wind dir. red.				0,60		0,60		
Total reduction				0,30		0,27		
Total, real				260		234		

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R12a - R12a

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February			March			April	May	June	July	August	September			October			November	December
1	07:23	07:10			06:34		15:42 (ML15)	06:44	05:59	05:30	05:31	05:54	06:25			06:54		16:24 (ML15)	06:28	07:02
	16:41	17:15			17:49	55	16:37 (ML15)	19:22	19:54	20:23	20:34	20:15	19:32			18:42	48	17:12 (ML15)	16:56	16:32
2	07:23	07:09			06:33		15:43 (ML15)	06:42	05:57	05:30	05:31	05:55	06:26			06:55		16:23 (ML15)	06:29	07:03
	16:42	17:16			17:50	55	16:38 (ML15)	19:23	19:55	20:24	20:34	20:14	19:31			18:41	49	17:12 (ML15)	16:55	16:32
3	07:23	07:08			06:31		15:42 (ML15)	06:41	05:56	05:29	05:32	05:56	06:27			06:56		16:21 (ML15)	06:30	07:04
	16:43	17:18			17:51	56	16:38 (ML15)	19:25	19:56	20:24	20:34	20:13	19:29			18:39	51	17:12 (ML15)	16:54	16:32
4	07:23	07:07			06:30		15:42 (ML15)	06:39	05:55	05:29	05:32	05:57	06:28			06:57		16:20 (ML15)	06:31	07:05
	16:44	17:19			17:52	55	16:37 (ML15)	19:26	19:57	20:25	20:33	20:12	19:28			18:37	52	17:12 (ML15)	16:53	16:32
5	07:23	07:06			06:28		15:42 (ML15)	06:37	05:54	05:29	05:33	05:58	06:29			06:58		16:19 (ML15)	06:33	07:06
	16:45	17:20			17:53	55	16:37 (ML15)	19:27	19:58	20:26	20:33	20:11	19:26			18:36	53	17:12 (ML15)	16:51	16:31
6	07:23	07:05			06:26		15:42 (ML15)	06:36	05:52	05:28	05:33	05:59	06:29			06:59		16:18 (ML15)	06:34	07:07
	16:46	17:21			17:55	55	16:37 (ML15)	19:28	19:59	20:26	20:33	20:09	19:24			18:34	54	17:12 (ML15)	16:50	16:31
7	07:23	07:04			06:25		15:43 (ML15)	06:34	05:51	05:28	05:34	06:00	06:30			07:00		16:18 (ML15)	06:35	07:08
	16:47	17:23			17:56	54	16:37 (ML15)	19:29	20:00	20:27	20:33	20:08	19:23			18:33	54	17:12 (ML15)	16:49	16:31
8	07:23	07:02			06:23		15:42 (ML15)	06:33	05:50	05:28	05:35	06:01	06:31			07:01		16:17 (ML15)	06:36	07:09
	16:48	17:24			17:57	54	16:36 (ML15)	19:30	20:01	20:28	20:32	20:07	19:21			18:31	55	17:12 (ML15)	16:48	16:31
9	07:23	07:01			06:22		15:42 (ML15)	06:31	05:49	05:27	05:35	06:02	06:32			07:02		16:16 (ML15)	06:37	07:10
	16:49	17:25			17:58	53	16:35 (ML15)	19:31	20:02	20:28	20:32	20:06	19:19			18:29	56	17:12 (ML15)	16:47	16:31
10	07:23	07:00			06:20		15:43 (ML15)	06:29	05:48	05:27	05:36	06:03	06:33			07:03		16:17 (ML15)	06:38	07:11
	16:50	17:26			17:59	52	16:35 (ML15)	19:32	20:03	20:29	20:32	20:05	19:18			18:28	55	17:12 (ML15)	16:46	16:31
11	07:22	06:59			06:18		15:44 (ML15)	06:28	05:47	05:27	05:37	06:04	06:34			07:04		16:16 (ML15)	06:40	07:12
	16:51	17:28			18:00	50	16:34 (ML15)	19:33	20:04	20:29	20:31	20:03	19:16			18:26	56	17:12 (ML15)	16:45	16:31
12	07:22	06:58			06:17		15:44 (ML15)	06:26	05:46	05:27	05:37	06:05	06:35			07:06		16:16 (ML15)	06:41	07:13
	16:52	17:29			18:01	48	16:32 (ML15)	19:34	20:05	20:30	20:31	20:02	19:14			18:25	55	17:11 (ML15)	16:44	16:31
13	07:22	06:56			06:15		15:45 (ML15)	06:25	05:45	05:27	05:38	06:06	06:36			07:07		16:16 (ML15)	06:42	07:13
	16:53	17:30			18:02	47	16:32 (ML15)	19:35	20:06	20:30	20:30	20:01	19:13			18:23	55	17:11 (ML15)	16:43	16:31
14	07:21	06:55		16:03 (ML15)	06:14		15:46 (ML15)	06:23	05:44	05:27	05:39	06:07	06:37			07:08		16:16 (ML15)	06:43	07:14
	16:54	17:31	16	16:19 (ML15)	18:03	44	16:30 (ML15)	19:36	20:07	20:31	20:30	19:59	19:11			18:21	54	17:10 (ML15)	16:42	16:32
15	07:21	06:54		15:59 (ML15)	06:12		15:48 (ML15)	06:22	05:43	05:27	05:39	06:08	06:38			07:09		16:16 (ML15)	06:44	07:15
	16:55	17:32	23	16:22 (ML15)	18:04	42	16:30 (ML15)	19:37	20:08	20:31	20:29	19:58	19:09			18:20	53	17:09 (ML15)	16:42	16:32
16	07:21	06:53		15:56 (ML15)	06:10		15:49 (ML15)	06:20	05:42	05:27	05:40	06:09	06:39			07:10		16:16 (ML15)	06:45	07:16
	16:56	17:34	29	16:25 (ML15)	18:05	39	16:28 (ML15)	19:38	20:09	20:32	20:29	19:57	19:08			18:18	52	17:08 (ML15)	16:41	16:32
17	07:20	06:51		15:55 (ML15)	06:09		15:50 (ML15)	06:18	05:41	05:27	05:41	06:10	06:40			07:11		16:16 (ML15)	06:47	07:16
	16:57	17:35	33	16:28 (ML15)	18:07	36	16:26 (ML15)	19:39	20:10	20:32	20:28	19:55	19:06			18:17	51	17:07 (ML15)	16:40	16:32
18	07:20	06:50		15:52 (ML15)	06:07		15:52 (ML15)	06:17	05:40	05:27	05:42	06:11	06:41			07:12		16:16 (ML15)	06:48	07:17
	16:58	17:36	37	16:29 (ML15)	18:08	32	16:24 (ML15)	19:40	20:11	20:32	20:27	19:54	19:04			18:15	50	17:06 (ML15)	16:39	16:33
19	07:19	06:49		15:51 (ML15)	06:05		15:54 (ML15)	06:15	05:39	05:27	05:43	06:12	06:42			07:13		16:18 (ML15)	06:49	07:18
	17:00	17:37	40	16:31 (ML15)	18:09	28	16:22 (ML15)	19:41	20:12	20:33	20:27	19:52	19:03			18:14	48	17:06 (ML15)	16:38	16:33
20	07:19	06:47		15:49 (ML15)	06:04		15:56 (ML15)	06:14	05:38	05:27	05:43	06:13	06:43			07:14		16:18 (ML15)	06:50	07:18
	17:01	17:38	43	16:32 (ML15)	18:10	22	16:18 (ML15)	19:42	20:13	20:33	20:26	19:51	19:01			18:12	47	17:05 (ML15)	16:38	16:34
21	07:18	06:46		15:48 (ML15)	06:02		16:01 (ML15)	06:12	05:37	05:27	05:44	06:14	06:44			07:15		16:19 (ML15)	06:51	07:19
	17:02	17:40	45	16:33 (ML15)	18:11	14	16:15 (ML15)	19:43	20:14	20:33	20:25	19:49	18:59			18:11	44	17:03 (ML15)	16:37	16:34
22	07:18	06:44		15:48 (ML15)	06:00			06:11	05:36	05:28	05:45	06:15	06:45		16:47 (ML15)	07:16		16:20 (ML15)	06:52	07:19
	17:03	17:41	47	16:35 (ML15)	18:12			19:44	20:15	20:33	20:24	19:48	18:57	10	16:57 (ML15)	18:10	42	17:02 (ML15)	16:36	16:34
23	07:17	06:43		15:46 (ML15)	05:59			06:10	05:36	05:28	05:46	06:16	06:46		16:42 (ML15)	07:18		16:21 (ML15)	06:54	07:20
	17:04	17:42	49	16:35 (ML15)	18:13			19:45	20:15	20:33	20:24	19:46	18:56	20	17:02 (ML15)	18:08	39	17:00 (ML15)	16:36	16:35
24	07:16	06:42		15:46 (ML15)	05:57			06:08	05:35	05:28	05:47	06:17	06:47		16:38 (ML15)	07:19		16:22 (ML15)	06:55	07:20
	17:05	17:43	50	16:36 (ML15)	18:14			19:46	20:16	20:34	20:23	19:45	18:54	26	17:04 (ML15)	18:07	36	16:58 (ML15)	16:35	16:36
25	07:16	06:40		15:44 (ML15)	05:55			06:07	05:34	05:28	05:48	06:18	06:48		16:35 (ML15)	06:20		15:25 (ML15)	06:56	07:21
	17:07	17:44	52	16:36 (ML15)	18:15			19:48	20:17	20:34	20:22	19:43	18:52	31	17:06 (ML15)	17:05	32	15:57 (ML15)	16:35	16:36
26	07:15	06:39		15:44 (ML15)	05:54			06:05	05:34	05:29	05:49	06:19	06:49		16:33 (ML15)	06:21		15:27 (ML15)	06:57	07:21
	17:08	17:45	53	16:37 (ML15)	19:16			19:49	20:18	20:34	20:21	19:42	18:51	35	17:08 (ML15)	17:04	27	15:54 (ML15)	16:34	16:37
27	07:14	06:37		15:43 (ML15)	05:52			06:04	05:33	05:29	05:50	06:20	06:50		16:31 (ML15)	06:22		15:29 (ML15)	06:58	07:21
	17:09	17:47	54	16:37 (ML15)	19:17			19:50	20:19	20:34	20:20	19:40	18:49	38	17:09 (ML15)	17:03	22	15:51 (ML15)	16:34	16:37
28	07:13	06:36		15:43 (ML15)	05:51			06:03	05:32	05:29	05:51	06:21	06:51		16:29 (ML15)	06:23		15:33 (ML15)	06:59	07:22
	17:10	17:48	55	16:38 (ML15)	19:18			19:51	20:20	20:34	20:19	19:39	18:47	41	17:10 (ML15)	17:01	14	15:47 (ML15)	16:33	16:38
29	07:12				06:49			06:01	05:32	05:30	05:51	06:22	06:52		16:27 (ML15)	06:24			07:00	07:22
	17:12				19:19			19:52	20:21	20:34	20:18	19:37	18:46	44	17:11 (ML15)	17:00			16:33	16:39
30	07:11				06:47			06:00	05:31	05:30	05:52	06:23	06:53		16:25 (ML15)	06:26			07:01	07:22
	17:13				19:20			19:53	20:21	20:34	20:17	19:36	18:44	46	17:11 (ML15)	16:59			16:33	16:39
31	07:11				06:46				05:31		05:53	06:24				06:27				07:22
	17:14				19:21				20:22		20:16	19:34				16:57				16:40
Potential sun hours	298	298			370			398	447	451	458	427	375			346			299	289
Total, worst case			626			946								291			1304			
Sun reduction			0,45			0,46								0,67			0,56			
Oper. time red.			0,88			0,88								0,88			0,88			
Wind dir. red.			0,59			0,59								0,59			0,59			
Total reduction			0,23			0,24								0,35			0,29			
Total, real			145			226								101			379			

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

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

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk 14/11/2023 15:50 / 23 windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R12b - R12b

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February			March			April	May	June	July	August	September			October			November	December
1	07:23	07:10			06:34		15:42 (M.15)	06:44	05:59	05:30	05:31	05:54	06:25			06:54		16:22 (M.15)	06:28	07:02
	16:41	17:15			17:49	56	16:38 (M.15)	19:22	19:54	20:23	20:34	20:15	19:32			18:42	52	17:14 (M.15)	16:56	16:32
2	07:23	07:09			06:33		15:42 (M.15)	06:42	05:57	05:30	05:31	05:55	06:26			06:55		16:21 (M.15)	06:29	07:03
	16:42	17:16			17:50	56	16:38 (M.15)	19:23	19:55	20:24	20:34	20:14	19:31			18:41	53	17:14 (M.15)	16:55	16:32
3	07:23	07:08			06:31		15:41 (M.15)	06:41	05:56	05:29	05:32	05:56	06:27			06:56		16:19 (M.15)	06:30	07:04
	16:43	17:18			17:51	57	16:38 (M.15)	19:25	19:56	20:24	20:34	20:13	19:29			18:39	55	17:14 (M.15)	16:54	16:32
4	07:23	07:07			06:30		15:41 (M.15)	06:39	05:55	05:29	05:32	05:57	06:28			06:57		16:19 (M.15)	06:31	07:05
	16:44	17:19			17:52	57	16:38 (M.15)	19:26	19:57	20:25	20:33	20:12	19:28			18:37	55	17:14 (M.15)	16:53	16:32
5	07:23	07:06			06:28		15:41 (M.15)	06:37	05:54	05:29	05:33	05:58	06:29			06:58		16:18 (M.15)	06:33	07:06
	16:45	17:20			17:53	57	16:38 (M.15)	19:27	19:58	20:26	20:33	20:11	19:26			18:36	56	17:14 (M.15)	16:51	16:31
6	07:23	07:05			06:26		15:41 (M.15)	06:36	05:52	05:28	05:33	05:59	06:29			06:59		16:17 (M.15)	06:34	07:07
	16:46	17:21			17:55	57	16:38 (M.15)	19:28	19:59	20:26	20:33	20:09	19:24			18:34	57	17:14 (M.15)	16:50	16:31
7	07:23	07:04			06:25		15:41 (M.15)	06:34	05:51	05:28	05:34	06:00	06:30			07:00		16:16 (M.15)	06:35	07:08
	16:47	17:23			17:56	57	16:38 (M.15)	19:29	20:00	20:27	20:33	20:08	19:23			18:33	57	17:13 (M.15)	16:49	16:31
8	07:23	07:02			06:23		15:41 (M.15)	06:33	05:50	05:28	05:35	06:01	06:31			07:01		16:16 (M.15)	06:36	07:09
	16:48	17:24			17:57	56	16:37 (M.15)	19:30	20:01	20:28	20:32	20:07	19:21			18:31	57	17:13 (M.15)	16:48	16:31
9	07:23	07:01			06:22		15:41 (M.15)	06:31	05:49	05:27	05:35	06:02	06:32			07:02		16:15 (M.15)	06:37	07:10
	16:49	17:25			17:58	55	16:36 (M.15)	19:31	20:02	20:28	20:32	20:06	19:19			18:29	57	17:12 (M.15)	16:47	16:31
10	07:23	07:00			06:20		15:42 (M.15)	06:29	05:48	05:27	05:36	06:03	06:33			07:03		16:16 (M.15)	06:38	07:11
	16:50	17:26			17:59	54	16:36 (M.15)	19:32	20:03	20:29	20:32	20:05	19:18			18:28	57	17:13 (M.15)	16:46	16:31
11	07:22	06:59			06:18		15:42 (M.15)	06:28	05:47	05:27	05:37	06:04	06:34			07:04		16:16 (M.15)	06:40	07:12
	16:51	17:28			18:00	53	16:35 (M.15)	19:33	20:04	20:29	20:31	20:03	19:16			18:26	56	17:12 (M.15)	16:45	16:31
12	07:22	06:58			06:17		15:42 (M.15)	06:26	05:46	05:27	05:37	06:05	06:35			07:06		16:15 (M.15)	06:41	07:13
	16:52	17:29			18:01	52	16:34 (M.15)	19:34	20:05	20:30	20:31	20:02	19:14			18:25	57	17:12 (M.15)	16:44	16:31
13	07:22	06:56			06:15		15:43 (M.15)	06:25	05:45	05:27	05:38	06:06	06:36			07:07		16:15 (M.15)	06:42	07:13
	16:53	17:30			18:02	51	16:34 (M.15)	19:35	20:06	20:30	20:30	20:01	19:13			18:23	56	17:11 (M.15)	16:43	16:31
14	07:21	06:55			06:14		15:43 (M.15)	06:23	05:44	05:27	05:39	06:07	06:37			07:08		16:15 (M.15)	06:43	07:14
	16:54	17:31			18:03	50	16:33 (M.15)	19:36	20:07	20:31	20:30	19:59	19:11			18:21	55	17:10 (M.15)	16:42	16:32
15	07:21	06:54		16:02 (M.15)	06:12		15:45 (M.15)	06:22	05:43	05:27	05:39	06:08	06:38			07:09		16:16 (M.15)	06:44	07:15
	16:55	17:32	17	16:19 (M.15)	18:04	47	16:32 (M.15)	19:37	20:08	20:31	20:29	19:58	19:09			18:20	53	17:09 (M.15)	16:42	16:32
16	07:21	06:53		15:59 (M.15)	06:10		15:45 (M.15)	06:20	05:42	05:27	05:40	06:09	06:39			07:10		16:16 (M.15)	06:45	07:16
	16:56	17:34	24	16:23 (M.15)	18:05	46	16:31 (M.15)	19:38	20:09	20:32	20:29	19:57	19:08			18:18	52	17:08 (M.15)	16:41	16:32
17	07:20	06:51		15:56 (M.15)	06:09		15:46 (M.15)	06:18	05:41	05:27	05:41	06:10	06:40			07:11		16:16 (M.15)	06:47	07:16
	16:57	17:35	30	16:26 (M.15)	18:07	43	16:29 (M.15)	19:39	20:10	20:32	20:28	19:55	19:06			18:17	51	17:07 (M.15)	16:40	16:32
18	07:20	06:50		15:53 (M.15)	06:07		15:48 (M.15)	06:17	05:40	05:27	05:42	06:11	06:41			07:12		16:17 (M.15)	06:48	07:17
	16:58	17:36	35	16:28 (M.15)	18:08	40	16:28 (M.15)	19:40	20:11	20:32	20:27	19:54	19:04			18:15	49	17:06 (M.15)	16:39	16:33
19	07:19	06:49		15:52 (M.15)	06:05		15:49 (M.15)	06:15	05:39	05:27	05:43	06:12	06:42			07:13		16:18 (M.15)	06:49	07:18
	17:00	17:37	38	16:30 (M.15)	18:09	37	16:26 (M.15)	19:41	20:12	20:33	20:27	19:52	19:03			18:14	48	17:06 (M.15)	16:38	16:33
20	07:19	06:47		15:50 (M.15)	06:04		15:51 (M.15)	06:14	05:38	05:27	05:43	06:13	06:43		16:48 (M.15)	07:14		16:19 (M.15)	06:50	07:18
	17:01	17:38	41	16:31 (M.15)	18:10	32	16:23 (M.15)	19:42	20:13	20:33	20:26	19:51	19:01	10	16:58 (M.15)	18:12	45	17:04 (M.15)	16:38	16:34
21	07:18	06:46		15:49 (M.15)	06:02		15:54 (M.15)	06:12	05:37	05:27	05:44	06:14	06:44		16:43 (M.15)	07:15		16:20 (M.15)	06:51	07:19
	17:02	17:40	43	16:32 (M.15)	18:11	28	16:22 (M.15)	19:43	20:14	20:33	20:25	19:49	18:59	20	17:03 (M.15)	18:11	43	17:03 (M.15)	16:37	16:34
22	07:18	06:44		15:48 (M.15)	06:00		15:56 (M.15)	06:11	05:36	05:28	05:45	06:15	06:45		16:39 (M.15)	07:16		16:21 (M.15)	06:52	07:19
	17:03	17:41	46	16:34 (M.15)	18:12	22	16:18 (M.15)	19:44	20:15	20:33	20:24	19:48	18:57	26	17:05 (M.15)	18:10	40	17:01 (M.15)	16:36	16:34
23	07:17	06:43		15:46 (M.15)	05:59		16:00 (M.15)	06:10	05:36	05:28	05:46	06:16	06:46		16:36 (M.15)	07:18		16:22 (M.15)	06:54	07:20
	17:04	17:42	48	16:34 (M.15)	18:13	13	16:13 (M.15)	19:45	20:15	20:33	20:24	19:46	18:56	31	17:07 (M.15)	18:08	37	16:59 (M.15)	16:35	16:35
24	07:16	06:42		15:46 (M.15)	05:57			06:08	05:35	05:28	05:47	06:17	06:47		16:33 (M.15)	07:19		16:24 (M.15)	06:55	07:20
	17:05	17:43	50	16:36 (M.15)	18:14			19:46	20:16	20:34	20:23	19:45	18:54	36	17:09 (M.15)	18:07	33	16:57 (M.15)	16:35	16:35
25	07:16	06:40		15:44 (M.15)	05:55			06:07	05:34	05:28	05:48	06:18	06:48		16:31 (M.15)	06:20		15:27 (M.15)	06:56	07:21
	17:07	17:44	52	16:36 (M.15)	18:15			19:48	20:17	20:34	20:22	19:43	18:52	39	17:10 (M.15)	17:05	28	15:55 (M.15)	16:35	16:36
26	07:15	06:39		15:44 (M.15)	05:54			06:05	05:34	05:29	05:49	06:19	06:49		16:29 (M.15)	06:21		15:29 (M.15)	06:57	07:21
	17:08	17:45	53	16:37 (M.15)	18:16			19:49	20:18	20:34	20:21	19:42	18:51	42	17:11 (M.15)	17:04	23	15:52 (M.15)	16:34	16:37
27	07:14	06:37		15:43 (M.15)	05:52			06:04	05:33	05:29	05:50	06:20	06:50		16:27 (M.15)	06:22		15:33 (M.15)	06:58	07:21
	17:09	17:47	54	16:37 (M.15)	18:17			19:50	20:19	20:34	20:20	19:40	18:49	45	17:12 (M.15)	17:03	14	15:47 (M.15)	16:34	16:37
28	07:13	06:36		15:43 (M.15)	05:51			06:03	05:32	05:29	05:51	06:21	06:51		16:26 (M.15)	06:23			06:59	07:22
	17:10	17:48	55	16:38 (M.15)	18:18			19:51	20:20	20:34	20:19	19:39	18:47	46	17:12 (M.15)	17:01			16:33	16:38
29	07:12				06:49			06:01	05:32	05:30	05:51	06:22	06:52		16:24 (M.15)	06:24			07:00	07:22
	17:12				19:19			19:52	20:21	20:34	20:18	19:37	18:46	49	17:13 (M.15)	17:00			16:33	16:39
30	07:11				06:47			06:00	05:31	05:30	05:52	06:23	06:53		16:23 (M.15)	06:26			07:01	07:22
	17:13				19:20			19:53	20:21	20:34	20:17	19:36	18:44	50	17:13 (M.15)	16:59			16:33	16:39
31	07:11				06:46				05:31		05:53	06:24				06:27				07:22
	17:14				19:21				20:22		20:16	19:34				16:57				16:40
Potential sun hours	298	298			370			398	447	451	458	427	375			346			293	289
Total, worst case			586			1076								394			1296			
Sun reduction			0,45			0,46								0,67			0,56			
Oper. time red.			0,88			0,88								0,88			0,88			
Wind dir. red.			0,59			0,59								0,59			0,59			
Total reduction			0,23			0,24								0,35			0,29			
Total, real			136			255								136			376			

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

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

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk

14/11/2023 15:50 / 24

windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R13a - R13a
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January		February	March			April	May	June
1	07:23		07:10	06:34			06:44	05:59	05:30
	16:41	21 15:52 (ML17)	17:15	17:49			19:22	19:54	20:23
2	07:23		07:09	06:33			06:42	05:57	05:30
	16:42	22 15:52 (ML17)	17:17	17:50			19:24	19:55	20:24
3	07:23		07:08	06:31			06:41	05:56	05:29
	16:43	21 15:53 (ML17)	17:18	17:51			19:25	19:56	20:24
4	07:23		07:07	06:30			06:39	05:55	05:29
	16:44	22 15:53 (ML17)	17:19	17:52			19:26	19:57	20:25
5	07:23		07:06	06:28		06:49 (ML15)	06:37	05:54	05:29
	16:45	21 15:54 (ML17)	17:20	17:53	8	06:57 (ML15)	19:27	19:58	20:26
6	07:23		07:05	06:27		06:45 (ML15)	06:36	05:52	05:28
	16:46	21 15:54 (ML17)	17:21	17:55	16	07:01 (ML15)	19:28	19:59	20:26
7	07:23		07:04	06:25		06:44 (ML15)	06:34	05:51	05:28
	16:47	21 15:55 (ML17)	17:23	17:56	19	07:03 (ML15)	19:29	20:00	20:27
8	07:23		07:02	06:23		06:42 (ML15)	06:33	05:50	05:28
	16:48	21 15:55 (ML17)	17:24	17:57	23	07:05 (ML15)	19:30	20:01	20:28
9	07:23		07:01	06:22		06:40 (ML15)	06:31	05:49	05:28
	16:49	21 15:55 (ML17)	17:25	17:58	25	07:05 (ML15)	19:31	20:02	20:28
10	07:23		07:00	06:20		06:39 (ML15)	06:29	05:48	05:27
	16:50	20 15:56 (ML17)	17:26	17:59	28	07:07 (ML15)	19:32	20:03	20:29
11	07:22		06:59	06:19		06:37 (ML15)	06:28	05:47	05:27
	16:51	20 15:57 (ML17)	17:28	18:00	30	07:07 (ML15)	19:33	20:04	20:29
12	07:22		06:58	06:17		06:36 (ML15)	06:26	05:46	05:27
	16:52	19 15:57 (ML17)	17:29	18:01	32	07:08 (ML15)	19:34	20:05	20:30
13	07:22		06:57	06:15		06:34 (ML15)	06:25	05:45	05:27
	16:53	19 15:58 (ML17)	17:30	18:02	34	07:08 (ML15)	19:35	20:06	20:30
14	07:22		06:55	06:14		06:33 (ML15)	06:23	05:44	05:27
	16:54	17 16:00 (ML17)	17:31	18:03	35	07:08 (ML15)	19:36	20:07	20:31
15	07:21		06:54	06:12		06:33 (ML15)	06:22	05:43	05:27
	16:55	16 16:00 (ML17)	17:32	18:04	35	07:08 (ML15)	19:37	20:08	20:31
16	07:21		06:53	06:10		06:32 (ML15)	06:20	05:42	05:27
	16:56	14 16:02 (ML17)	17:34	18:06	36	07:08 (ML15)	19:38	20:09	20:32
17	07:20		06:51	06:09		06:32 (ML15)	06:19	05:41	05:27
	16:57	12 16:03 (ML17)	17:35	18:07	35	07:07 (ML15)	19:39	20:10	20:32
18	07:20		06:50	06:07		06:32 (ML15)	06:17	05:40	05:27
	16:58	9 16:05 (ML17)	17:36	18:08	35	07:07 (ML15)	19:40	20:11	20:32
19	07:19		06:49	06:05		06:32 (ML15)	06:15	05:39	05:27
	17:00	4 16:08 (ML17)	17:37	18:09	34	07:06 (ML15)	19:41	20:12	20:33
20	07:19		06:47	06:04		06:32 (ML15)	06:14	05:38	05:27
	17:01	16:12 (ML17)	17:38	18:10	33	07:05 (ML15)	19:42	20:13	20:33
21	07:18		06:46	06:02		06:33 (ML15)	06:13	05:37	05:27
	17:02		17:40	18:11	32	07:05 (ML15)	19:43	20:14	20:33
22	07:18		06:45	06:01		06:33 (ML15)	06:11	05:36	05:28
	17:03		17:41	18:12	30	07:03 (ML15)	19:44	20:15	20:33
23	07:17		06:43	05:59		06:34 (ML15)	06:10	05:36	05:28
	17:04		17:42	18:13	27	07:01 (ML15)	19:45	20:16	20:34
24	07:16		06:42	05:57		06:35 (ML15)	06:08	05:35	05:28
	17:06		17:43	18:14	25	07:00 (ML15)	19:47	20:16	20:34
25	07:16		06:40	05:56		06:37 (ML15)	06:07	05:34	05:28
	17:07		17:44	18:15	21	06:58 (ML15)	19:48	20:17	20:34
26	07:15		06:39	05:54		06:38 (ML15)	06:05	05:34	05:29
	17:08		17:45	18:16	17	06:55 (ML15)	19:49	20:18	20:34
27	07:14		06:37	05:52		06:43 (ML15)	06:04	05:33	05:29
	17:09		17:47	18:17	8	06:51 (ML15)	19:50	20:19	20:34
28	07:13		06:36	05:51			06:03	05:32	05:29
	17:10		17:48	18:18			19:51	20:20	20:34
29	07:12			06:49			06:01	05:32	05:30
	17:12			19:19			19:52	20:21	20:34
30	07:12			06:47			06:00	05:31	05:30
	17:13			19:20			19:53	20:21	20:34
31	07:11			06:46				05:31	
	17:14			19:21				20:22	
Potential sun hours	298		298	370			398	447	451
Total, worst case	341			618					
Sun reduction	0,43			0,46					
Oper. time red.	0,88			0,88					
Wind dir. red.	0,60			0,56					
Total reduction	0,23			0,23					
Total, real	78			140					

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R13a - R13a
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July	August	September		October		November			December		
1	05:31	05:54	06:25		06:54		07:14 (ML15)	06:28		07:02		15:39 (ML17)
	20:34	20:15	19:33		18:42	33	07:47 (ML15)	16:56		16:32	20	15:59 (ML17)
2	05:31	05:55	06:26		06:55		07:15 (ML15)	06:29		07:03		15:39 (ML17)
	20:34	20:14	19:31		18:41	31	07:46 (ML15)	16:55		16:32	20	15:59 (ML17)
3	05:32	05:56	06:27		06:56		07:16 (ML15)	06:30		07:04		15:39 (ML17)
	20:34	20:13	19:29		18:39	29	07:45 (ML15)	16:54		16:32	21	16:00 (ML17)
4	05:32	05:57	06:28		06:57		07:17 (ML15)	06:31		07:05		15:40 (ML17)
	20:33	20:12	19:28		18:38	27	07:44 (ML15)	16:53		16:32	20	16:00 (ML17)
5	05:33	05:58	06:29		06:58		07:18 (ML15)	06:33		07:06		15:40 (ML17)
	20:33	20:11	19:26		18:36	24	07:42 (ML15)	16:52		16:31	21	16:01 (ML17)
6	05:33	05:59	06:30		06:59		07:19 (ML15)	06:34		07:07		15:40 (ML17)
	20:33	20:10	19:24		18:34	21	07:40 (ML15)	16:50		16:31	22	16:02 (ML17)
7	05:34	06:00	06:31		07:00		07:20 (ML15)	06:35		07:08		15:41 (ML17)
	20:33	20:08	19:23		18:33	18	07:38 (ML15)	16:49		16:31	21	16:02 (ML17)
8	05:35	06:01	06:32		07:01		07:21 (ML15)	06:36		07:09		15:41 (ML17)
	20:32	20:07	19:21		18:31	13	07:34 (ML15)	16:48		16:31	22	16:03 (ML17)
9	05:35	06:02	06:32		07:02			06:37		07:10		15:42 (ML17)
	20:32	20:06	19:19		18:29			16:47		16:31	21	16:03 (ML17)
10	05:36	06:03	06:33		07:03			06:38		07:11		15:42 (ML17)
	20:32	20:05	19:18		18:28			16:46		16:31	22	16:04 (ML17)
11	05:37	06:04	06:34		07:05			06:40		07:12		15:42 (ML17)
	20:31	20:03	19:16		18:26			16:45		16:31	21	16:03 (ML17)
12	05:37	06:05	06:35		07:06			06:41		07:13		15:42 (ML17)
	20:31	20:02	19:14		18:25			16:44		16:31	22	16:04 (ML17)
13	05:38	06:06	06:36		07:07			06:42		07:13		15:43 (ML17)
	20:30	20:01	19:13		18:23			16:43		16:32	21	16:04 (ML17)
14	05:39	06:07	06:37		07:08			06:43		07:14		15:44 (ML17)
	20:30	19:59	19:11		18:22			16:42		16:32	21	16:05 (ML17)
15	05:40	06:08	06:38		07:09			06:44		07:15		15:44 (ML17)
	20:29	19:58	19:09		18:20			16:42		16:32	21	16:05 (ML17)
16	05:40	06:09	06:39	07:33 (ML15)	07:10			06:46		07:16		15:44 (ML17)
	20:29	19:57	19:08	4 07:37 (ML15)	18:18			16:41		16:32	22	16:06 (ML17)
17	05:41	06:10	06:40	07:27 (ML15)	07:11			06:47		07:16		15:45 (ML17)
	20:28	19:55	19:06	15 07:42 (ML15)	18:17			16:40		16:32	21	16:06 (ML17)
18	05:42	06:11	06:41	07:24 (ML15)	07:12			06:48		07:17		15:45 (ML17)
	20:27	19:54	19:04	21 07:45 (ML15)	18:15			16:39		16:33	21	16:06 (ML17)
19	05:43	06:12	06:42	07:22 (ML15)	07:13			06:49		07:18		15:46 (ML17)
	20:27	19:52	19:03	24 07:46 (ML15)	18:14			16:38		16:33	21	16:07 (ML17)
20	05:44	06:13	06:43	07:20 (ML15)	07:14			06:50		07:18		15:46 (ML17)
	20:26	19:51	19:01	27 07:47 (ML15)	18:12			16:38		16:34	21	16:07 (ML17)
21	05:44	06:14	06:44	07:19 (ML15)	07:15			06:51		07:19		15:47 (ML17)
	20:25	19:49	18:59	29 07:48 (ML15)	18:11			16:37		16:34	21	16:08 (ML17)
22	05:45	06:15	06:45	07:18 (ML15)	07:16			06:53		16:35	21	16:08 (ML17)
	20:24	19:48	18:58	31 07:49 (ML15)	18:10			16:36				
23	05:46	06:16	06:46	07:17 (ML15)	07:18			06:54	15:45 (ML17)	07:20		15:48 (ML17)
	20:24	19:47	18:56	32 07:49 (ML15)	18:08			16:36	3 15:48 (ML17)	16:35	21	16:09 (ML17)
24	05:47	06:17	06:47	07:16 (ML15)	07:19			06:55	15:51 (ML17)	07:20		15:48 (ML17)
	20:23	19:45	18:54	33 07:49 (ML15)	18:07			16:35	9 15:51 (ML17)	16:36	21	16:09 (ML17)
25	05:48	06:18	06:48	07:15 (ML15)	06:20			06:56	15:41 (ML17)	07:21		15:49 (ML17)
	20:22	19:44	18:53	35 07:50 (ML15)	17:05			16:35	12 15:53 (ML17)	16:36	21	16:10 (ML17)
26	05:49	06:19	06:49	07:14 (ML15)	06:21			06:57	15:40 (ML17)	07:21		15:49 (ML17)
	20:21	19:42	18:51	35 07:49 (ML15)	17:04			16:34	14 15:54 (ML17)	16:37	21	16:10 (ML17)
27	05:50	06:20	06:50	07:14 (ML15)	06:22			06:58	15:39 (ML17)	07:21		15:49 (ML17)
	20:20	19:40	18:49	35 07:49 (ML15)	17:03			16:34	16 15:55 (ML17)	16:37	21	16:10 (ML17)
28	05:51	06:21	06:51	07:14 (ML15)	06:23			06:59	15:40 (ML17)	07:22		15:50 (ML17)
	20:19	19:39	18:47	35 07:49 (ML15)	17:01			16:33	17 15:57 (ML17)	16:38	21	16:11 (ML17)
29	05:52	06:22	06:52	07:13 (ML15)	06:24			07:00	15:39 (ML17)	07:22		15:51 (ML17)
	20:18	19:37	18:46	35 07:48 (ML15)	17:00			16:33	19 15:58 (ML17)	16:39	21	16:12 (ML17)
30	05:52	06:23	06:53	07:13 (ML15)	06:26			07:01	15:39 (ML17)	07:22		15:51 (ML17)
	20:17	19:36	18:44	35 07:48 (ML15)	16:59			16:33	19 15:58 (ML17)	16:40	21	16:12 (ML17)
31	05:53	06:24			06:27					07:23		15:51 (ML17)
	20:16	19:34			16:58					16:40	22	16:13 (ML17)
Potential sun hours	458	427	375		346		299			289		
Total, worst case			426		196		109			654		
Sun reduction			0,67		0,56		0,51			0,44		
Oper. time red.			0,88		0,88		0,88			0,88		
Wind dir. red.			0,56		0,56		0,60			0,60		
Total reduction			0,33		0,28		0,27			0,23		
Total, real			141		54		29			152		

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)

Ten Project S.r.l: Sede legale ed operativa: Loc.Chianarile Z I., 82010 San Martino Sannita (BN) - **Sede Operativa**: Via Alfonso la Cava 114- 71036 Lucera (FG)

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R13b - R13b
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January		February	March		April			May	June
1	07:23	15:59 (ML17)	07:10	06:34		06:44		07:27 (ML15)	05:59	05:30
	16:41	17 16:16 (ML17)	17:15	17:49		19:22	16	07:43 (ML15)	19:54	20:23
2	07:23	15:59 (ML17)	07:09	06:33		06:42		07:32 (ML15)	05:57	05:30
	16:42	17 16:16 (ML17)	17:17	17:50		19:24	7	07:39 (ML15)	19:55	20:24
3	07:23	15:59 (ML17)	07:08	06:31		06:41			05:56	05:29
	16:43	18 16:17 (ML17)	17:18	17:51		19:25			19:56	20:24
4	07:23	16:00 (ML17)	07:07	06:30		06:39			05:55	05:29
	16:44	18 16:18 (ML17)	17:19	17:52		19:26			19:57	20:25
5	07:23	16:00 (ML17)	07:06	06:28		06:37			05:54	05:29
	16:45	19 16:19 (ML17)	17:20	17:53		19:27			19:58	20:26
6	07:23	16:00 (ML17)	07:05	06:27		06:36			05:52	05:28
	16:46	20 16:20 (ML17)	17:21	17:55		19:28			19:59	20:26
7	07:23	16:01 (ML17)	07:04	06:25		06:34			05:51	05:28
	16:47	20 16:21 (ML17)	17:23	17:56		19:29			20:00	20:27
8	07:23	16:01 (ML17)	07:02	06:23		06:33			05:50	05:28
	16:48	22 16:23 (ML17)	17:24	17:57		19:30			20:01	20:28
9	07:23	16:01 (ML17)	07:01	06:22		06:31			05:49	05:28
	16:49	21 16:22 (ML17)	17:25	17:58		19:31			20:02	20:28
10	07:23	16:01 (ML17)	07:00	06:20		06:29			05:48	05:27
	16:50	22 16:23 (ML17)	17:26	17:59		19:32			20:03	20:29
11	07:22	16:02 (ML17)	06:59	06:19		06:37 (ML15) 06:28			05:47	05:27
	16:51	22 16:24 (ML17)	17:28	18:00	12	06:49 (ML15) 19:33			20:04	20:29
12	07:22	16:02 (ML17)	06:58	06:17		06:36 (ML15) 06:26			05:46	05:27
	16:52	21 16:23 (ML17)	17:29	18:01	16	06:52 (ML15) 19:34			20:05	20:30
13	07:22	16:03 (ML17)	06:57	06:15		06:34 (ML15) 06:25			05:45	05:27
	16:53	21 16:24 (ML17)	17:30	18:02	20	06:54 (ML15) 19:35			20:06	20:30
14	07:22	16:04 (ML17)	06:55	06:14		06:32 (ML15) 06:23			05:44	05:27
	16:54	21 16:25 (ML17)	17:31	18:03	23	06:55 (ML15) 19:36			20:07	20:31
15	07:21	16:04 (ML17)	06:54	06:12		06:31 (ML15) 06:22			05:43	05:27
	16:55	20 16:24 (ML17)	17:32	18:04	25	06:56 (ML15) 19:37			20:08	20:31
16	07:21	16:05 (ML17)	06:53	06:10		06:29 (ML15) 06:20			05:42	05:27
	16:56	20 16:25 (ML17)	17:34	18:06	28	06:57 (ML15) 19:38			20:09	20:32
17	07:20	16:05 (ML17)	06:51	06:09		06:27 (ML15) 06:19			05:41	05:27
	16:57	20 16:25 (ML17)	17:35	18:07	30	06:57 (ML15) 19:39			20:10	20:32
18	07:20	16:06 (ML17)	06:50	06:07		06:26 (ML15) 06:17			05:40	05:27
	16:58	19 16:25 (ML17)	17:36	18:08	32	06:58 (ML15) 19:40			20:11	20:32
19	07:19	16:07 (ML17)	06:49	06:05		06:24 (ML15) 06:15			05:39	05:27
	17:00	17 16:24 (ML17)	17:37	18:09	34	06:58 (ML15) 19:41			20:12	20:33
20	07:19	16:08 (ML17)	06:47	06:04		06:22 (ML15) 06:14			05:38	05:27
	17:01	17 16:25 (ML17)	17:38	18:10	35	06:57 (ML15) 19:42			20:13	20:33
21	07:18	16:09 (ML17)	06:46	06:02		06:22 (ML15) 06:13			05:37	05:27
	17:02	15 16:24 (ML17)	17:40	18:11	36	06:58 (ML15) 19:43			20:14	20:33
22	07:18	16:10 (ML17)	06:45	06:01		06:21 (ML15) 06:11			05:36	05:28
	17:03	13 16:23 (ML17)	17:41	18:12	36	06:57 (ML15) 19:44			20:15	20:33
23	07:17	16:12 (ML17)	06:43	05:59		06:21 (ML15) 06:10			05:36	05:28
	17:04	9 16:21 (ML17)	17:42	18:13	35	06:56 (ML15) 19:45			20:16	20:34
24	07:16		06:42	05:57		06:21 (ML15) 06:08			05:35	05:28
	17:06		17:43	18:14	36	06:57 (ML15) 19:47			20:16	20:34
25	07:16		06:40	05:56		06:21 (ML15) 06:07			05:34	05:28
	17:07		17:44	18:15	34	06:55 (ML15) 19:48			20:17	20:34
26	07:15		06:39	05:54		06:21 (ML15) 06:05			05:34	05:29
	17:08		17:45	18:16	33	06:54 (ML15) 19:49			20:18	20:34
27	07:14		06:37	05:52		06:22 (ML15) 06:04			05:33	05:29
	17:09		17:47	18:17	32	06:54 (ML15) 19:50			20:19	20:34
28	07:13		06:36	05:51		06:22 (ML15) 06:03			05:32	05:29
	17:10		17:48	18:18	30	06:52 (ML15) 19:51			20:20	20:34
29	07:12			06:49		07:23 (ML15) 06:01			05:32	05:30
	17:12			19:19	27	07:50 (ML15) 19:52			20:21	20:34
30	07:12			06:47		07:24 (ML15) 06:00			05:31	05:30
	17:13			19:20	25	07:49 (ML15) 19:53			20:21	20:34
31	07:11			06:46		07:26 (ML15)			05:31	
	17:14			19:21	21	07:47 (ML15)			20:22	
Potential sun hours	298		298	370		398			447	451
Total, worst case	429			600		23				
Sun reduction	0,43			0,46		0,50				
Oper. time red.	0,88			0,88		0,88				
Wind dir. red.	0,60			0,56		0,56				
Total reduction	0,23			0,23		0,25				
Total, real	98			137		6				

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R13b - R13b
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July	August	September		October		November			December		
1	05:31 / 20:34	05:54 / 20:15	06:25 / 19:33		06:54 / 18:42 18	07:14 (ML15) 07:32 (ML15)	06:28 / 16:56			07:02 / 16:32 22	15:44 (ML17) 16:06 (ML17)	
2	05:31 / 20:34	05:55 / 20:14	06:26 / 19:31		06:55 / 18:41 14	07:15 (ML15) 07:29 (ML15)	06:29 / 16:55			07:03 / 16:32 21	15:45 (ML17) 16:06 (ML17)	
3	05:32 / 20:34	05:56 / 20:13	06:27 / 19:29		06:56 / 18:39 8	07:16 (ML15) 07:24 (ML15)	06:30 / 16:54			07:04 / 16:32 21	15:45 (ML17) 16:06 (ML17)	
4	05:32 / 20:33	05:57 / 20:12	06:28 / 19:28		06:57 / 18:38		06:31 / 16:53			07:05 / 16:32 22	15:45 (ML17) 16:07 (ML17)	
5	05:33 / 20:33	05:58 / 20:11	06:29 / 19:26		06:58 / 18:36		06:33 / 16:52			07:06 / 16:31 20	15:46 (ML17) 16:06 (ML17)	
6	05:33 / 20:33	05:59 / 20:10	06:30 / 19:24		06:59 / 18:34		06:34 / 16:50			07:07 / 16:31 20	15:46 (ML17) 16:06 (ML17)	
7	05:34 / 20:33	06:00 / 20:08	06:31 / 19:23		07:00 / 18:33		06:35 / 16:49			07:08 / 16:31 19	15:47 (ML17) 16:06 (ML17)	
8	05:35 / 20:32	06:01 / 20:07	06:32 / 19:21		07:01 / 18:31		06:36 / 16:48			07:09 / 16:31 18	15:48 (ML17) 16:06 (ML17)	
9	05:35 / 20:32	06:02 / 20:06	06:32 / 19:19		07:02 / 18:29		06:37 / 16:47			07:10 / 16:31 17	15:49 (ML17) 16:06 (ML17)	
10	05:36 / 20:32	06:03 / 20:05	06:33 / 19:18 5	07:26 (ML15) 07:31 (ML15)	07:03 / 18:28		06:38 / 16:46			07:11 / 16:31 17	15:49 (ML17) 16:06 (ML17)	
11	05:37 / 20:31	06:04 / 20:03	06:34 / 19:16 15	07:21 (ML15) 07:36 (ML15)	07:05 / 18:26		06:40 / 16:45			07:12 / 16:31 17	15:49 (ML17) 16:06 (ML17)	
12	05:37 / 20:31	06:05 / 20:02	06:35 / 19:14 20	07:18 (ML15) 07:38 (ML15)	07:06 / 18:25		06:41 / 16:44			07:13 / 16:31 16	15:50 (ML17) 16:06 (ML17)	
13	05:38 / 20:30	06:06 / 20:01	06:36 / 19:13 24	07:16 (ML15) 07:40 (ML15)	07:07 / 18:23		06:42 / 16:43			07:13 / 16:32 15	15:51 (ML17) 16:06 (ML17)	
14	05:39 / 20:30	06:07 / 19:59	06:37 / 19:11 27	07:14 (ML15) 07:41 (ML15)	07:08 / 18:22		06:43 / 16:42			07:14 / 16:32 15	15:52 (ML17) 16:07 (ML17)	
15	05:40 / 20:29	06:08 / 19:58	06:38 / 19:09 29	07:12 (ML15) 07:41 (ML15)	07:09 / 18:20		06:44 / 16:42			07:15 / 16:32 14	15:52 (ML17) 16:06 (ML17)	
16	05:40 / 20:29	06:09 / 19:57	06:39 / 19:08 32	07:10 (ML15) 07:42 (ML15)	07:10 / 18:18		06:46 / 16:41			07:16 / 16:32 14	15:53 (ML17) 16:07 (ML17)	
17	05:41 / 20:28	06:10 / 19:55	06:40 / 19:06 33	07:09 (ML15) 07:42 (ML15)	07:11 / 18:17		06:47 / 16:40			07:16 / 16:32 14	15:53 (ML17) 16:07 (ML17)	
18	05:42 / 20:27	06:11 / 19:54	06:41 / 19:04 35	07:08 (ML15) 07:43 (ML15)	07:12 / 18:15		06:48 / 16:39			07:17 / 16:33 14	15:53 (ML17) 16:07 (ML17)	
19	05:43 / 20:27	06:12 / 19:52	06:42 / 19:03 35	07:08 (ML15) 07:43 (ML15)	07:13 / 18:14		06:49 / 16:38 9	15:47 (ML17) 15:56 (ML17)		07:18 / 16:33 14	15:54 (ML17) 16:08 (ML17)	
20	05:44 / 20:26	06:13 / 19:51	06:43 / 19:01 36	07:07 (ML15) 07:43 (ML15)	07:14 / 18:12		06:50 / 16:38 13	15:45 (ML17) 15:58 (ML17)		07:18 / 16:34 14	15:54 (ML17) 16:08 (ML17)	
21	05:44 / 20:25	06:14 / 19:49	06:44 / 18:59 37	07:06 (ML15) 07:43 (ML15)	07:15 / 18:11		06:51 / 16:37 15	15:44 (ML17) 15:59 (ML17)		07:19 / 16:34 13	15:55 (ML17) 16:08 (ML17)	
22	05:45 / 20:24	06:15 / 19:48	06:45 / 18:58 36	07:06 (ML15) 07:42 (ML15)	07:16 / 18:10		06:53 / 16:36 17	15:44 (ML17) 16:01 (ML17)		07:19 / 16:35 13	15:55 (ML17) 16:08 (ML17)	
23	05:46 / 20:24	06:16 / 19:47	06:46 / 18:56 36	07:06 (ML15) 07:42 (ML15)	07:18 / 18:08		06:54 / 16:36 17	15:44 (ML17) 16:01 (ML17)		07:20 / 16:35 13	15:56 (ML17) 16:09 (ML17)	
24	05:47 / 20:23	06:17 / 19:45	06:47 / 18:54 34	07:07 (ML15) 07:41 (ML15)	07:19 / 18:07		06:55 / 16:35 19	15:43 (ML17) 16:02 (ML17)		07:20 / 16:36 14	15:56 (ML17) 16:10 (ML17)	
25	05:48 / 20:22	06:18 / 19:44	06:48 / 18:53 33	07:08 (ML15) 07:41 (ML15)	06:20 / 17:05		06:56 / 16:35 20	15:43 (ML17) 16:03 (ML17)		07:21 / 16:36 14	15:57 (ML17) 16:11 (ML17)	
26	05:49 / 20:21	06:19 / 19:42	06:49 / 18:51 31	07:09 (ML15) 07:40 (ML15)	06:21 / 17:04		06:57 / 16:34 20	15:43 (ML17) 16:03 (ML17)		07:21 / 16:37 14	15:57 (ML17) 16:11 (ML17)	
27	05:50 / 20:20	06:20 / 19:40	06:50 / 18:49 29	07:10 (ML15) 07:39 (ML15)	06:22 / 17:03		06:58 / 16:34 21	15:43 (ML17) 16:04 (ML17)		07:21 / 16:37 13	15:58 (ML17) 16:11 (ML17)	
28	05:51 / 20:19	06:21 / 19:39	06:51 / 18:47 26	07:11 (ML15) 07:37 (ML15)	06:23 / 17:01		06:59 / 16:33 21	15:44 (ML17) 16:05 (ML17)		07:22 / 16:38 14	15:58 (ML17) 16:12 (ML17)	
29	05:52 / 20:18	06:22 / 19:37	06:52 / 18:46 24	07:12 (ML15) 07:36 (ML15)	06:24 / 17:00		07:00 / 16:33 21	15:44 (ML17) 16:05 (ML17)		07:22 / 16:39 14	15:59 (ML17) 16:13 (ML17)	
30	05:52 / 20:17	06:23 / 19:36	06:53 / 18:44 21	07:13 (ML15) 07:34 (ML15)	06:26 / 16:59		07:01 / 16:33 22	15:44 (ML17) 16:06 (ML17)		07:22 / 16:40 15	15:59 (ML17) 16:14 (ML17)	
31	05:53 / 20:16	06:24 / 19:34			06:27 / 16:58					07:23 / 16:40 16	15:59 (ML17) 16:15 (ML17)	
Potential sun hours	458	427	375		346		299			289		
Total, worst case			598		40		215			497		
Sun reduction			0,67		0,56		0,51			0,44		
Oper. time red.			0,88		0,88		0,88			0,88		
Wind dir. red.			0,56		0,56		0,60			0,60		
Total reduction			0,33		0,28		0,27			0,23		
Total, real			199		11		58			115		

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk   14/11/2023 15:50 / 28   windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R13c - R13c
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

Day	January		February	March			April		May	June
1	07:23		16:08 (ML17)	07:10	06:34		06:44	07:17 (ML15)	05:59	05:30
	16:41	8	16:16 (ML17)	17:15	17:49		19:22	30 07:47 (ML15)	19:54	20:23
2	07:23		16:08 (ML17)	07:09	06:33		06:42	07:19 (ML15)	05:57	05:30
	16:42	8	16:16 (ML17)	17:17	17:50		19:24	27 07:46 (ML15)	19:55	20:24
3	07:23		16:08 (ML17)	07:08	06:31		06:41	07:20 (ML15)	05:56	05:29
	16:43	9	16:17 (ML17)	17:18	17:51		19:25	23 07:43 (ML15)	19:56	20:24
4	07:23		16:08 (ML17)	07:07	06:30		06:39	07:21 (ML15)	05:55	05:29
	16:44	10	16:18 (ML17)	17:19	17:52		19:26	20 07:41 (ML15)	19:57	20:25
5	07:23		16:08 (ML17)	07:06	06:28		06:37	07:24 (ML15)	05:54	05:29
	16:45	11	16:19 (ML17)	17:20	17:53		19:27	14 07:38 (ML15)	19:58	20:26
6	07:23		16:08 (ML17)	07:05	06:27		06:36		05:52	05:28
	16:46	12	16:20 (ML17)	17:21	17:55		19:28		19:59	20:26
7	07:23		16:08 (ML17)	07:04	06:25		06:34		05:51	05:28
	16:47	13	16:21 (ML17)	17:23	17:56		19:29		20:00	20:27
8	07:23		16:08 (ML17)	07:02	06:23		06:33		05:50	05:28
	16:48	15	16:23 (ML17)	17:24	17:57		19:30		20:01	20:28
9	07:23		16:08 (ML17)	07:01	06:22		06:31		05:49	05:28
	16:49	15	16:23 (ML17)	17:25	17:58		19:31		20:02	20:28
10	07:23		16:08 (ML17)	07:00	06:20		06:29		05:48	05:27
	16:50	16	16:24 (ML17)	17:26	17:59		19:32		20:03	20:29
11	07:22		16:08 (ML17)	06:59	06:19		06:28		05:47	05:27
	16:51	18	16:26 (ML17)	17:28	18:00		19:33		20:04	20:29
12	07:22		16:08 (ML17)	06:58	06:17		06:26		05:46	05:27
	16:52	18	16:26 (ML17)	17:29	18:01		19:34		20:05	20:30
13	07:22		16:08 (ML17)	06:57	06:15	06:34 (ML15)	06:25		05:45	05:27
	16:53	19	16:27 (ML17)	17:30	18:02	9 06:43 (ML15)	19:35		20:06	20:30
14	07:22		16:09 (ML17)	06:55	06:14	06:32 (ML15)	06:23		05:44	05:27
	16:54	20	16:29 (ML17)	17:31	18:03	15 06:47 (ML15)	19:36		20:07	20:31
15	07:21		16:09 (ML17)	06:54	06:12	06:31 (ML15)	06:22		05:43	05:27
	16:55	21	16:30 (ML17)	17:32	18:04	19 06:50 (ML15)	19:37		20:08	20:31
16	07:21		16:09 (ML17)	06:53	06:10	06:29 (ML15)	06:20		05:42	05:27
	16:56	22	16:31 (ML17)	17:34	18:06	22 06:51 (ML15)	19:38		20:09	20:32
17	07:20		16:09 (ML17)	06:51	06:09	06:27 (ML15)	06:19		05:41	05:27
	16:57	22	16:31 (ML17)	17:35	18:07	25 06:52 (ML15)	19:39		20:10	20:32
18	07:20		16:10 (ML17)	06:50	06:07	06:26 (ML15)	06:17		05:40	05:27
	16:58	21	16:31 (ML17)	17:36	18:08	27 06:53 (ML15)	19:40		20:11	20:32
19	07:19		16:10 (ML17)	06:49	06:05	06:24 (ML15)	06:15		05:39	05:27
	17:00	21	16:31 (ML17)	17:37	18:09	29 06:53 (ML15)	19:41		20:12	20:33
20	07:19		16:12 (ML17)	06:47	06:04	06:22 (ML15)	06:14		05:38	05:27
	17:01	20	16:32 (ML17)	17:38	18:10	31 06:53 (ML15)	19:42		20:13	20:33
21	07:18		16:12 (ML17)	06:46	06:02	06:21 (ML15)	06:13		05:37	05:27
	17:02	19	16:31 (ML17)	17:40	18:11	33 06:54 (ML15)	19:43		20:14	20:33
22	07:18		16:12 (ML17)	06:45	06:01	06:19 (ML15)	06:11		05:36	05:28
	17:03	19	16:31 (ML17)	17:41	18:12	35 06:54 (ML15)	19:44		20:15	20:33
23	07:17		16:13 (ML17)	06:43	05:59	06:17 (ML15)	06:10		05:36	05:28
	17:04	17	16:30 (ML17)	17:42	18:13	37 06:54 (ML15)	19:45		20:16	20:34
24	07:16		16:15 (ML17)	06:42	05:57	06:16 (ML15)	06:08		05:35	05:28
	17:06	16	16:31 (ML17)	17:43	18:14	38 06:54 (ML15)	19:47		20:16	20:34
25	07:16		16:16 (ML17)	06:40	05:56	06:16 (ML15)	06:07		05:34	05:28
	17:07	14	16:30 (ML17)	17:44	18:15	38 06:54 (ML15)	19:48		20:17	20:34
26	07:15		16:17 (ML17)	06:39	05:54	06:15 (ML15)	06:05		05:34	05:29
	17:08	11	16:28 (ML17)	17:45	18:16	38 06:53 (ML15)	19:49		20:18	20:34
27	07:14		16:20 (ML17)	06:37	05:52	06:16 (ML15)	06:04		05:33	05:29
	17:09	6	16:26 (ML17)	17:47	18:17	37 06:53 (ML15)	19:50		20:19	20:34
28	07:13			06:36	05:51	06:15 (ML15)	06:03		05:32	05:29
	17:10			17:48	18:18	37 06:52 (ML15)	19:51		20:20	20:34
29	07:12				06:49	07:15 (ML15)	06:01		05:32	05:30
	17:12				19:19	36 07:51 (ML15)	19:52		20:21	20:34
30	07:12				06:47	07:16 (ML15)	06:00		05:31	05:30
	17:13				19:20	34 07:50 (ML15)	19:53		20:21	20:34
31	07:11				06:46	07:17 (ML15)			05:31	
	17:14				19:21	32 07:49 (ML15)			20:22	
Potential sun hours	298		298	370			398		447	451
Total, worst case	421			572			114			
Sun reduction	0,43			0,46			0,50			
Oper. time red.	0,88			0,88			0,88			
Wind dir. red.	0,60			0,57			0,57			
Total reduction	0,23			0,23			0,25			
Total, real	96			131			28			

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R13c - R13c
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July	August	September		October	November		December		
1	05:31	05:54	06:25		06:54	06:28		07:02		15:50 (ML17)
	20:34	20:15	19:33		18:42	16:56		16:32	18	16:08 (ML17)
2	05:31	05:55	06:26		06:55	06:29		07:03		15:51 (ML17)
	20:34	20:14	19:31		18:41	16:55		16:32	16	16:07 (ML17)
3	05:32	05:56	06:27		06:56	06:30		07:04		15:52 (ML17)
	20:34	20:13	19:29		18:39	16:54		16:32	15	16:07 (ML17)
4	05:32	05:57	06:28		06:57	06:31		07:05		15:52 (ML17)
	20:33	20:12	19:28		18:38	16:53		16:32	15	16:07 (ML17)
5	05:33	05:58	06:29		06:58	06:33		07:06		15:53 (ML17)
	20:33	20:11	19:26		18:36	16:52		16:31	13	16:06 (ML17)
6	05:33	05:59	06:30		06:59	06:34		07:07		15:54 (ML17)
	20:33	20:10	19:24		18:34	16:50		16:31	12	16:06 (ML17)
7	05:34	06:00	06:31	07:20 (ML15)	07:00	06:35		07:08		15:55 (ML17)
	20:33	20:08	19:23	13	07:33 (ML15)	18:33	06:35	16:31	11	16:06 (ML17)
8	05:35	06:01	06:32	07:16 (ML15)	07:01	06:36		07:09		15:56 (ML17)
	20:32	20:07	19:21	20	07:36 (ML15)	18:31		16:31	10	16:06 (ML17)
9	05:35	06:02	06:32	07:14 (ML15)	07:02	06:37		07:10		15:57 (ML17)
	20:32	20:06	19:19	23	07:37 (ML15)	18:29	18:47	16:31	9	16:06 (ML17)
10	05:36	06:03	06:33	07:12 (ML15)	07:03	06:38		07:11		15:58 (ML17)
	20:32	20:05	19:18	27	07:39 (ML15)	18:28	16:46	16:31	8	16:06 (ML17)
11	05:37	06:04	06:34	07:10 (ML15)	07:05	06:40		07:12		15:58 (ML17)
	20:31	20:03	19:16	30	07:40 (ML15)	18:26	16:45	16:31	8	16:06 (ML17)
12	05:37	06:05	06:35	07:09 (ML15)	07:06	06:41		07:13		16:00 (ML17)
	20:31	20:02	19:14	32	07:41 (ML15)	18:25	16:44	16:31	6	16:06 (ML17)
13	05:38	06:06	06:36	07:08 (ML15)	07:07	06:42		07:13		16:01 (ML17)
	20:30	20:01	19:13	33	07:41 (ML15)	18:23	16:43	16:32	5	16:06 (ML17)
14	05:39	06:07	06:37	07:07 (ML15)	07:08	06:43		07:14		16:02 (ML17)
	20:30	19:59	19:11	35	07:42 (ML15)	18:22	16:42	16:32	5	16:07 (ML17)
15	05:40	06:08	06:38	07:05 (ML15)	07:09	06:44	15:53 (ML17)	07:15		16:03 (ML17)
	20:29	19:58	19:09	36	07:41 (ML15)	18:20	16:42	6	15:59 (ML17)	16:32	3	16:06 (ML17)
16	05:40	06:09	06:39	07:04 (ML15)	07:10	06:46	15:50 (ML17)	07:16		16:05 (ML17)
	20:29	19:57	19:08	37	07:41 (ML15)	18:18	16:41	11	16:01 (ML17)	16:32	2	16:07 (ML17)
17	05:41	06:10	06:40	07:03 (ML15)	07:11	06:47	15:49 (ML17)	07:16		
	20:28	19:55	19:06	38	07:41 (ML15)	18:17	16:40	14	16:03 (ML17)	16:32		
18	05:42	06:11	06:41	07:03 (ML15)	07:12	06:48	15:49 (ML17)	07:17		
	20:27	19:54	19:04	38	07:41 (ML15)	18:15	16:39	16	16:05 (ML17)	16:33		
19	05:43	06:12	06:42	07:03 (ML15)	07:13	06:49	15:48 (ML17)	07:18		
	20:27	19:52	19:03	38	07:41 (ML15)	18:14	16:38	17	16:05 (ML17)	16:33		
20	05:44	06:13	06:43	07:03 (ML15)	07:14	06:50	15:47 (ML17)	07:18		
	20:26	19:51	19:01	37	07:40 (ML15)	18:12	16:38	19	16:06 (ML17)	16:34		
21	05:44	06:14	06:44	07:04 (ML15)	07:15	06:51	15:47 (ML17)	07:19		
	20:25	19:49	18:59	36	07:40 (ML15)	18:11	16:37	19	16:06 (ML17)	16:34		
22	05:45	06:15	06:45	07:05 (ML15)	07:16	06:53	15:48 (ML17)	07:19		
	20:24	19:48	18:58	34	07:39 (ML15)	18:10	16:36	20	16:08 (ML17)	16:35		
23	05:46	06:16	06:46	07:06 (ML15)	07:18	06:54	15:47 (ML17)	07:20		
	20:24	19:47	18:56	32	07:38 (ML15)	18:08	16:36	21	16:08 (ML17)	16:35		
24	05:47	06:17	06:47	07:07 (ML15)	07:19	06:55	15:47 (ML17)	07:20		
	20:23	19:45	18:54	30	07:37 (ML15)	18:07	16:35	21	16:08 (ML17)	16:36		
25	05:48	06:18	06:48	07:08 (ML15)	06:20	06:56	15:47 (ML17)	07:21		
	20:22	19:43	18:53	28	07:36 (ML15)	17:05	16:35	22	16:09 (ML17)	16:36		
26	05:49	06:19	06:49	07:09 (ML15)	06:21	06:57	15:47 (ML17)	07:21		
	20:21	19:42	18:51	25	07:34 (ML15)	17:04	16:34	22	16:09 (ML17)	16:37		
27	05:50	06:20	06:50	07:10 (ML15)	06:22	06:58	15:48 (ML17)	07:21		16:10 (ML17)
	20:20	19:40	18:49	23	07:33 (ML15)	17:03	16:34	21	16:09 (ML17)	16:37	1	16:11 (ML17)
28	05:51	06:21	06:51	07:11 (ML15)	06:23	06:59	15:49 (ML17)	07:22		16:09 (ML17)
	20:19	19:39	18:47	20	07:31 (ML15)	17:01	16:33	20	16:09 (ML17)	16:38	3	16:12 (ML17)
29	05:52	06:22	06:52	07:12 (ML15)	06:24	07:00	15:49 (ML17)	07:22		16:10 (ML17)
	20:18	19:37	18:46	16	07:28 (ML15)	17:00	16:33	20	16:09 (ML17)	16:39	3	16:13 (ML17)
30	05:52	06:23	06:53	07:13 (ML15)	06:26	07:01	15:50 (ML17)	07:22		16:09 (ML17)
	20:17	19:36	18:44	12	07:25 (ML15)	16:59	16:33	18	16:08 (ML17)	16:40	5	16:14 (ML17)
31	05:53	06:24			06:27			07:23		16:09 (ML17)
	20:16	19:34			16:58			16:40	6	16:15 (ML17)
Potential sun hours	458	427	375		346	299		289		
Total, worst case				693			287		174	
Sun reduction				0,67			0,51		0,44	
Oper. time red.				0,88			0,88		0,88	
Wind dir. red.				0,57			0,60		0,60	
Total reduction				0,33			0,27		0,23	
Total, real				231			77		40	

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk   14/11/2023 15:50 / 30   windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R13d - R13d
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January		February	March			April			May	June
1	07:23	15:57 (ML17)	07:10	06:34			06:44		07:25 (ML15)	05:59	05:30
	16:41	19	16:16 (ML17)	17:15	17:49		19:22	18	07:43 (ML15)	19:54	20:23
2	07:23	15:57 (ML17)	07:09	06:33			06:42		07:29 (ML15)	05:57	05:30
	16:42	19	16:16 (ML17)	17:17	17:50		19:24	11	07:40 (ML15)	19:55	20:24
3	07:23	15:57 (ML17)	07:08	06:31			06:41			05:56	05:29
	16:43	20	16:17 (ML17)	17:18	17:51		19:25			19:56	20:24
4	07:23	15:58 (ML17)	07:07	06:30			06:39			05:55	05:29
	16:44	20	16:18 (ML17)	17:19	17:52		19:26			19:57	20:25
5	07:23	15:58 (ML17)	07:06	06:28			06:37			05:54	05:29
	16:45	21	16:19 (ML17)	17:20	17:53		19:27			19:58	20:26
6	07:23	15:58 (ML17)	07:05	06:27			06:36			05:52	05:28
	16:46	22	16:20 (ML17)	17:21	17:55		19:28			19:59	20:26
7	07:23	15:59 (ML17)	07:04	06:25			06:34			05:51	05:28
	16:47	22	16:21 (ML17)	17:23	17:56		19:29			20:00	20:27
8	07:23	15:59 (ML17)	07:02	06:23			06:33			05:50	05:28
	16:48	22	16:21 (ML17)	17:24	17:57		19:30			20:01	20:28
9	07:23	15:59 (ML17)	07:01	06:22			06:31			05:49	05:28
	16:49	22	16:21 (ML17)	17:25	17:58		19:31			20:02	20:28
10	07:23	16:00 (ML17)	07:00	06:20			06:29			05:48	05:27
	16:50	22	16:22 (ML17)	17:26	17:59		19:32			20:03	20:29
11	07:22	16:00 (ML17)	06:59	06:19			06:28			05:47	05:27
	16:51	22	16:22 (ML17)	17:28	18:00		19:33			20:04	20:29
12	07:22	16:00 (ML17)	06:58	06:17	06:36 (ML15)		06:26			05:46	05:27
	16:52	22	16:22 (ML17)	17:29	18:01	12	06:48 (ML15)	19:34		20:05	20:30
13	07:22	16:01 (ML17)	06:57	06:15	06:34 (ML15)		06:25			05:45	05:27
	16:53	22	16:23 (ML17)	17:30	18:02	16	06:50 (ML15)	19:35		20:06	20:30
14	07:22	16:02 (ML17)	06:55	06:14	06:32 (ML15)		06:23			05:44	05:27
	16:54	21	16:23 (ML17)	17:31	18:03	20	06:52 (ML15)	19:36		20:07	20:31
15	07:21	16:02 (ML17)	06:54	06:12	06:31 (ML15)		06:22			05:43	05:27
	16:55	21	16:23 (ML17)	17:32	18:04	23	06:54 (ML15)	19:37		20:08	20:31
16	07:21	16:03 (ML17)	06:53	06:10	06:29 (ML15)		06:20			05:42	05:27
	16:56	20	16:23 (ML17)	17:34	18:06	25	06:54 (ML15)	19:38		20:09	20:32
17	07:20	16:03 (ML17)	06:51	06:09	06:27 (ML15)		06:19			05:41	05:27
	16:57	20	16:23 (ML17)	17:35	18:07	27	06:54 (ML15)	19:39		20:10	20:32
18	07:20	16:05 (ML17)	06:50	06:07	06:26 (ML15)		06:17			05:40	05:27
	16:58	18	16:23 (ML17)	17:36	18:08	30	06:56 (ML15)	19:40		20:11	20:32
19	07:19	16:05 (ML17)	06:49	06:05	06:24 (ML15)		06:16			05:39	05:27
	17:00	17	16:22 (ML17)	17:37	18:09	32	06:56 (ML15)	19:41		20:12	20:33
20	07:19	16:07 (ML17)	06:47	06:04	06:22 (ML15)		06:14			05:38	05:27
	17:01	16	16:23 (ML17)	17:38	18:10	33	06:55 (ML15)	19:42		20:13	20:33
21	07:18	16:08 (ML17)	06:46	06:02	06:21 (ML15)		06:13			05:37	05:27
	17:02	13	16:21 (ML17)	17:40	18:11	35	06:56 (ML15)	19:43		20:14	20:33
22	07:18	16:10 (ML17)	06:45	06:01	06:20 (ML15)		06:11			05:36	05:28
	17:03	10	16:20 (ML17)	17:41	18:12	35	06:55 (ML15)	19:44		20:15	20:33
23	07:17	16:12 (ML17)	06:43	05:59	06:20 (ML15)		06:10			05:36	05:28
	17:04	5	16:17 (ML17)	17:42	18:13	35	06:55 (ML15)	19:45		20:16	20:34
24	07:16			06:42	05:57		06:20 (ML15)	06:08		05:35	05:28
	17:06			17:43	18:14	35	06:55 (ML15)	19:47		20:16	20:34
25	07:16			06:40	05:56		06:20 (ML15)	06:07		05:34	05:28
	17:07			17:44	18:15	34	06:54 (ML15)	19:48		20:17	20:34
26	07:15			06:39	05:54		06:20 (ML15)	06:05		05:34	05:29
	17:08			17:45	18:16	33	06:53 (ML15)	19:49		20:18	20:34
27	07:14			06:37	05:52		06:21 (ML15)	06:04		05:33	05:29
	17:09			17:47	18:17	31	06:52 (ML15)	19:50		20:19	20:34
28	07:13			06:36	05:51		06:21 (ML15)	06:03		05:32	05:29
	17:10			17:48	18:18	30	06:51 (ML15)	19:51		20:20	20:34
29	07:12				06:49		07:21 (ML15)	06:01		05:32	05:30
	17:12				19:19	28	07:49 (ML15)	19:52		20:21	20:34
30	07:12				06:47		07:23 (ML15)	06:00		05:31	05:30
	17:13				19:20	25	07:48 (ML15)	19:53		20:21	20:34
31	07:11				06:46		07:24 (ML15)			05:31	
	17:14				19:21	22	07:46 (ML15)			20:22	
Potential sun hours	298			298	370			398		447	451
Total, worst case	436				561			29			
Sun reduction	0,43				0,46			0,50			
Oper. time red.	0,88				0,88			0,88			
Wind dir. red.	0,60				0,56			0,56			
Total reduction	0,23				0,23			0,25			
Total, real	100				128			7			

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R13d - R13d
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July	August	September		October			November			December		
1	05:31	05:54	06:25		06:54		07:14 (ML15)	06:28			07:02		15:42 (ML17)
	20:34	20:15	19:33		18:42	14	07:28 (ML15)	16:56			16:32	22	16:04 (ML17)
2	05:31	05:55	06:26		06:55		07:15 (ML15)	06:29			07:03		15:43 (ML17)
	20:34	20:14	19:31		18:41	8	07:23 (ML15)	16:55			16:32	22	16:05 (ML17)
3	05:32	05:56	06:27		06:56			06:30			07:04		15:43 (ML17)
	20:34	20:13	19:29		18:39			16:54			16:32	22	16:05 (ML17)
4	05:32	05:57	06:28		06:57			06:31			07:05		15:43 (ML17)
	20:33	20:12	19:28		18:38			16:53			16:32	22	16:05 (ML17)
5	05:33	05:58	06:29		06:58			06:33			07:06		15:44 (ML17)
	20:33	20:11	19:26		18:36			16:52			16:31	22	16:06 (ML17)
6	05:33	05:59	06:30		06:59			06:34			07:07		15:44 (ML17)
	20:33	20:10	19:24		18:34			16:50			16:31	22	16:06 (ML17)
7	05:34	06:00	06:31		07:00			06:35			07:08		15:45 (ML17)
	20:33	20:08	19:23		18:33			16:49			16:31	21	16:06 (ML17)
8	05:35	06:01	06:32		07:01			06:36			07:09		15:46 (ML17)
	20:32	20:07	19:21		18:31			16:48			16:31	20	16:06 (ML17)
9	05:35	06:02	06:32		07:02			06:37			07:10		15:46 (ML17)
	20:32	20:06	19:19		18:29			16:47			16:31	20	16:06 (ML17)
10	05:36	06:03	06:33		07:23 (ML15)	07:03		06:38			07:11		15:47 (ML17)
	20:32	20:05	19:18	9	07:32 (ML15)	18:28		16:46			16:31	19	16:06 (ML17)
11	05:37	06:04	06:34		07:19 (ML15)	07:05		06:40			07:12		15:47 (ML17)
	20:31	20:03	19:16	17	07:36 (ML15)	18:26		16:45			16:31	19	16:06 (ML17)
12	05:37	06:05	06:35		07:16 (ML15)	07:06		06:41			07:13		15:48 (ML17)
	20:31	20:02	19:14	22	07:38 (ML15)	18:25		16:44			16:31	18	16:06 (ML17)
13	05:38	06:06	06:36		07:14 (ML15)	07:07		06:42			07:13		15:48 (ML17)
	20:30	20:01	19:13	25	07:39 (ML15)	18:23		16:43			16:32	18	16:09 (ML17)
14	05:39	06:07	06:37		07:12 (ML15)	07:08		06:42			07:14		15:49 (ML17)
	20:30	19:59	19:11	28	07:40 (ML15)	18:22		16:42			16:32	18	16:07 (ML17)
15	05:40	06:08	06:38		07:10 (ML15)	07:09		06:44			07:15		15:49 (ML17)
	20:29	19:58	19:09	30	07:40 (ML15)	18:20		16:42			16:32	17	16:06 (ML17)
16	05:40	06:09	06:39		07:09 (ML15)	07:10		06:46			07:16		15:50 (ML17)
	20:29	19:57	19:08	31	07:40 (ML15)	18:18		16:41			16:32	17	16:07 (ML17)
17	05:41	06:10	06:40		07:08 (ML15)	07:11		06:47			07:16		15:51 (ML17)
	20:28	19:55	19:06	33	07:41 (ML15)	18:17		16:40			16:32	16	16:07 (ML17)
18	05:42	06:11	06:41		07:07 (ML15)	07:12		06:48			07:17		15:51 (ML17)
	20:27	19:54	19:04	34	07:41 (ML15)	18:15		16:39			16:33	16	16:07 (ML17)
19	05:43	06:12	06:42		07:06 (ML15)	07:13		06:49		15:47 (ML17)	07:18		15:52 (ML17)
	20:27	19:52	19:03	35	07:41 (ML15)	18:14		16:38	6	15:53 (ML17)	16:33	16	16:08 (ML17)
20	05:44	06:13	06:43		07:06 (ML15)	07:14		16:38	10	15:45 (ML17)	07:18		15:52 (ML17)
	20:26	19:51	19:01	35	07:41 (ML15)	18:12		06:50		15:55 (ML17)	16:34	16	16:08 (ML17)
21	05:44	06:14	06:44		07:06 (ML15)	07:15		06:51		15:43 (ML17)	07:19		15:53 (ML17)
	20:25	19:49	18:59	35	07:41 (ML15)	18:11		16:37	13	15:56 (ML17)	16:34	15	16:08 (ML17)
22	05:45	06:15	06:45		07:05 (ML15)	07:16		06:53		15:43 (ML17)	07:19		15:53 (ML17)
	20:24	19:48	18:58	35	07:40 (ML15)	18:10		16:36	16	15:59 (ML17)	16:35	15	16:08 (ML17)
23	05:46	06:16	06:46		07:06 (ML15)	07:18		06:54		15:42 (ML17)	07:20		15:54 (ML17)
	20:24	19:47	18:56	34	07:40 (ML15)	18:08		16:36	17	15:59 (ML17)	16:35	15	16:09 (ML17)
24	05:47	06:17	06:47		07:07 (ML15)	07:19		06:55		15:42 (ML17)	07:20		15:54 (ML17)
	20:23	19:45	18:54	32	07:39 (ML15)	18:07		16:35	18	16:00 (ML17)	16:36	16	16:10 (ML17)
25	05:48	06:18	06:48		07:08 (ML15)	06:20		06:56		15:41 (ML17)	07:21		15:55 (ML17)
	20:22	19:44	18:53	30	07:38 (ML15)	17:05		16:35	20	16:01 (ML17)	16:36	16	16:11 (ML17)
26	05:49	06:19	06:49		07:09 (ML15)	06:21		06:57		15:41 (ML17)	07:21		15:55 (ML17)
	20:21	19:42	18:51	28	07:37 (ML15)	17:04		16:34	20	16:01 (ML17)	16:37	16	16:11 (ML17)
27	05:50	06:20	06:50		07:10 (ML15)	06:22		06:58		15:41 (ML17)	07:21		15:55 (ML17)
	20:20	19:40	18:49	26	07:36 (ML15)	17:03		16:34	21	16:02 (ML17)	16:37	16	16:11 (ML17)
28	05:51	06:21	06:51		07:11 (ML15)	06:23		06:59		15:42 (ML17)	07:22		15:55 (ML17)
	20:19	19:39	18:47	24	07:35 (ML15)	17:01		16:33	21	16:03 (ML17)	16:38	17	16:12 (ML17)
29	05:52	06:22	06:52		07:12 (ML15)	06:24		07:00		15:42 (ML17)	07:22		15:56 (ML17)
	20:18	19:37	18:46	21	07:33 (ML15)	17:00		16:33	22	16:04 (ML17)	16:39	17	16:13 (ML17)
30	05:52	06:23	06:53		07:13 (ML15)	06:26		07:01		15:42 (ML17)	07:22		15:56 (ML17)
	20:17	19:36	18:44	18	07:31 (ML15)	16:59		16:33	22	16:04 (ML17)	16:40	18	16:14 (ML17)
31	05:53	06:24				06:27					07:23		15:57 (ML17)
	20:16	19:34				16:58					16:40	18	16:15 (ML17)
Potential sun hours	458	427	375		346			299			289		
Total, worst case			582			22			206			562	
Sun reduction			0,67			0,56			0,51			0,44	
Oper. time red.			0,88			0,88			0,88			0,88	
Wind dir. red.			0,56			0,56			0,60			0,60	
Total reduction			0,33			0,28			0,27			0,23	
Total, real			194			6			56			131	

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk   14/11/2023 15:50 / 32   windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R13e - R13e

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February	March		April	May	June	July	August	September		October			November	December
1	07:23 / 16:41	07:10 / 17:15	06:34 / 17:49		06:44 / 19:22	05:59 / 19:54	05:30 / 20:23	05:31 / 20:34	05:54 / 20:15	06:25 / 19:33		06:54 / 18:42	25	07:14 (ML15) / 07:39 (ML15)	06:28 / 16:56	07:02 / 16:32
2	07:23 / 16:42	07:09 / 17:17	06:33 / 17:50		06:42 / 19:24	05:57 / 19:55	05:30 / 20:24	05:31 / 20:34	05:55 / 20:14	06:26 / 19:31		06:55 / 18:41	22	07:15 (ML15) / 07:37 (ML15)	06:29 / 16:55	07:03 / 16:32
3	07:23 / 16:43	07:08 / 17:18	06:31 / 17:51		06:41 / 19:25	05:56 / 19:56	05:29 / 20:24	05:32 / 20:34	05:56 / 20:13	06:27 / 19:29		06:56 / 18:39	19	07:16 (ML15) / 07:35 (ML15)	06:30 / 16:54	07:04 / 16:32
4	07:23 / 16:44	07:07 / 17:19	06:30 / 17:52		06:39 / 19:26	05:55 / 19:57	05:29 / 20:25	05:32 / 20:33	05:57 / 20:12	06:29 / 19:28		06:57 / 18:38	16	07:17 (ML15) / 07:33 (ML15)	06:31 / 16:53	07:05 / 16:32
5	07:23 / 16:45	07:06 / 17:20	06:28 / 17:53		06:37 / 19:27	05:54 / 19:58	05:29 / 20:26	05:33 / 20:33	05:58 / 20:11	06:29 / 19:26		06:58 / 18:36	11	07:18 (ML15) / 07:29 (ML15)	06:33 / 16:52	07:06 / 16:31
6	07:23 / 16:46	07:05 / 17:21	06:27 / 17:55		06:36 / 19:28	05:52 / 19:59	05:28 / 20:26	05:33 / 20:33	05:59 / 20:10	06:30 / 19:24		06:59 / 18:34			06:34 / 16:50	07:07 / 16:31
7	07:23 / 16:47	07:04 / 17:23	06:25 / 17:56		06:34 / 19:29	05:51 / 20:00	05:28 / 20:27	05:34 / 20:33	06:00 / 20:08	06:31 / 19:23		07:00 / 18:33			06:35 / 16:49	07:08 / 16:31
8	07:23 / 16:48	07:02 / 17:24	06:23 / 17:57	7	06:43 (ML15) / 06:50 (ML15) / 19:30	05:50 / 20:01	05:28 / 20:28	05:35 / 20:32	06:01 / 20:07	06:32 / 19:21		07:01 / 18:31			06:36 / 16:48	07:09 / 16:31
9	07:23 / 16:49	07:01 / 17:25	06:22 / 17:58	14	06:40 (ML15) / 06:54 (ML15) / 19:31	05:49 / 20:02	05:28 / 20:28	05:35 / 20:32	06:02 / 20:05	06:32 / 19:19		07:02 / 18:29			06:37 / 16:47	07:10 / 16:31
10	07:23 / 16:50	07:00 / 17:26	06:20 / 17:59	18	06:39 (ML15) / 06:57 (ML15) / 19:32	05:48 / 20:03	05:27 / 20:29	05:36 / 20:32	06:03 / 20:05	06:33 / 19:18		07:03 / 18:28			06:38 / 16:46	07:11 / 16:31
11	07:22 / 16:51	06:59 / 17:28	06:19 / 18:00	21	06:37 (ML15) / 06:58 (ML15) / 19:33	05:47 / 20:04	05:27 / 20:29	05:37 / 20:31	06:04 / 20:03	06:34 / 19:16		07:05 / 18:26			06:40 / 16:45	07:12 / 16:31
12	07:22 / 16:52	06:58 / 17:29	06:17 / 18:01	24	06:36 (ML15) / 07:00 (ML15) / 19:34	05:46 / 20:05	05:27 / 20:30	05:37 / 20:31	06:05 / 20:02	06:35 / 19:14		07:06 / 18:25			06:41 / 16:44	07:13 / 16:31
13	07:22 / 16:53	06:57 / 17:30	06:15 / 18:02	26	06:34 (ML15) / 07:00 (ML15) / 19:35	05:45 / 20:06	05:27 / 20:30	05:38 / 20:30	06:06 / 20:01	06:36 / 19:13		07:07 / 18:23			06:42 / 16:43	07:13 / 16:32
14	07:22 / 16:54	06:55 / 17:31	06:14 / 18:03	29	06:32 (ML15) / 07:00 (ML15) / 19:36	05:44 / 20:07	05:27 / 20:31	05:39 / 20:30	06:07 / 19:59	06:37 / 19:11	9	07:27 (ML15) / 07:36 (ML15) / 18:22			06:43 / 16:42	07:14 / 16:32
15	07:21 / 16:55	06:54 / 17:32	06:12 / 18:04	30	06:31 (ML15) / 07:01 (ML15) / 19:37	05:43 / 20:07	05:27 / 20:31	05:40 / 20:29	06:08 / 19:58	06:38 / 19:10	16	07:22 (ML15) / 07:38 (ML15) / 18:20			06:44 / 16:42	07:15 / 16:32
16	07:21 / 16:56	06:53 / 17:34	06:10 / 18:05	32	06:29 (ML15) / 07:01 (ML15) / 19:38	05:42 / 20:08	05:27 / 20:32	05:40 / 20:29	06:09 / 19:57	06:39 / 19:08	21	07:40 (ML15) / 18:18			06:46 / 16:41	07:16 / 16:32
17	07:20 / 16:57	06:51 / 17:35	06:09 / 18:07	34	06:27 (ML15) / 07:01 (ML15) / 19:39	05:41 / 20:10	05:27 / 20:32	05:41 / 20:28	06:10 / 19:55	06:41 / 19:06	25	07:42 (ML15) / 18:17			06:47 / 16:40	07:17 / 16:32
18	07:20 / 16:58	06:50 / 17:36	06:07 / 18:08	34	06:27 (ML15) / 07:01 (ML15) / 19:40	05:40 / 20:11	05:27 / 20:33	05:42 / 20:27	06:11 / 19:54	06:42 / 19:04	27	07:45 (ML15) / 18:15			06:48 / 16:39	07:18 / 16:33
19	07:19 / 17:00	06:49 / 17:37	06:05 / 18:09	34	06:27 (ML15) / 07:02 (ML15) / 19:41	05:39 / 20:12	05:27 / 20:33	05:43 / 20:27	06:12 / 19:52	06:42 / 19:03	29	07:14 (ML15) / 18:14			06:49 / 16:38	07:18 / 16:33
20	07:19 / 17:01	06:47 / 17:38	06:04 / 18:10	34	06:26 (ML15) / 07:00 (ML15) / 19:42	05:38 / 20:13	05:27 / 20:33	05:44 / 20:26	06:13 / 19:51	06:43 / 19:01	31	07:13 (ML15) / 18:13			06:50 / 16:38	07:18 / 16:34
21	07:18 / 17:02	06:46 / 17:40	06:02 / 18:11	33	06:27 (ML15) / 06:13	05:37 / 20:14	05:27 / 20:33	05:44 / 20:25	06:14 / 18:59	06:44 / 19:00	32	07:12 (ML15) / 18:11			06:51 / 16:37	07:19 / 16:34
22	07:18 / 17:03	06:45 / 17:41	06:01 / 18:12	32	06:27 (ML15) / 06:59 (ML15) / 19:44	05:36 / 20:15	05:28 / 20:33	05:45 / 20:24	06:15 / 18:58	06:45 / 18:58	33	07:11 (ML15) / 18:10			06:53 / 16:36	07:19 / 16:35
23	07:17 / 17:04	06:43 / 17:42	05:59 / 18:13	31	06:27 (ML15) / 06:58 (ML15) / 19:45	05:36 / 20:16	05:28 / 20:34	05:46 / 20:24	06:16 / 18:56	06:45 / 18:56	35	07:11 (ML15) / 18:08			06:54 / 16:36	07:20 / 16:35
24	07:16 / 17:06	06:42 / 17:43	05:57 / 18:14	29	06:20 (ML15) / 06:57 (ML15) / 06:08	05:35 / 20:16	05:28 / 20:34	05:47 / 20:23	06:17 / 18:54	06:47 / 18:54	34	07:44 (ML15) / 18:07			06:55 / 16:35	07:20 / 16:36
25	07:16 / 17:07	06:40 / 17:44	05:56 / 18:15	38	06:22 (ML15) / 06:56 (ML15) / 06:07	05:34 / 20:17	05:28 / 20:34	05:48 / 20:22	06:18 / 18:53	06:48 / 18:53	34	07:10 (ML15) / 18:06			06:56 / 16:35	07:21 / 16:36
26	07:15 / 17:08	06:39 / 17:45	05:54 / 18:16	25	06:29 (ML15) / 06:54 (ML15) / 06:05	05:34 / 20:18	05:29 / 20:34	05:49 / 20:21	06:19 / 18:51	06:49 / 18:51	33	07:10 (ML15) / 17:04			06:57 / 16:34	07:21 / 16:37
27	07:14 / 17:09	06:37 / 17:47	05:52 / 18:17	21	06:31 (ML15) / 06:52 (ML15) / 19:50	05:33 / 20:19	05:29 / 20:34	05:50 / 20:20	06:20 / 18:49	06:50 / 18:49	33	07:10 (ML15) / 18:22			06:58 / 16:34	07:21 / 16:37
28	07:13 / 17:10	06:36 / 17:48	05:51 / 18:18	17	06:32 (ML15) / 06:49 (ML15) / 06:03	05:32 / 20:20	05:29 / 20:34	05:51 / 20:19	06:21 / 18:47	06:51 / 18:47	31	07:11 (ML15) / 18:33			06:59 / 16:33	07:22 / 16:38
29	07:12 / 17:12		06:49 / 19:19	10	07:35 (ML15) / 06:01	05:32 / 20:21	05:30 / 20:34	05:52 / 20:18	06:22 / 18:46	06:52 / 18:46	29	07:12 (ML15) / 18:24			07:00 / 16:33	07:22 / 16:39
30	07:12 / 17:13		06:47 / 19:20		07:45 (ML15) / 06:00	05:31 / 20:21	05:30 / 20:34	05:52 / 20:17	06:23 / 18:44	06:53 / 18:44	27	07:13 (ML15) / 18:28			07:01 / 16:33	07:22 / 16:39
31	07:11 / 17:14		06:46 / 19:21			05:31 / 20:22		05:53 / 20:16	06:24 / 19:34			07:40 (ML15) / 16:58				07:23 / 16:40

Potential sun hours	298	248	370		398	447	451	458	427	375		346			299	259
Total, worst case			562							477			93			
Sun reduction			0,46							0,67			0,56			
Oper. time red.			0,88							0,68			0,68			
Wind dir. red.			0,56							0,56			0,56			
Total reduction			0,23							0,33			0,28			
Total, real			127							158			26			

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk   14/11/2023 15:50 / 33   windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor: R14 - R14**
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January			February			March	April	May	June
1	07:23	12:30 (ML23)	07:10	12:44 (ML23)	06:34		06:44	05:59	05:30	
	16:41	70	13:40 (ML23)	17:15	66	13:50 (ML23)	17:49	19:22	19:54	20:23
2	07:23	12:30 (ML23)	07:09	12:45 (ML23)	06:33		06:42	05:57	05:30	
	16:42	70	13:40 (ML23)	17:16	65	13:50 (ML23)	17:50	19:23	19:55	20:24
3	07:23	12:31 (ML23)	07:08	12:46 (ML23)	06:31		06:41	05:56	05:29	
	16:43	70	13:41 (ML23)	17:18	64	13:50 (ML23)	17:51	19:24	19:56	20:24
4	07:23	12:31 (ML23)	07:07	12:46 (ML23)	06:30		06:39	05:55	05:29	
	16:44	70	13:41 (ML23)	17:19	62	13:48 (ML23)	17:52	19:26	19:57	20:25
5	07:23	12:31 (ML23)	07:06	12:47 (ML23)	06:28		06:37	05:54	05:29	
	16:45	71	13:42 (ML23)	17:20	60	13:47 (ML23)	17:53	19:27	19:58	20:26
6	07:23	12:32 (ML23)	07:05	12:49 (ML23)	06:26		06:36	05:52	05:28	
	16:46	71	13:43 (ML23)	17:21	58	13:47 (ML23)	17:55	19:28	19:59	20:26
7	07:23	12:32 (ML23)	07:04	12:51 (ML23)	06:25		06:34	05:51	05:28	
	16:47	71	13:43 (ML23)	17:23	55	13:46 (ML23)	17:56	19:29	20:00	20:27
8	07:23	12:33 (ML23)	07:02	12:53 (ML23)	06:23		06:33	05:50	05:28	
	16:48	71	13:44 (ML23)	17:24	52	13:45 (ML23)	17:57	19:30	20:01	20:28
9	07:23	12:32 (ML23)	07:01	12:55 (ML23)	06:22		06:31	05:49	05:27	
	16:49	72	13:44 (ML23)	17:25	49	13:44 (ML23)	17:58	19:31	20:02	20:28
10	07:22	12:33 (ML23)	07:00	12:58 (ML23)	06:20		06:29	05:48	05:27	
	16:50	72	13:45 (ML23)	17:26	44	13:42 (ML23)	17:59	19:32	20:03	20:29
11	07:22	12:33 (ML23)	06:59	13:00 (ML23)	06:18		06:28	05:47	05:27	
	16:51	73	13:46 (ML23)	17:28	40	13:40 (ML23)	18:00	19:33	20:04	20:29
12	07:22	12:33 (ML23)	06:58	13:04 (ML23)	06:17		06:26	05:46	05:27	
	16:52	73	13:46 (ML23)	17:29	34	13:38 (ML23)	18:01	19:34	20:05	20:30
13	07:22	12:34 (ML23)	06:56	13:08 (ML23)	06:15		06:25	05:45	05:27	
	16:53	72	13:46 (ML23)	17:30	26	13:34 (ML23)	18:02	19:35	20:06	20:30
14	07:21	12:34 (ML23)	06:55	13:15 (ML23)	06:14		06:23	05:44	05:27	
	16:54	73	13:47 (ML23)	17:31	14	13:29 (ML23)	18:03	19:36	20:07	20:31
15	07:21	12:34 (ML23)	06:54		06:12		06:22	05:43	05:27	
	16:55	73	13:47 (ML23)	17:32			18:04	19:37	20:08	20:31
16	07:21	12:35 (ML23)	06:53		06:10		06:20	05:42	05:27	
	16:56	73	13:48 (ML23)	17:34			18:05	19:38	20:09	20:32
17	07:20	12:35 (ML23)	06:51		06:09		06:18	05:41	05:27	
	16:57	73	13:48 (ML23)	17:35			18:07	19:39	20:10	20:32
18	07:20	12:36 (ML23)	06:50		06:07		06:17	05:40	05:27	
	16:58	73	13:49 (ML23)	17:36			18:08	19:40	20:11	20:32
19	07:19	12:36 (ML23)	06:49		06:05		06:15	05:39	05:27	
	17:00	73	13:49 (ML23)	17:37			18:09	19:41	20:12	20:33
20	07:19	12:36 (ML23)	06:47		06:04		06:14	05:38	05:27	
	17:01	73	13:49 (ML23)	17:38			18:10	19:42	20:13	20:33
21	07:18	12:37 (ML23)	06:46		06:02		06:12	05:37	05:27	
	17:02	73	13:50 (ML23)	17:40			18:11	19:43	20:14	20:33
22	07:18	12:37 (ML23)	06:44		06:00		06:11	05:36	05:28	
	17:03	73	13:50 (ML23)	17:41			18:12	19:44	20:15	20:33
23	07:17	12:37 (ML23)	06:43		05:59		06:10	05:36	05:28	
	17:04	73	13:50 (ML23)	17:42			18:13	19:45	20:15	20:33
24	07:16	12:38 (ML23)	06:42		05:57		06:08	05:35	05:28	
	17:05	73	13:51 (ML23)	17:43			18:14	19:46	20:16	20:34
25	07:15	12:38 (ML23)	06:40		05:55		06:07	05:34	05:28	
	17:07	73	13:51 (ML23)	17:44			18:15	19:48	20:17	20:34
26	07:15	12:39 (ML23)	06:39		05:54		06:05	05:34	05:29	
	17:08	72	13:51 (ML23)	17:45			18:16	19:49	20:18	20:34
27	07:14	12:39 (ML23)	06:37		05:52		06:04	05:33	05:29	
	17:09	71	13:50 (ML23)	17:47			18:17	19:50	20:19	20:34
28	07:13	12:40 (ML23)	06:36		05:51		06:03	05:32	05:29	
	17:10	70	13:50 (ML23)	17:48			18:18	19:51	20:20	20:34
29	07:12	12:40 (ML23)			06:49		06:01	05:32	05:30	
	17:12	70	13:50 (ML23)				19:19	19:52	20:21	20:34
30	07:11	12:42 (ML23)			06:47		06:00	05:31	05:30	
	17:13	69	13:51 (ML23)				19:20	19:53	20:21	20:34
31	07:11	12:43 (ML23)			06:46			05:31		
	17:14	68	13:51 (ML23)				19:21		20:22	
Potential sun hours	298		298		370	398	447	451		
Total, worst case	2222		689							
Sun reduction	0,43		0,45							
Oper. time red.	0,88		0,86							
Wind dir. red.	0,69		0,69							
Total reduction	0,26		0,27							
Total, real	578		187							

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk   14/11/2023 15:50 / 34   windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R14 - R14
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October		November		December	
1	05:31 20:34	05:54 20:15	06:25 19:32	06:54 18:42		06:28 16:56	46	12:26 (ML23) 13:12 (ML23)	07:02 16:32	73	12:15 (ML23) 13:28 (ML23)
2	05:31 20:34	05:55 20:14	06:26 19:31	06:55 18:41		06:29 16:55	49	12:24 (ML23) 13:13 (ML23)	07:03 16:32	72	12:16 (ML23) 13:28 (ML23)
3	05:32 20:34	05:56 20:13	06:27 19:29	06:56 18:39		06:30 16:54	53	12:22 (ML23) 13:15 (ML23)	07:04 16:32	72	12:16 (ML23) 13:28 (ML23)
4	05:32 20:33	05:57 20:12	06:28 19:28	06:57 18:37		06:31 16:53	56	12:20 (ML23) 13:16 (ML23)	07:05 16:32	71	12:17 (ML23) 13:28 (ML23)
5	05:33 20:33	05:58 20:11	06:29 19:26	06:58 18:36		06:33 16:52	58	12:19 (ML23) 13:17 (ML23)	07:06 16:31	72	12:17 (ML23) 13:29 (ML23)
6	05:33 20:33	05:59 20:09	06:30 19:24	06:59 18:34		06:34 16:50	60	12:18 (ML23) 13:18 (ML23)	07:07 16:31	71	12:18 (ML23) 13:29 (ML23)
7	05:34 20:33	06:00 20:08	06:30 19:23	07:00 18:33		06:35 16:49	62	12:17 (ML23) 13:19 (ML23)	07:08 16:31	70	12:19 (ML23) 13:29 (ML23)
8	05:35 20:32	06:01 20:07	06:31 19:21	07:01 18:31		06:36 16:48	64	12:16 (ML23) 13:20 (ML23)	07:09 16:31	70	12:19 (ML23) 13:29 (ML23)
9	05:35 20:32	06:02 20:06	06:32 19:19	07:02 18:29		06:37 16:47	66	12:14 (ML23) 13:20 (ML23)	07:10 16:31	70	12:20 (ML23) 13:30 (ML23)
10	05:36 20:32	06:03 20:05	06:33 19:18	07:03 18:28		06:38 16:46	67	12:14 (ML23) 13:21 (ML23)	07:11 16:31	69	12:20 (ML23) 13:29 (ML23)
11	05:37 20:31	06:04 20:03	06:34 19:16	07:04 18:26		06:40 16:45	68	12:14 (ML23) 13:22 (ML23)	07:12 16:31	70	12:20 (ML23) 13:30 (ML23)
12	05:37 20:31	06:05 20:02	06:35 19:14	07:06 18:25		06:41 16:44	69	12:13 (ML23) 13:22 (ML23)	07:13 16:31	69	12:21 (ML23) 13:30 (ML23)
13	05:38 20:30	06:06 20:01	06:36 19:13	07:07 18:23		06:42 16:43	70	12:12 (ML23) 13:22 (ML23)	07:13 16:31	69	12:22 (ML23) 13:31 (ML23)
14	05:39 20:30	06:07 19:59	06:37 19:11	07:08 18:21		06:43 16:42	70	12:13 (ML23) 13:23 (ML23)	07:14 16:32	68	12:23 (ML23) 13:31 (ML23)
15	05:40 20:29	06:08 19:58	06:38 19:09	07:09 18:20		06:44 16:42	71	12:12 (ML23) 13:23 (ML23)	07:15 16:32	69	12:22 (ML23) 13:31 (ML23)
16	05:40 20:29	06:09 19:57	06:39 19:08	07:10 18:18		06:45 16:41	72	12:12 (ML23) 13:24 (ML23)	07:16 16:32	69	12:23 (ML23) 13:32 (ML23)
17	05:41 20:28	06:10 19:55	06:40 19:06	07:11 18:17		06:47 16:40	73	12:11 (ML23) 13:24 (ML23)	07:16 16:32	68	12:24 (ML23) 13:32 (ML23)
18	05:42 20:27	06:11 19:54	06:41 19:04	07:12 18:15		06:48 16:39	73	12:12 (ML23) 13:25 (ML23)	07:17 16:33	68	12:24 (ML23) 13:32 (ML23)
19	05:43 20:27	06:12 19:52	06:42 19:03	07:13 18:14		06:49 16:38	73	12:12 (ML23) 13:25 (ML23)	07:18 16:33	68	12:25 (ML23) 13:33 (ML23)
20	05:44 20:26	06:13 19:51	06:43 19:01	07:14 18:12		06:50 16:38	73	12:12 (ML23) 13:25 (ML23)	07:18 16:34	68	12:25 (ML23) 13:33 (ML23)
21	05:45 20:25	06:14 19:49	06:44 18:59	07:15 18:11		06:51 16:37	73	12:12 (ML23) 13:25 (ML23)	07:19 16:34	68	12:26 (ML23) 13:34 (ML23)
22	05:45 20:24	06:15 19:48	06:45 18:57	07:16 18:10		06:52 16:36	73	12:12 (ML23) 13:25 (ML23)	07:19 16:34	68	12:26 (ML23) 13:34 (ML23)
23	05:46 20:24	06:16 19:46	06:46 18:56	07:18 18:08		06:54 16:36	73	12:13 (ML23) 13:26 (ML23)	07:20 16:35	68	12:27 (ML23) 13:35 (ML23)
24	05:47 20:23	06:17 19:45	06:47 18:54	07:19 18:07		06:55 16:35	73	12:13 (ML23) 13:26 (ML23)	07:20 16:36	68	12:27 (ML23) 13:35 (ML23)
25	05:48 20:22	06:18 19:43	06:48 18:52	06:20 17:05		06:56 16:35	73	12:13 (ML23) 13:26 (ML23)	07:21 16:36	68	12:28 (ML23) 13:36 (ML23)
26	05:49 20:21	06:19 19:42	06:49 18:51	06:21 17:04		06:57 16:34	73	12:13 (ML23) 13:26 (ML23)	07:21 16:37	68	12:28 (ML23) 13:36 (ML23)
27	05:50 20:20	06:20 19:40	06:50 18:49	06:22 17:03		06:58 16:34	73	12:13 (ML23) 13:26 (ML23)	07:21 16:37	69	12:28 (ML23) 13:37 (ML23)
28	05:51 20:19	06:21 19:39	06:51 18:47	06:23 17:01	12:42 (ML23) 12:59 (ML23)	06:59 16:33	73	12:13 (ML23) 13:26 (ML23)	07:22 16:38	69	12:28 (ML23) 13:37 (ML23)
29	05:51 20:18	06:22 19:37	06:52 18:46	06:24 17:00	12:37 (ML23) 13:05 (ML23)	07:00 16:33	73	12:15 (ML23) 13:28 (ML23)	07:22 16:39	68	12:30 (ML23) 13:38 (ML23)
30	05:52 20:17	06:23 19:36	06:53 18:44	06:26 16:59	12:33 (ML23) 13:08 (ML23)	07:01 16:33	73	12:15 (ML23) 13:28 (ML23)	07:22 16:40	69	12:30 (ML23) 13:39 (ML23)
31	05:53 20:16	06:24 19:34		06:27 16:57	12:29 (ML23) 13:10 (ML23)			07:22 16:40	69	12:30 (ML23) 13:39 (ML23)
Potential sun hours	458	427	375	346		299		289	
Total, worst case				121		2023		2148	
Sun reduction				0,56		0,51		0,44	
Oper. time red.				0,88		0,88		0,88	
Wind dir. red.				0,69		0,69		0,69	
Total reduction				0,34		0,31		0,26	
Total, real				41		619		566	

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

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

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk

14/11/2023 15:50 / 35

windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R15 - R15
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January			February			March	April		May			June		
1	07:23		08:03 (ML28)	07:10		08:18 (ML28)	06:34	06:44		05:59			05:30		05:51 (ML24)
	16:41	55	08:58 (ML28)	17:15	46	09:04 (ML28)	17:49	19:22		19:54			20:23	76	19:20 (ML23)
2	07:23		08:04 (ML28)	07:09		08:19 (ML28)	06:33	06:42		05:57			05:30		05:51 (ML24)
	16:42	55	08:59 (ML28)	17:16	44	09:03 (ML28)	17:50	19:23		19:55			20:24	77	19:21 (ML23)
3	07:23		08:04 (ML28)	07:08		08:19 (ML28)	06:31	06:41		05:56			05:29		05:51 (ML24)
	16:43	55	08:59 (ML28)	17:18	42	09:01 (ML28)	17:51	19:24		19:56			20:24	79	19:22 (ML23)
4	07:23		08:04 (ML28)	07:07		08:20 (ML28)	06:30	06:39		05:55			05:29		05:50 (ML24)
	16:44	56	09:00 (ML28)	17:19	40	09:00 (ML28)	17:52	19:26		19:57			20:25	81	19:22 (ML23)
5	07:23		08:05 (ML28)	07:06		08:22 (ML28)	06:28	06:37		05:54			05:29		05:50 (ML24)
	16:45	55	09:00 (ML28)	17:20	37	08:59 (ML28)	17:53	19:27		19:58			20:26	81	19:22 (ML23)
6	07:23		08:05 (ML28)	07:05		08:23 (ML28)	06:26	06:36		05:52			05:28		05:50 (ML24)
	16:46	56	09:01 (ML28)	17:21	34	08:57 (ML28)	17:54	19:28		19:59			20:26	83	19:23 (ML23)
7	07:23		08:06 (ML28)	07:03		08:25 (ML28)	06:25	06:34		05:51			05:28		05:50 (ML24)
	16:47	56	09:02 (ML28)	17:23	31	08:56 (ML28)	17:56	19:29		20:00			20:27	84	19:24 (ML23)
8	07:23		08:05 (ML28)	07:02		08:28 (ML28)	06:23	06:33		05:50			05:28		05:50 (ML24)
	16:48	56	09:01 (ML28)	17:24	26	08:54 (ML28)	17:57	19:30		20:01			20:28	84	19:24 (ML23)
9	07:23		08:06 (ML28)	07:01		08:31 (ML28)	06:22	06:31	06:49 (ML26)	05:49			05:27		05:50 (ML24)
	16:49	56	09:02 (ML28)	17:25	20	08:51 (ML28)	17:58	19:31	4	06:53 (ML26)	20:02			20:28	85	19:24 (ML23)
10	07:22		08:06 (ML28)	07:00		08:35 (ML28)	06:20	06:29	06:48 (ML26)	05:48		06:07 (ML24)	05:27		05:50 (ML24)
	16:50	57	09:03 (ML28)	17:26	12	08:47 (ML28)	17:59	19:32	8	06:56 (ML26)	20:03	9	06:16 (ML24)	20:29	85	19:25 (ML23)
11	07:22		08:07 (ML28)	06:59			06:18	06:28	06:46 (ML26)	05:47		06:06 (ML24)	05:27		05:51 (ML24)
	16:51	57	09:04 (ML28)	17:28			18:00	19:33	11	06:57 (ML26)	20:04	13	06:19 (ML24)	20:29	84	19:25 (ML23)
12	07:22		08:06 (ML28)	06:58			06:17	06:26	06:45 (ML26)	05:46		06:05 (ML24)	05:27		05:51 (ML24)
	16:52	57	09:03 (ML28)	17:29			18:01	19:34	13	06:58 (ML26)	20:05	17	06:22 (ML24)	20:30	86	19:26 (ML23)
13	07:22		08:07 (ML28)	06:56			06:15	06:25	06:43 (ML26)	05:45		06:04 (ML24)	05:27		05:51 (ML24)
	16:53	57	09:04 (ML28)	17:30			18:02	19:35	15	06:58 (ML26)	20:06	19	06:23 (ML24)	20:30	86	19:26 (ML23)
14	07:21		08:08 (ML28)	06:55			06:14	06:23	06:42 (ML26)	05:44		06:23 (ML24)	05:27		05:51 (ML24)
	16:54	57	09:05 (ML28)	17:31			18:03	19:36	17	06:59 (ML26)	20:07	22	06:26 (ML24)	20:31	86	19:26 (ML23)
15	07:21		08:08 (ML28)	06:54			06:12	06:21	06:40 (ML26)	05:43		06:03 (ML24)	05:27		05:52 (ML24)
	16:55	57	09:05 (ML28)	17:32			18:04	19:37	19	06:59 (ML26)	20:08	24	06:27 (ML24)	20:31	86	19:27 (ML23)
16	07:21		08:08 (ML28)	06:53			06:10	06:20	06:38 (ML26)	05:42		06:02 (ML24)	05:27		05:52 (ML24)
	16:56	58	09:06 (ML28)	17:34			18:05	19:38	21	06:59 (ML26)	20:09	26	06:28 (ML24)	20:31	86	19:27 (ML23)
17	07:20		08:08 (ML28)	06:51			06:09	06:18	06:37 (ML26)	05:41		06:01 (ML24)	05:27		05:52 (ML24)
	16:57	57	09:05 (ML28)	17:35			18:07	19:39	22	06:59 (ML26)	20:10	28	06:29 (ML24)	20:32	86	19:27 (ML23)
18	07:20		08:09 (ML28)	06:50			06:07	06:17	06:36 (ML26)	05:40		06:00 (ML24)	05:27		05:52 (ML24)
	16:58	57	09:06 (ML28)	17:36			18:08	19:40	23	06:59 (ML26)	20:11	29	06:29 (ML24)	20:32	87	19:27 (ML23)
19	07:19		08:09 (ML28)	06:49			06:05	06:15	06:34 (ML26)	05:39		05:59 (ML24)	05:27		05:52 (ML24)
	17:00	57	09:06 (ML28)	17:37			18:09	19:41	24	06:58 (ML26)	20:12	31	06:30 (ML24)	20:32	87	19:27 (ML23)
20	07:19		08:09 (ML28)	06:47			06:04	06:14	06:33 (ML26)	05:38		05:58 (ML24)	05:27		05:52 (ML24)
	17:01	57	09:06 (ML28)	17:38			18:10	19:42	25	06:58 (ML26)	20:13	32	06:30 (ML24)	20:33	87	19:27 (ML23)
21	07:18		08:10 (ML28)	06:46			06:02	06:12	06:31 (ML26)	05:37		05:58 (ML24)	05:27		05:53 (ML24)
	17:02	57	09:07 (ML28)	17:40			18:11	19:43	26	06:57 (ML26)	20:14	34	06:32 (ML24)	20:33	86	19:28 (ML23)
22	07:17		08:10 (ML28)	06:44			06:00	06:11	06:30 (ML26)	05:36		05:57 (ML24)	05:28		05:53 (ML24)
	17:03	56	09:06 (ML28)	17:41			18:12	19:44	27	06:57 (ML26)	20:15	35	06:32 (ML24)	20:33	86	19:28 (ML23)
23	07:17		08:11 (ML28)	06:43			05:59	06:10	06:30 (ML26)	05:36		05:56 (ML24)	05:28		05:53 (ML24)
	17:04	55	09:06 (ML28)	17:42			18:13	19:45	25	06:55 (ML26)	20:15	47	19:08 (ML23)	20:33	87	19:28 (ML23)
24	07:16		08:12 (ML28)	06:42			05:57	06:08	06:31 (ML26)	05:35		05:56 (ML24)	05:28		05:53 (ML24)
	17:05	55	09:07 (ML28)	17:43			18:14	19:46	23	06:54 (ML26)	20:16	54	19:12 (ML23)	20:34	87	19:28 (ML23)
25	07:15		08:12 (ML28)	06:40			05:55	06:07	06:33 (ML26)	05:34		05:55 (ML24)	05:28		05:54 (ML24)
	17:07	54	09:06 (ML28)	17:44			18:15	19:47	21	06:54 (ML26)	20:17	58	19:13 (ML23)	20:34	86	19:29 (ML23)
26	07:15		08:13 (ML28)	06:39			05:54	06:05	06:33 (ML26)	05:34		05:54 (ML24)	05:29		05:54 (ML24)
	17:08	53	09:06 (ML28)	17:45			18:16	19:49	18	06:51 (ML26)	20:18	61	19:14 (ML23)	20:34	86	19:29 (ML23)
27	07:14		08:13 (ML28)	06:37			05:52	06:04	06:36 (ML26)	05:33		05:54 (ML24)	05:29		05:54 (ML24)
	17:09	53	09:06 (ML28)	17:47			18:17	19:50	13	06:49 (ML26)	20:19	65	19:16 (ML23)	20:34	86	19:29 (ML23)
28	07:13		08:14 (ML28)	06:36			05:50	06:03	06:39 (ML26)	05:32		05:53 (ML24)	05:29		05:55 (ML24)
	17:10	51	09:05 (ML28)	17:48			18:18	19:51	7	06:46 (ML26)	20:20	68	19:17 (ML23)	20:34	85	19:29 (ML23)
29	07:12		08:14 (ML28)				06:49	06:01		05:32		05:53 (ML24)	05:30		05:54 (ML24)
	17:12	51	09:05 (ML28)				19:19	19:52		20:20	70	19:18 (ML23)	20:34	86	19:29 (ML23)
30	07:11		08:15 (ML28)				06:47	06:00		05:31		05:52 (ML24)	05:30		05:55 (ML24)
	17:13	49	09:04 (ML28)				19:20	19:53		20:21	72	19:18 (ML23)	20:34	86	19:30 (ML23)
31	07:11		08:17 (ML28)				06:46			05:31		05:52 (ML24)			
	17:14	48	09:05 (ML28)				19:21			20:22	74	19:20 (ML23)			
Potential sun hours	298			298			370	398		447			451		
Total, worst case	1710			332				362		888			2537		
Sun reduction	0,43			0,45				0,50		0,57			0,64		
Oper. time red.	0,88			0,88				0,88		0,88			0,88		
Wind dir. red.	0,63			0,63				0,56		0,58			0,58		
Total reduction	0,24			0,25				0,25		0,29			0,33		
Total, real	409			83				90		261			839		

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R15 - R15
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October	November			December	
1	05:31		05:55 (ML24)	05:54		06:16 (ML24)	06:25		06:45 (ML26)	06:54	06:28		08:03 (ML28)	07:02	
	20:34	84	19:29 (ML23)	20:15	15	06:31 (ML24)	19:32	11	06:56 (ML26)	18:42	16:56	13	08:16 (ML28)	16:32	57	08:46 (ML28)
2	05:31		05:56 (ML24)	05:55		06:17 (ML24)	06:26		06:46 (ML26)	06:55	06:29		07:59 (ML28)	07:03		07:49 (ML28)
	20:34	84	19:30 (ML23)	20:14	12	06:29 (ML24)	19:31	8	06:54 (ML26)	18:41	16:55	21	08:20 (ML28)	16:32	57	08:46 (ML28)
3	05:32		05:55 (ML24)	05:56		06:18 (ML24)	06:27		06:47 (ML26)	06:56	06:30		07:57 (ML28)	07:04		07:50 (ML28)
	20:33	85	19:29 (ML23)	20:13	7	06:25 (ML24)	19:29	4	06:51 (ML26)	18:39	16:54	27	07:55 (ML28)	16:32	56	08:46 (ML28)
4	05:32		05:56 (ML24)	05:57			06:28			06:57	06:31		07:55 (ML28)	07:05		07:50 (ML28)
	20:33	84	19:30 (ML23)	20:12			19:28			18:37	16:53	31	08:26 (ML28)	16:32	56	08:46 (ML28)
5	05:33		05:55 (ML24)	05:58			05:29			06:58	06:32		07:53 (ML28)	07:06		07:51 (ML28)
	20:33	84	19:29 (ML23)	20:11			19:26			18:36	16:51	34	08:27 (ML28)	16:31	56	08:47 (ML28)
6	05:33		05:56 (ML24)	05:59			06:29			06:59	06:34		07:51 (ML28)	07:07		07:51 (ML28)
	20:33	84	19:30 (ML23)	20:09			19:24			18:34	16:50	38	08:29 (ML28)	16:31	56	08:47 (ML28)
7	05:34		05:56 (ML24)	06:00			06:30			07:00	06:35		07:51 (ML28)	07:08		07:52 (ML28)
	20:33	82	19:29 (ML23)	20:08			19:23			18:33	16:49	40	08:31 (ML28)	16:31	55	08:47 (ML28)
8	05:35		05:57 (ML24)	06:01			06:31			07:01	06:36		07:50 (ML28)	07:09		07:52 (ML28)
	20:32	81	19:29 (ML23)	20:07			19:21			18:31	16:48	42	08:32 (ML28)	16:31	56	08:48 (ML28)
9	05:35		05:58 (ML24)	06:02			06:32			07:02	06:37		07:48 (ML28)	07:10		07:52 (ML28)
	20:32	79	19:29 (ML23)	20:06			19:19			18:29	16:47	45	08:33 (ML28)	16:31	55	08:47 (ML28)
10	05:36		05:58 (ML24)	06:03			06:33			07:03	06:38		07:48 (ML28)	07:11		07:53 (ML28)
	20:31	78	19:28 (ML23)	20:05			19:18			18:28	16:46	47	08:35 (ML28)	16:31	55	08:48 (ML28)
11	05:37		05:59 (ML24)	06:04			06:34			07:04	06:40		07:48 (ML28)	07:12		07:54 (ML28)
	20:31	76	19:28 (ML23)	20:03			19:16			18:26	16:45	47	08:35 (ML28)	16:31	54	08:48 (ML28)
12	05:37		06:00 (ML24)	06:05			06:35			07:05	06:41		07:47 (ML28)	07:12		07:54 (ML28)
	20:31	75	19:28 (ML23)	20:02			19:14			18:25	16:44	49	08:36 (ML28)	16:31	55	08:49 (ML28)
13	05:38		06:00 (ML24)	06:06			06:36			07:07	06:42		07:46 (ML29)	07:13		07:55 (ML28)
	20:30	73	19:27 (ML23)	20:01			19:13			18:23	16:43	51	08:37 (ML28)	16:31	54	08:49 (ML28)
14	05:39		06:01 (ML24)	06:07			06:37			07:08	06:43		07:46 (ML28)	07:14		07:56 (ML28)
	20:30	71	19:27 (ML22)	19:59			19:11			18:21	16:42	52	08:38 (ML28)	16:32	54	08:50 (ML28)
15	05:39		06:02 (ML24)	06:08		06:45 (ML26)	06:38			07:09	06:44		07:46 (ML28)	07:15		07:56 (ML28)
	20:29	68	19:26 (ML23)	19:58	9	06:54 (ML26)	19:09			18:20	16:42	53	08:39 (ML28)	16:32	53	08:49 (ML28)
16	05:40		06:03 (ML24)	06:09		06:42 (ML26)	06:39			07:10	06:45		07:46 (ML28)	07:16		07:57 (ML28)
	20:28	67	19:26 (ML23)	19:57	15	06:57 (ML26)	19:08			18:18	16:41	53	08:39 (ML28)	16:32	53	08:50 (ML28)
17	05:41		06:03 (ML24)	06:10		06:40 (ML26)	06:40			07:11	06:47		07:45 (ML28)	07:16		07:57 (ML28)
	20:28	64	19:24 (ML23)	19:55	18	06:58 (ML26)	19:06			18:17	16:40	54	08:39 (ML28)	16:32	54	08:51 (ML28)
18	05:42		06:04 (ML24)	06:11		06:38 (ML26)	06:41			07:12	06:48		07:46 (ML28)	07:17		07:57 (ML28)
	20:27	60	19:23 (ML23)	19:54	22	07:00 (ML26)	19:04			18:15	16:39	55	08:41 (ML28)	16:33	54	08:51 (ML28)
19	05:43		06:05 (ML24)	06:12		06:37 (ML26)	06:42			07:13	06:49		07:46 (ML28)	07:17		07:58 (ML28)
	20:27	56	19:22 (ML23)	19:52	23	07:00 (ML26)	19:03			18:14	16:38	55	08:41 (ML28)	16:33	53	08:51 (ML28)
20	05:44		06:06 (ML24)	06:13		06:36 (ML26)	06:43			07:14	06:50		07:45 (ML28)	07:18		07:58 (ML28)
	20:26	51	19:20 (ML23)	19:51	25	07:01 (ML26)	19:01			18:12	16:38	56	08:41 (ML29)	16:34	53	08:51 (ML28)
21	05:44		06:07 (ML24)	06:14		06:35 (ML26)	06:44			07:15	06:51		07:45 (ML28)	07:19		07:59 (ML28)
	20:25	43	19:17 (ML23)	19:49	27	07:02 (ML26)	18:59			18:11	16:37	57	08:42 (ML28)	16:34	53	08:52 (ML28)
22	05:45		06:07 (ML24)	06:15		06:36 (ML26)	06:45			07:16	06:52		07:45 (ML28)	07:19		07:59 (ML28)
	20:24	34	06:41 (ML24)	19:48	26	07:02 (ML26)	18:57			18:10	16:36	57	08:42 (ML28)	16:34	53	08:52 (ML28)
23	05:46		06:08 (ML24)	06:16		06:37 (ML26)	06:46			07:17	06:54		07:46 (ML28)	07:20		08:00 (ML28)
	20:24	33	06:41 (ML24)	19:46	25	07:02 (ML26)	18:56			18:08	16:36	57	08:43 (ML28)	16:35	53	08:53 (ML28)
24	05:47		06:09 (ML24)	06:17		06:38 (ML26)	06:47			18:07	06:55		07:46 (ML28)	07:20		08:00 (ML28)
	20:23	32	06:41 (ML24)	19:45	24	07:02 (ML26)	18:54			18:07	16:35	57	08:43 (ML28)	16:36	53	08:53 (ML28)
25	05:48		06:10 (ML24)	06:18		06:39 (ML26)	06:48			06:20	06:56		07:46 (ML28)	07:21		08:00 (ML28)
	20:22	30	06:40 (ML24)	19:43	23	07:02 (ML26)	18:52			17:05	16:35	57	08:43 (ML28)	16:36	54	08:54 (ML28)
26	05:49		06:11 (ML24)	06:19		06:40 (ML26)	06:49			06:21	06:57		07:46 (ML28)	07:21		08:01 (ML28)
	20:21	29	06:40 (ML24)	19:42	22	07:02 (ML26)	18:51			17:04	16:34	58	08:44 (ML28)	16:37	54	08:55 (ML28)
27	05:50		06:12 (ML24)	06:20		06:41 (ML26)	06:50			06:22	06:58		07:47 (ML28)	07:21		09:01 (ML28)
	20:20	27	06:39 (ML24)	19:40	20	07:01 (ML26)	18:49			17:03	16:34	57	08:44 (ML28)	16:37	54	08:55 (ML28)
28	05:51		06:13 (ML24)	06:21		06:42 (ML26)	06:51			06:23	06:59		07:47 (ML26)	07:22		08:02 (ML28)
	20:19	25	06:38 (ML24)	19:39	19	07:01 (ML26)	18:47			17:01	16:33	57	08:44 (ML28)	16:38	53	08:55 (ML28)
29	05:51		06:14 (ML24)	06:22		06:42 (ML26)	06:52			06:24	07:00		07:48 (ML28)	07:22		08:03 (ML28)
	20:18	23	06:37 (ML24)	19:37	17	06:59 (ML26)	18:46			17:00	16:33	57	08:45 (ML28)	16:39	54	08:57 (ML28)
30	05:52		06:14 (ML24)	06:23		06:43 (ML26)	06:53			06:25	07:01		07:48 (ML28)	07:22		08:03 (ML28)
	20:17	21	06:35 (ML24)	19:36	15	06:58 (ML26)	18:44			16:59	16:33	57	08:45 (ML28)	16:40	54	08:57 (ML28)
31	05:53		06:15 (ML24)	06:24		06:44 (ML26)				06:27				07:22		08:03 (ML28)
	20:16	18	06:33 (ML24)	19:34	13	06:57 (ML26)				16:57				16:40	54	08:57 (ML28)

	July	August	September	October	November	December
Potential sun hours	458	427	375	346	299	289
Total, worst case	1801	377	23		1434	1685
Sun reduction	0,72	0,73	0,67		0,51	0,44
Oper. time red.	0,88	0,88	0,88		0,88	0,88
Wind dir. red.	0,58	0,56	0,56		0,63	0,63
Total reduction	0,37	0,37	0,33		0,28	0,24
Total, real	667	138	8		404	408

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R16 - R16
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January		February		March	April		May		June
1	07:23 / 16:41		07:10 / 17:15 55	07:50 (ML28) / 09:45 (ML28)	06:34 / 17:49	06:44 / 19:22		05:59 / 19:54 22	06:23 (ML26) / 06:45 (ML26)	05:30 / 20:23 27	05:51 (ML24) / 06:18 (ML24)
2	07:23 / 16:42		07:09 / 17:16 55	07:50 (ML28) / 08:45 (ML28)	06:33 / 17:50	06:42 / 19:23		05:57 / 19:55 19	06:25 (ML26) / 06:44 (ML26)	05:30 / 20:24 28	05:51 (ML24) / 06:19 (ML24)
3	07:23 / 16:43		07:08 / 17:18 56	07:49 (ML28) / 08:45 (ML28)	06:31 / 17:51	06:41 / 19:24		05:58 / 19:56 16	06:25 (ML26) / 06:41 (ML26)	05:29 / 20:24 29	05:51 (ML24) / 06:20 (ML24)
4	07:23 / 16:44		07:07 / 17:19 56	07:49 (ML28) / 08:45 (ML28)	06:30 / 17:52	06:39 / 19:26		05:55 / 19:57 12	06:27 (ML26) / 06:39 (ML26)	05:29 / 20:25 30	05:50 (ML24) / 06:20 (ML24)
5	07:23 / 16:45		07:06 / 17:20 56	07:49 (ML28) / 08:45 (ML28)	06:28 / 17:53	06:37 / 19:27		05:54 / 19:58 5	08:31 (ML26) / 06:36 (ML26)	05:29 / 20:26 31	05:50 (ML24) / 06:21 (ML24)
6	07:23 / 16:46		07:05 / 17:21 56	07:49 (ML28) / 08:45 (ML28)	06:26 / 17:55	06:36 / 19:28		05:52 / 19:59		05:28 / 20:26 32	05:50 (ML24) / 06:22 (ML24)
7	07:23 / 16:47		07:03 / 17:23 56	07:50 (ML28) / 08:46 (ML28)	06:25 / 17:56	06:34 / 19:29		05:51 / 20:00		05:28 / 20:27 32	05:50 (ML24) / 06:22 (ML24)
8	07:23 / 16:48		07:02 / 17:24 56	07:50 (ML28) / 08:46 (ML28)	06:23 / 17:57	06:33 / 19:30		05:50 / 20:01		05:28 / 20:28 33	05:49 (ML24) / 06:22 (ML24)
9	07:23 / 16:49 10	08:05 (ML28) / 08:15 (ML28)	07:01 / 17:25 56	07:50 (ML28) / 08:46 (ML28)	06:22 / 17:58	06:31 / 19:31		05:49 / 20:02		05:27 / 20:28 33	05:49 (ML24) / 06:22 (ML24)
10	07:22 / 16:50 16	08:03 (ML28) / 08:19 (ML28)	07:00 / 17:26 55	07:51 (ML28) / 08:46 (ML28)	06:20 / 17:59	06:29 / 19:32		05:48 / 20:03		05:27 / 20:29 34	05:49 (ML24) / 06:23 (ML24)
11	07:22 / 16:51 19	08:02 (ML28) / 08:21 (ML28)	06:59 / 17:28 55	07:50 (ML28) / 08:45 (ML28)	06:18 / 18:00	06:28 / 19:33		05:47 / 20:04		05:27 / 20:29 34	05:49 (ML24) / 06:23 (ML24)
12	07:22 / 16:52 23	08:00 (ML28) / 08:23 (ML28)	06:58 / 17:29 51	07:51 (ML28) / 08:44 (ML28)	06:17 / 18:01	06:26 / 19:34		05:46 / 20:05		05:27 / 20:30 35	05:49 (ML24) / 06:24 (ML24)
13	07:22 / 16:53 26	07:59 (ML28) / 08:25 (ML28)	06:56 / 17:30 52	07:52 (ML28) / 08:44 (ML28)	06:15 / 18:02	06:25 / 19:35		05:45 / 20:06		05:27 / 20:30 35	05:49 (ML24) / 06:24 (ML24)
14	07:21 / 16:54 29	07:58 (ML28) / 08:27 (ML28)	06:55 / 17:31 52	07:51 (ML28) / 08:43 (ML28)	06:13 / 18:03	06:23 / 19:36		05:44 / 20:07		05:27 / 20:31 35	05:49 (ML24) / 06:24 (ML24)
15	07:21 / 16:55 31	07:57 (ML28) / 08:28 (ML28)	06:54 / 17:32 50	07:52 (ML28) / 08:42 (ML28)	06:12 / 18:04	06:21 / 19:37 2	06:40 (ML26) / 06:42 (ML26)	05:43 / 20:08		05:27 / 20:31 36	05:49 (ML24) / 06:25 (ML24)
16	07:21 / 16:56 33	07:57 (ML28) / 08:30 (ML28)	06:53 / 17:34 49	07:53 (ML28) / 08:42 (ML28)	06:10 / 18:05	06:20 / 19:38 6	06:38 (ML26) / 06:44 (ML26)	05:42 / 20:09		05:27 / 20:31 36	05:49 (ML24) / 06:25 (ML24)
17	07:20 / 16:57 36	07:55 (ML28) / 08:31 (ML28)	06:51 / 17:35 47	07:53 (ML28) / 08:40 (ML28)	06:09 / 18:07	06:18 / 19:39 9	06:37 (ML26) / 06:46 (ML26)	05:41 / 20:10		05:27 / 20:32 36	05:49 (ML24) / 06:25 (ML24)
18	07:20 / 16:58 38	07:55 (ML28) / 08:33 (ML28)	06:50 / 17:36 45	07:55 (ML28) / 08:40 (ML28)	06:07 / 18:08	06:17 / 19:40 12	06:36 (ML26) / 06:48 (ML26)	05:40 / 20:11		05:27 / 20:32 36	05:49 (ML24) / 06:25 (ML24)
19	07:19 / 17:00 40	07:54 (ML28) / 08:34 (ML28)	06:49 / 17:37 43	07:56 (ML28) / 08:39 (ML28)	06:05 / 18:09	06:15 / 19:41 14	06:34 (ML26) / 06:48 (ML26)	05:39 / 20:12		05:27 / 20:32 36	05:49 (ML24) / 06:25 (ML24)
20	07:19 / 17:01 41	07:53 (ML28) / 08:34 (ML28)	06:47 / 17:38 40	07:57 (ML28) / 08:37 (ML28)	06:04 / 18:10	06:14 / 19:42 16	06:33 (ML26) / 06:49 (ML26)	05:38 / 20:13		05:27 / 20:33 36	05:49 (ML24) / 06:25 (ML24)
21	07:18 / 17:02 43	07:53 (ML28) / 08:36 (ML28)	06:46 / 17:40 37	07:58 (ML28) / 08:35 (ML28)	06:02 / 18:11	06:12 / 19:43 18	06:31 (ML26) / 06:49 (ML26)	05:37 / 20:14 7	05:58 (ML24) / 06:05 (ML24)	05:27 / 20:33 36	05:50 (ML24) / 06:26 (ML24)
22	07:17 / 17:03 44	07:53 (ML28) / 08:37 (ML28)	06:44 / 17:41 34	07:59 (ML28) / 08:33 (ML28)	06:00 / 18:12	06:11 / 19:44 19	06:30 (ML26) / 06:49 (ML26)	05:36 / 20:15 11	06:08 (ML24) / 05:56 (ML24)	05:28 / 20:33 36	05:50 (ML24) / 06:26 (ML24)
23	07:17 / 17:04 46	07:52 (ML28) / 08:38 (ML28)	06:43 / 17:42 29	08:02 (ML28) / 08:31 (ML28)	05:59 / 18:13	06:10 / 19:45 21	06:28 (ML26) / 06:49 (ML26)	05:36 / 20:15 14	06:10 (ML24) / 05:56 (ML24)	05:28 / 20:33 36	05:50 (ML24) / 06:26 (ML24)
24	07:16 / 17:05 47	07:52 (ML28) / 08:39 (ML28)	06:42 / 17:43 24	08:05 (ML28) / 08:29 (ML28)	05:57 / 18:14	06:08 / 19:46 22	06:27 (ML26) / 06:49 (ML26)	05:35 / 20:16 16	06:12 (ML24) / 05:55 (ML24)	05:28 / 20:34 36	05:51 (ML24) / 06:26 (ML24)
25	07:15 / 17:07 48	07:52 (ML28) / 08:40 (ML28)	06:40 / 17:44 16	08:08 (ML28) / 08:24 (ML28)	05:55 / 18:16	06:07 / 19:47 23	06:26 (ML26) / 06:49 (ML26)	05:34 / 20:17 18	06:13 (ML24) / 05:54 (ML24)	05:29 / 20:34 36	05:51 (ML24) / 06:27 (ML24)
26	07:15 / 17:08 50	07:51 (ML28) / 08:41 (ML28)	06:39 / 17:45		05:54 / 18:16	06:05 / 19:49 24	06:24 (ML26) / 06:48 (ML26)	05:34 / 20:18 20	06:14 (ML24) / 05:54 (ML24)	05:29 / 20:34 36	05:51 (ML24) / 06:27 (ML24)
27	07:14 / 17:09 50	07:51 (ML28) / 08:41 (ML28)	06:37 / 17:47		05:52 / 18:17	06:04 / 19:50 25	06:23 (ML26) / 06:48 (ML26)	05:33 / 20:19 21	06:15 (ML24) / 05:53 (ML24)	05:29 / 20:34 36	05:51 (ML24) / 06:27 (ML24)
28	07:13 / 17:10 52	07:50 (ML28) / 08:42 (ML28)	06:36 / 17:48		05:50 / 18:18	06:03 / 19:51 26	06:22 (ML26) / 06:48 (ML26)	05:32 / 20:20 23	06:16 (ML24) / 05:53 (ML24)	05:29 / 20:34 36	05:52 (ML24) / 06:28 (ML24)
29	07:12 / 17:12 52	07:50 (ML28) / 08:42 (ML28)	06:35 /		05:49 / 18:19	06:01 / 19:52 25	06:21 (ML26) / 06:46 (ML26)	05:32 / 20:20 24	06:17 (ML24) / 05:52 (ML24)	05:30 / 20:34 35	05:52 (ML24) / 06:27 (ML24)
30	07:11 / 17:13 53	07:50 (ML28) / 08:43 (ML28)			06:47 / 19:19	06:00 / 19:53 24	06:22 (ML26) / 06:46 (ML26)	05:31 / 20:21 25	06:17 (ML24) / 05:52 (ML24)	05:30 / 20:34 35	05:53 (ML24) / 06:28 (ML24)
31	07:11 / 17:14 54	07:50 (ML28) / 08:44 (ML28)			06:46 / 19:20			05:31 / 20:22 26	06:18 (ML24) / 05:52 (ML24)		

	January	February	March	April	May	June
Potential sun hours	298	298	370	398	447	451
Total, worst case	881	1183		286	279	1022
Sun reduction	0,43	0,45		0,50	0,57	0,64
Oper. time red.	0,88	0,88		0,88	0,88	0,88
Wind dir. red.	0,61	0,61		0,56	0,58	0,59
Total reduction	0,23	0,24		0,24	0,29	0,34
Total, real	205	287		70	82	345

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R16 - R16
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July		August		September	October		November		December	
1	05:31	05:53 (ML24)	05:54		06:25	06:54		06:28	07:20 (ML28)	07:02	07:44 (ML28)	
	20:34	35 06:28 (ML24)	20:15		19:32	18:42		16:56	54 08:14 (ML28)	16:32	19 08:03 (ML28)	
2	05:31	05:54 (ML24)	05:55		06:26	06:55		06:29	07:19 (ML28)	07:03	07:46 (ML28)	
	20:34	34 06:28 (ML24)	20:14		19:31	18:41		16:55	55 08:14 (ML28)	16:32	16 08:02 (ML28)	
3	05:32	05:54 (ML24)	05:56		06:27	06:56		06:30	07:20 (ML28)	07:04	07:49 (ML28)	
	20:33	34 06:28 (ML24)	20:13		19:29	18:39		16:54	55 08:15 (ML28)	16:32	11 08:00 (ML28)	
4	05:32	05:55 (ML24)	05:57		06:28	06:57		06:31	07:19 (ML28)	07:05		
	20:33	33 06:28 (ML24)	20:12		19:28	18:37		16:53	56 08:16 (ML28)	16:32		
5	05:33	05:55 (ML24)	05:58		06:29	06:58		06:32	07:19 (ML28)	07:06		
	20:33	33 06:28 (ML24)	20:11		19:26	18:36		16:51	56 08:15 (ML28)	16:31		
6	05:33	05:56 (ML24)	05:59		06:29	06:59		06:34	07:19 (ML28)	07:07		
	20:33	32 06:28 (ML24)	20:09		19:24	18:34		16:50	56 08:15 (ML28)	16:31		
7	05:34	05:56 (ML24)	06:00		06:30	07:00		06:35	07:20 (ML28)	07:08		
	20:33	31 06:27 (ML24)	20:08		19:23	18:33		16:49	56 08:16 (ML28)	16:31		
8	05:35	05:57 (ML24)	06:01	06:39 (ML26)	06:31	07:01		06:36	07:20 (ML28)	07:09		
	20:32	31 06:28 (ML24)	20:07	8 06:47 (ML26)	19:21	18:31		16:48	55 08:15 (ML28)	16:31		
9	05:35	05:58 (ML24)	06:02	06:36 (ML26)	06:32	07:02		06:37	07:20 (ML28)	07:10		
	20:32	30 06:28 (ML24)	20:06	14 06:50 (ML26)	19:19	18:29		16:47	55 08:15 (ML28)	16:31		
10	05:36	05:58 (ML24)	06:03	06:34 (ML26)	06:33	07:03		06:38	07:21 (ML28)	07:11		
	20:31	29 06:27 (ML24)	20:05	17 06:51 (ML26)	19:18	18:28		16:46	55 08:16 (ML28)	16:31		
11	05:37	05:59 (ML24)	06:04	06:33 (ML26)	06:34	07:04		06:40	07:21 (ML28)	07:12		
	20:31	28 06:27 (ML24)	20:03	20 06:53 (ML26)	19:16	18:26		16:45	54 08:15 (ML28)	16:31		
12	05:37	06:00 (ML24)	06:05	06:31 (ML26)	06:35	07:05		06:41	07:21 (ML28)	07:12		
	20:31	27 06:27 (ML24)	20:02	22 06:53 (ML26)	19:14	18:25		16:44	54 08:15 (ML28)	16:31		
13	05:38	06:00 (ML24)	06:06	06:30 (ML26)	06:36	07:07		06:42	07:22 (ML28)	07:13		
	20:30	26 06:26 (ML24)	20:01	23 06:53 (ML26)	19:13	18:23		16:43	52 08:14 (ML28)	16:31		
14	05:39	06:01 (ML24)	06:07	06:29 (ML26)	06:37	07:08		06:43	07:23 (ML28)	07:14		
	20:30	25 06:26 (ML24)	19:59	25 06:54 (ML26)	19:11	18:21		16:42	52 08:15 (ML28)	16:32		
15	05:40	06:02 (ML24)	06:08	06:29 (ML26)	06:38	07:09		06:44	07:24 (ML28)	07:15		
	20:29	23 06:25 (ML24)	19:58	25 06:54 (ML26)	19:09	18:20		16:42	50 08:14 (ML28)	16:32		
16	05:40	06:03 (ML24)	06:09	06:30 (ML26)	06:39	07:10		06:45	07:24 (ML28)	07:16		
	20:28	22 06:25 (ML24)	19:57	25 06:55 (ML26)	19:08	18:18	9 08:52 (ML28)	16:41	50 08:14 (ML28)	16:32		
17	05:41	06:03 (ML24)	06:10	06:31 (ML26)	06:40	07:11	08:38 (ML28)	06:47	07:25 (ML28)	07:16		
	20:28	20 06:23 (ML24)	19:55	24 06:55 (ML26)	19:06	18:17	19 08:57 (ML28)	16:40	48 08:13 (ML28)	16:32		
18	05:42	06:04 (ML24)	06:11	06:32 (ML26)	06:41	07:12	08:34 (ML28)	06:48	07:26 (ML28)	07:17		
	20:27	19 06:23 (ML24)	19:54	23 06:55 (ML26)	19:04	18:15	26 09:00 (ML28)	16:39	47 08:13 (ML28)	16:33		
19	05:43	06:05 (ML24)	06:12	06:33 (ML26)	06:42	07:13	08:33 (ML28)	06:49	07:27 (ML28)	07:17		
	20:27	17 06:22 (ML24)	19:52	22 06:55 (ML26)	19:03	18:14	30 09:03 (ML28)	16:38	46 08:13 (ML28)	16:33		
20	05:44	06:06 (ML24)	06:13	06:34 (ML26)	06:43	07:14	08:30 (ML28)	06:50	07:28 (ML28)	07:18		
	20:26	15 06:21 (ML24)	19:51	20 06:54 (ML26)	19:01	18:12	35 09:05 (ML28)	16:38	44 08:12 (ML28)	16:34		
21	05:44	06:07 (ML24)	06:14	06:35 (ML26)	06:44	07:15	08:29 (ML28)	06:51	07:28 (ML28)	07:19		
	20:25	12 06:19 (ML24)	19:49	19 06:54 (ML26)	18:59	18:11	37 09:06 (ML28)	16:37	43 08:11 (ML28)	16:34		
22	05:45	06:07 (ML24)	06:15	06:36 (ML26)	06:45	07:16	08:27 (ML28)	06:52	07:29 (ML28)	07:19		
	20:24	9 06:16 (ML24)	19:48	17 06:53 (ML26)	18:57	18:10	41 09:08 (ML28)	16:36	41 08:10 (ML28)	16:34		
23	05:46		06:16	06:37 (ML26)	06:46	07:17	08:25 (ML28)	06:54	07:31 (ML28)	07:20		
	20:24		19:46	16 06:53 (ML26)	18:56	18:08	44 09:09 (ML28)	16:35	40 08:11 (ML28)	16:35		
24	05:47		06:17	06:38 (ML26)	06:47	07:19	08:24 (ML28)	06:55	07:32 (ML28)	07:20		
	20:23		19:45	14 06:52 (ML26)	18:54	18:07	45 09:09 (ML28)	16:35	38 08:10 (ML28)	16:36		
25	05:48		06:18	06:39 (ML26)	06:48	06:20	07:24 (ML28)	06:56	07:33 (ML28)	07:21		
	20:22		19:43	11 06:50 (ML26)	18:52	17:05	47 08:11 (ML28)	16:35	36 08:09 (ML28)	16:36		
26	05:49		06:19	06:40 (ML26)	06:49	06:21	07:23 (ML28)	06:57	07:35 (ML28)	07:21		
	20:21		19:42	9 06:49 (ML26)	18:51	17:04	49 08:12 (ML28)	16:34	33 08:08 (ML28)	16:37		
27	05:50		06:20	06:41 (ML26)	06:50	06:22	07:22 (ML28)	06:58	07:36 (ML28)	07:21		
	20:20		19:40	6 06:47 (ML26)	18:49	17:03	50 08:12 (ML28)	16:34	31 08:07 (ML28)	16:37		
28	05:51		06:21	06:42 (ML26)	06:51	06:23	07:21 (ML28)	06:59	07:37 (ML28)	07:22		
	20:19		19:39	2 06:44 (ML26)	18:47	17:01	52 08:13 (ML28)	16:33	29 08:06 (ML28)	16:38		
29	05:51		06:22		06:52	06:24	07:20 (ML28)	07:00	07:40 (ML28)	07:22		
	20:18		19:37		18:46	17:00	53 08:13 (ML28)	16:33	26 08:06 (ML28)	16:39		
30	05:52		06:23		06:53	06:25	07:21 (ML28)	07:01	07:42 (ML28)	07:22		
	20:17		19:36		18:44	16:59	53 08:14 (ML28)	16:33	23 08:05 (ML28)	16:40		
31	05:53		06:24			06:27	07:20 (ML28)			07:22		
	20:16		19:34			16:57	54 08:14 (ML28)			16:40		

	July		August		September	October		November		December	
Potential sun hours	458		427		375	346		299		289	
Total, worst case	565		362			644		1390		46	
Sun reduction	0,72		0,73			0,56		0,51		0,44	
Oper. time red.	0,88		0,88			0,88		0,88		0,88	
Wind dir. red.	0,59		0,56			0,61		0,61		0,61	
Total reduction	0,38		0,36			0,30		0,27		0,24	
Total, real	213		130			196		381		11	

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

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

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R17 - R17
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January		February		March	April		May		June	
1	07:23 / 16:41		07:10 / 17:15 48	07:40 (ML28) / 08:28 (ML28)	06:34 / 17:49	06:44 / 19:22		05:59 / 19:54		05:30 / 20:23 37	05:51 (ML24) / 06:28 (ML24)
2	07:23 / 16:42		07:09 / 17:16 49	07:40 (ML28) / 08:29 (ML28)	06:33 / 17:50	06:42 / 19:23		05:57 / 19:55		05:30 / 20:24 37	05:51 (ML24) / 06:28 (ML24)
3	07:23 / 16:43		07:08 / 17:18 49	07:39 (ML28) / 08:28 (ML28)	06:31 / 17:51	06:41 / 19:24		05:56 / 19:56		05:29 / 20:24 37	05:51 (ML24) / 06:28 (ML24)
4	07:23 / 16:44		07:07 / 17:19 49	07:39 (ML28) / 08:28 (ML28)	06:30 / 17:52	06:39 / 19:26		05:55 / 19:57		05:29 / 20:25 38	05:50 (ML24) / 06:28 (ML24)
5	07:23 / 16:45		07:06 / 17:20 50	07:39 (ML28) / 08:29 (ML28)	06:28 / 17:53	06:37 / 19:27		05:54 / 19:58		05:29 / 20:26 38	05:50 (ML24) / 06:28 (ML24)
6	07:23 / 16:46		07:05 / 17:21 50	07:39 (ML28) / 08:29 (ML28)	06:26 / 17:55	06:36 / 19:28		05:52 / 19:59		05:28 / 20:26 37	05:51 (ML24) / 06:28 (ML24)
7	07:23 / 16:47		07:03 / 17:23 50	07:39 (ML28) / 08:29 (ML28)	06:25 / 17:56	06:34 / 19:29		05:51 / 20:00		05:28 / 20:27 38	05:51 (ML24) / 06:29 (ML24)
8	07:23 / 16:48		07:02 / 17:24 49	07:40 (ML28) / 08:29 (ML28)	06:23 / 17:57	06:33 / 19:30		05:50 / 20:01 5	06:10 (ML24) / 06:15 (ML24)	05:28 / 20:28 37	05:51 (ML24) / 06:28 (ML24)
9	07:23 / 16:49		07:01 / 17:25 49	07:40 (ML28) / 08:29 (ML28)	06:22 / 17:58	06:31 / 19:31		05:49 / 20:02 8	06:09 (ML24) / 06:17 (ML24)	05:27 / 20:28 37	05:51 (ML24) / 06:28 (ML24)
10	07:22 / 16:50		07:00 / 17:26 48	07:41 (ML28) / 08:29 (ML28)	06:20 / 17:59	06:29 / 19:32		05:48 / 20:03 11	06:07 (ML24) / 06:18 (ML24)	05:27 / 20:29 36	05:52 (ML24) / 06:28 (ML24)
11	07:22 / 16:51	07:56 (ML28) / 08:00 (ML28) 4	06:59 / 17:28 47	07:41 (ML28) / 08:28 (ML28)	06:18 / 18:00	06:28 / 19:33 1	06:46 (ML26) / 06:47 (ML26)	05:47 / 20:04 13	06:06 (ML24) / 06:19 (ML24)	05:27 / 20:29 37	05:52 (ML24) / 06:28 (ML24)
12	07:22 / 16:52 12	07:52 (ML28) / 08:04 (ML28)	06:58 / 17:29 46	07:41 (ML28) / 08:27 (ML28)	06:17 / 18:01	06:26 / 19:34 5	06:45 (ML26) / 06:50 (ML26)	05:46 / 20:05 16	06:05 (ML24) / 06:21 (ML24)	05:27 / 20:30 37	05:53 (ML24) / 06:29 (ML24)
13	07:22 / 16:53 17	07:50 (ML28) / 08:07 (ML28)	06:56 / 17:30 45	07:42 (ML28) / 08:27 (ML28)	06:15 / 18:02	06:25 / 19:35 7	06:43 (ML26) / 06:50 (ML26)	05:45 / 20:06 17	06:04 (ML24) / 06:21 (ML24)	05:27 / 20:30 36	05:53 (ML24) / 06:29 (ML24)
14	07:21 / 16:54 20	07:49 (ML28) / 08:09 (ML28)	06:55 / 17:31 43	07:42 (ML28) / 08:25 (ML28)	06:14 / 18:03	06:23 / 19:36 10	06:42 (ML26) / 06:52 (ML26)	05:44 / 20:07 19	06:04 (ML24) / 06:23 (ML24)	05:27 / 20:31 36	05:53 (ML24) / 06:29 (ML24)
15	07:21 / 16:55 24	07:47 (ML28) / 08:11 (ML28)	06:54 / 17:32 42	07:43 (ML28) / 08:25 (ML28)	06:12 / 18:04	06:21 / 19:37 12	06:40 (ML26) / 06:52 (ML26)	05:43 / 20:08 21	06:03 (ML24) / 06:24 (ML24)	05:27 / 20:31 36	05:53 (ML24) / 06:29 (ML24)
16	07:21 / 16:56 26	07:47 (ML28) / 08:13 (ML28)	06:53 / 17:34 39	07:45 (ML28) / 08:24 (ML28)	06:10 / 18:05	06:20 / 19:38 13	06:38 (ML26) / 06:51 (ML26)	05:42 / 20:09 22	06:02 (ML24) / 06:24 (ML24)	05:27 / 20:31 36	05:53 (ML24) / 06:29 (ML24)
17	07:20 / 16:57 29	07:45 (ML28) / 08:14 (ML28)	06:51 / 17:35 37	07:45 (ML28) / 08:22 (ML28)	06:09 / 18:07	06:18 / 19:39 15	06:37 (ML26) / 06:52 (ML26)	05:41 / 20:10 24	06:01 (ML24) / 06:25 (ML24)	05:27 / 20:32 35	05:54 (ML24) / 06:29 (ML24)
18	07:20 / 16:58 31	07:45 (ML28) / 08:16 (ML28)	06:50 / 17:36 34	07:47 (ML28) / 08:21 (ML28)	06:07 / 18:08	06:17 / 19:40 16	06:36 (ML26) / 06:52 (ML26)	05:40 / 20:11 25	06:00 (ML24) / 06:25 (ML24)	05:27 / 20:32 35	05:54 (ML24) / 06:29 (ML24)
19	07:19 / 17:00 33	07:44 (ML28) / 08:17 (ML28)	06:49 / 17:37 31	07:49 (ML28) / 08:20 (ML28)	06:05 / 18:09	06:15 / 19:41 17	06:34 (ML26) / 06:51 (ML26)	05:39 / 20:12 26	05:59 (ML24) / 06:25 (ML24)	05:27 / 20:32 35	05:54 (ML24) / 06:29 (ML24)
20	07:19 / 17:01 35	07:43 (ML28) / 08:18 (ML28)	06:47 / 17:38 27	07:50 (ML28) / 08:17 (ML28)	06:04 / 18:10	06:14 / 19:42 19	06:33 (ML26) / 06:52 (ML26)	05:38 / 20:13 28	05:58 (ML24) / 06:26 (ML24)	05:27 / 20:33 35	05:54 (ML24) / 06:29 (ML24)
21	07:18 / 17:02 37	07:43 (ML28) / 08:20 (ML28)	06:44 / 17:40 22	07:53 (ML28) / 08:15 (ML28)	06:02 / 18:11	06:12 / 19:43 19	06:31 (ML26) / 06:50 (ML26)	05:37 / 20:14 29	05:58 (ML24) / 06:27 (ML24)	05:28 / 20:33 35	05:55 (ML24) / 06:30 (ML24)
22	07:17 / 17:03 39	07:42 (ML28) / 08:21 (ML28)	06:44 / 17:41 16	07:55 (ML28) / 08:11 (ML28)	06:00 / 18:12	06:11 / 19:44 20	06:30 (ML26) / 06:50 (ML26)	05:36 / 20:15 30	05:57 (ML24) / 06:27 (ML24)	05:28 / 20:33 35	05:55 (ML24) / 06:30 (ML24)
23	07:17 / 17:04 40	07:41 (ML28) / 08:21 (ML28)	06:43 / 17:42		05:59 / 18:13	06:10 / 19:45 21	06:28 (ML26) / 06:49 (ML26)	05:36 / 20:15 31	05:56 (ML24) / 06:27 (ML24)	05:28 / 20:33 35	05:55 (ML24) / 06:30 (ML24)
24	07:16 / 17:05 41	07:42 (ML28) / 08:23 (ML28)	06:42 / 17:43		05:57 / 18:14	06:08 / 19:46 21	06:27 (ML26) / 06:48 (ML26)	05:35 / 20:16 31	05:56 (ML24) / 06:27 (ML24)	05:28 / 20:34 35	05:55 (ML24) / 06:30 (ML24)
25	07:15 / 17:07 43	07:41 (ML28) / 08:24 (ML28)	06:40 / 17:44		05:55 / 18:15	06:07 / 19:47 19	06:27 (ML26) / 06:47 (ML26)	05:34 / 20:17 32	05:55 (ML24) / 06:27 (ML24)	05:28 / 20:34 35	05:56 (ML24) / 06:31 (ML24)
26	07:15 / 17:08 44	07:40 (ML28) / 08:24 (ML28)	06:39 / 17:45		05:54 / 18:16	06:05 / 19:49 16	06:29 (ML26) / 06:45 (ML26)	05:34 / 20:18 33	05:54 (ML24) / 06:27 (ML24)	05:29 / 20:34 35	05:56 (ML24) / 06:31 (ML24)
27	07:14 / 17:09 45	07:40 (ML28) / 08:25 (ML28)	06:37 / 17:47		05:52 / 18:17	06:04 / 19:50 12	06:31 (ML26) / 06:43 (ML26)	05:33 / 20:19 34	05:54 (ML24) / 06:28 (ML24)	05:29 / 20:34 36	05:56 (ML24) / 06:31 (ML24)
28	07:13 / 17:10 46	07:40 (ML28) / 08:26 (ML28)	06:36 / 17:48		05:50 / 18:18	06:03 / 19:51 4	06:35 (ML26) / 06:39 (ML26)	05:32 / 20:20 34	05:53 (ML24) / 06:27 (ML24)	05:29 / 20:34 36	05:56 (ML24) / 06:32 (ML24)
29	07:12 / 17:12 47	07:39 (ML28) / 08:26 (ML28)	06:35		06:49 / 19:19	06:01 / 19:52		05:32 / 20:21 35	05:53 (ML24) / 06:28 (ML24)	05:30 / 20:34 36	05:56 (ML24) / 06:32 (ML24)
30	07:11 / 17:13 48	07:39 (ML28) / 08:27 (ML28)			06:47 / 19:20	06:00 / 19:53		05:31 / 20:21		05:30 / 20:34 37	05:52 (ML24) / 05:56 (ML24) / 06:33 (ML24)
31	07:11 / 17:14 48	07:40 (ML28) / 08:28 (ML28)			06:46 / 19:21			05:31 / 20:22 36	05:52 (ML24) / 06:28 (ML24)		
Potential sun hours	298		298		370	398		447		451	
Total, worst case	709		920			247		596		1085	
Sun reduction	0,43		0,45			0,50		0,57		0,64	
Oper. time red.	0,88		0,88			0,88		0,88		0,88	
Wind dir. red.	0,61		0,61			0,56		0,58		0,58	
Total reduction	0,23		0,24			0,25		0,29		0,33	
Total, real	164		221			61		175		360	

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk

14/11/2023 15:50 / 40   windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R17 - R17
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December
1	05:31		05:56 (ML24) 05:54		06:16 (ML24) 06:25		06:15 (ML26) 06:54		06:28		07:10 (ML28) 07:02
	20:34	37	06:33 (ML24) 20:15	15	06:31 (ML26) 19:32 1		06:46 (ML26) 18:42		16:56 48		07:58 (ML28) 16:32
2	05:31		05:57 (ML24) 05:55		06:17 (ML24) 06:26		06:55		06:29		07:09 (ML28) 07:03
	20:34	37	06:34 (ML24) 20:14	12	06:29 (ML24) 19:31		16:41		16:55 49		07:58 (ML28) 16:32
3	05:32		05:56 (ML24) 05:56		06:18 (ML24) 06:27		06:56		06:30		07:10 (ML28) 07:04
	20:33	37	06:33 (ML24) 20:13	10	06:28 (ML24) 19:29		18:39		16:54 49		07:59 (ML28) 16:32
4	05:32		05:57 (ML24) 05:57		06:19 (ML24) 06:28		06:57		06:31		07:09 (ML28) 07:05
	20:33	37	06:34 (ML24) 20:12	7	06:26 (ML24) 19:28		18:37		16:53 50		07:59 (ML28) 16:32
5	05:33		05:56 (ML24) 05:58		06:20 (ML24) 06:29		06:58		06:32		07:09 (ML28) 07:06
	20:33	38	06:34 (ML24) 20:11	3	06:23 (ML24) 19:26		18:36		16:51 50		07:59 (ML28) 16:31
6	05:33		05:57 (ML24) 05:59		06:29		06:59		06:34		07:09 (ML28) 07:07
	20:33	38	06:35 (ML24) 20:09		19:24		18:34		16:50 49		07:58 (ML28) 16:31
7	05:34		05:56 (ML24) 06:00		06:30		07:00		06:35		07:10 (ML28) 07:08
	20:33	38	06:34 (ML24) 20:08		19:23		18:33		16:49 49		07:59 (ML28) 16:31
8	05:35		05:57 (ML24) 06:01		06:31		07:01		06:36		07:10 (ML28) 07:09
	20:32	38	06:35 (ML24) 20:07		19:21		18:31		16:48 49		07:59 (ML28) 16:31
9	05:35		05:58 (ML24) 06:02		06:32		07:02		06:37		07:10 (ML28) 07:10
	20:32	38	06:36 (ML24) 20:06		19:19		18:29		16:47 49		07:59 (ML28) 16:31
10	05:36		05:58 (ML24) 06:03		06:33		07:03		06:38		07:11 (ML28) 07:11
	20:31	37	06:35 (ML24) 20:05		19:18		18:28		16:46 48		07:59 (ML28) 16:31
11	05:37		05:59 (ML24) 06:04		06:34		07:04		06:40		07:11 (ML28) 07:12
	20:31	37	06:36 (ML24) 20:03		19:16		18:26		16:45 48		07:59 (ML28) 16:31
12	05:37		06:00 (ML24) 06:05		06:35		07:05		06:41		07:11 (ML28) 07:12
	20:31	36	06:36 (ML24) 20:02		19:14		18:25		16:44 48		07:59 (ML28) 16:31
13	05:38		06:00 (ML24) 06:06		06:36		07:07		06:42		07:11 (ML28) 07:13
	20:30	36	06:36 (ML24) 20:01		19:13		18:23		16:43 47		07:58 (ML28) 16:31
14	05:39		06:01 (ML24) 06:07		06:37		07:08		06:43		07:12 (ML28) 07:14
	20:30	35	06:36 (ML24) 19:59		19:11		18:21		16:42 47		07:59 (ML28) 16:32
15	05:40		06:02 (ML24) 06:08		06:40 (ML26) 06:38		07:09		06:44		07:13 (ML28) 07:15
	20:29	35	06:37 (ML24) 19:58	7	06:47 (ML26) 19:09		18:20		16:41 45		07:58 (ML28) 16:32
16	05:40		06:03 (ML24) 06:09		06:37 (ML26) 06:39		07:10		06:45		07:13 (ML28) 07:16
	20:28	34	06:37 (ML24) 19:57	13	06:50 (ML26) 19:08		18:18		16:41 44		06:57 (ML28) 16:32
17	05:41		06:03 (ML24) 06:10		06:35 (ML26) 06:40		07:11		06:47		07:14 (ML28) 07:16
	20:28	33	06:36 (ML24) 19:55	17	06:52 (ML26) 19:06		18:17		16:40 43		06:57 (ML28) 16:32
18	05:42		06:04 (ML24) 06:11		06:34 (ML26) 06:41		07:13		06:48		07:16 (ML29) 07:17
	20:27	33	06:37 (ML24) 19:54	19	06:53 (ML26) 19:04		18:15		16:39 41		07:57 (ML28) 16:33
19	05:43		06:05 (ML24) 06:12		06:33 (ML26) 06:42		07:13	08:31 (ML28) 06:49		07:16 (ML29) 07:17
	20:27	32	06:37 (ML24) 19:52	21	06:54 (ML26) 19:03		18:14 8	08:39 (ML28) 16:38	40	07:56 (ML28) 16:33
20	05:44		06:06 (ML24) 06:13		06:34 (ML26) 06:43		07:14	08:26 (ML28) 06:50		07:17 (ML29) 07:18
	20:26	31	06:37 (ML24) 19:51	21	06:55 (ML26) 19:01		18:12 18	08:44 (ML28) 16:38	39	07:56 (ML28) 16:34
21	05:44		06:07 (ML24) 06:14		06:35 (ML26) 06:44		07:15	08:22 (ML28) 06:51		07:18 (ML28) 07:19
	20:25	30	06:37 (ML24) 19:49	20	06:55 (ML26) 18:59		18:11 24	08:46 (ML28) 16:37	37	07:55 (ML28) 16:34
22	05:45		06:07 (ML24) 06:15		06:36 (ML26) 06:45		07:16	08:20 (ML28) 06:52		07:19 (ML28) 07:19
	20:24	29	06:36 (ML24) 19:48	19	06:55 (ML26) 18:57		18:10 28	08:48 (ML28) 16:36	35	07:54 (ML28) 16:34
23	05:46		06:08 (ML24) 06:16		06:37 (ML26) 06:46		07:17	08:18 (ML28) 06:54		07:21 (ML28) 07:20
	20:24	28	06:36 (ML24) 19:46	18	06:55 (ML26) 18:56		18:08 32	08:50 (ML28) 16:36	33	07:54 (ML28) 16:35
24	05:47		06:09 (ML24) 06:17		06:38 (ML26) 06:47		07:19	08:16 (ML28) 06:55		07:22 (ML28) 07:20
	20:23	27	06:36 (ML24) 19:45	17	06:55 (ML26) 18:54		18:07 35	08:51 (ML28) 16:35	31	07:53 (ML28) 16:36
25	05:48		06:10 (ML24) 06:18		06:39 (ML26) 06:48		06:20	07:15 (ML28) 06:56		07:23 (ML28) 07:21
	20:22	26	06:36 (ML24) 19:43	16	06:55 (ML26) 18:52		17:05 38	07:53 (ML28) 16:35	29	07:52 (ML28) 16:36
26	05:49		06:11 (ML24) 06:19		06:40 (ML26) 06:49		06:21	07:14 (ML28) 06:57		07:25 (ML28) 07:21
	20:21	25	06:36 (ML24) 19:42	15	06:55 (ML26) 18:51		17:04 40	07:54 (ML28) 16:34	26	07:51 (ML28) 16:37
27	05:50		06:12 (ML24) 06:20		06:41 (ML26) 06:50		06:22	07:13 (ML28) 06:58		07:26 (ML29) 07:21
	20:20	23	06:35 (ML24) 19:40	13	06:54 (ML26) 18:49		17:03 42	07:55 (ML28) 16:34	24	07:50 (ML28) 16:37
28	05:51		06:13 (ML24) 06:21		06:42 (ML26) 06:51		06:23	07:12 (ML28) 06:59		07:28 (ML29) 07:22
	20:19	22	06:35 (ML24) 19:39	11	06:53 (ML26) 18:47		17:01 43	07:55 (ML28) 16:33	21	07:49 (ML28) 16:38
29	05:51		06:14 (ML24) 06:22		06:42 (ML26) 06:52		06:24	07:11 (ML28) 07:00		07:31 (ML28) 07:22
	20:18	20	06:34 (ML24) 19:37	9	06:51 (ML26) 18:46		17:00 45	07:56 (ML28) 16:33	17	07:48 (ML28) 16:39
30	05:52		06:15 (ML24) 06:23		06:43 (ML26) 06:53		06:25	07:11 (ML28) 07:01		07:33 (ML28) 07:22
	20:17	19	06:33 (ML24) 19:36	7	06:50 (ML26) 18:44		16:59 46	07:57 (ML28) 16:33	13	07:46 (ML28) 16:40
31	05:53		06:15 (ML24) 06:24				06:27	07:10 (ML28)		07:22
	20:16	17	06:32 (ML24) 19:34	5	06:49 (ML26)		16:57 47	07:57 (ML28)		16:40
Potential sun hours	458		427		375		346		299		289
Total, worst case	983		295		1		446		1198		4
Sun reduction	0,72		0,73		0,67		0,56		0,51		0,44
Oper. time red.	0,88		0,88		0,88		0,88		0,88		0,88
Wind dr. red.	0,58		0,56		0,56		0,61		0,61		0,61
Total reduction	0,37		0,37		0,33		0,30		0,27		0,23
Total, real	364		108		0		134		326		1

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

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

Ten Project S.r.l: Sede legale ed operativa: Loc.Chianarile Z I., 82010 San Martino Sannita (BN) - **Sede Operativa**: Via Alfonso la Cava 114- 71036 Lucera (FG)

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R18a - R18a
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January		February	March			April		May			June	
1	07:23 16:41	08:13 (ML28) 08:37 (ML28)	07:10 17:15	06:34 17:49			06:44 19:22		07:02 (ML24) 07:24 (ML24)	05:59 19:54		17:32 (ML23) 18:32 (ML23)	05:30 20:23	17:48 (ML23) 18:20 (ML23)
2	07:23 16:42	08:13 (ML28) 08:37 (ML28)	07:09 17:16	06:33 17:50			06:42 19:23		07:01 (ML24) 07:25 (ML24)	05:57 19:55		17:32 (ML23) 18:32 (ML23)	05:30 20:24	17:49 (ML23) 18:19 (ML23)
3	07:23 16:43	08:14 (ML28) 08:37 (ML28)	07:08 17:18	06:31 17:51			06:41 19:24		06:59 (ML24) 07:25 (ML24)	05:56 19:56		17:31 (ML23) 18:31 (ML23)	05:29 20:24	17:51 (ML23) 18:19 (ML23)
4	07:23 16:44	08:16 (ML28) 08:37 (ML28)	07:07 17:19	06:30 17:52			06:39 19:26		06:57 (ML24) 07:24 (ML24)	05:55 19:57		17:31 (ML23) 18:31 (ML23)	05:29 20:25	17:51 (ML23) 18:18 (ML23)
5	07:23 16:45	08:17 (ML28) 08:37 (ML28)	07:06 17:20	06:28 17:53			06:37 19:27		06:56 (ML24) 07:24 (ML24)	05:54 19:58		17:32 (ML23) 18:31 (ML23)	05:29 20:26	17:52 (ML23) 18:17 (ML23)
6	07:23 16:46	08:18 (ML28) 08:36 (ML28)	07:05 17:21	06:26 17:55			06:36 19:28		06:54 (ML24) 07:23 (ML24)	05:52 19:59		17:32 (ML23) 18:31 (ML23)	05:28 20:26	17:54 (ML23) 18:17 (ML23)
7	07:23 16:47	08:20 (ML28) 08:36 (ML28)	07:03 17:23	06:25 17:56			06:34 19:29		06:53 (ML24) 07:23 (ML24)	05:51 20:00		17:32 (ML23) 18:31 (ML23)	05:28 20:27	17:56 (ML23) 18:16 (ML23)
8	07:23 16:48	08:21 (ML28) 08:34 (ML28)	07:02 17:24	06:23 17:57			06:33 19:30		06:51 (ML24) 07:22 (ML24)	05:50 20:01		17:32 (ML23) 18:31 (ML23)	05:27 20:28	17:56 (ML23) 18:15 (ML23)
9	07:23 16:49	08:23 (ML28) 08:33 (ML28)	07:01 17:25	06:22 17:58			06:31 19:31		06:49 (ML24) 07:21 (ML24)	05:49 20:02		17:33 (ML23) 18:31 (ML23)	05:27 20:28	17:57 (ML23) 18:14 (ML23)
10	07:22 16:50		07:00 17:26	06:20 17:59			06:29 19:32		06:49 (ML24) 07:20 (ML24)	05:48 20:03		17:32 (ML23) 18:30 (ML23)	05:27 20:29	17:58 (ML23) 18:13 (ML23)
11	07:22 16:51		06:59 17:28	06:18 18:00			06:28 19:33		06:50 (ML24) 07:19 (ML24)	05:47 20:04		17:33 (ML23) 18:30 (ML23)	05:27 20:29	18:00 (ML23) 18:13 (ML23)
12	07:22 16:52		06:58 17:29	06:17 18:01			06:26 19:34	37	06:51 (ML24) 18:10 (ML23)	05:46 20:05	56	17:33 (ML23) 18:29 (ML23)	05:27 20:30	18:02 (ML23) 18:11 (ML23)
13	07:22 16:53		06:56 17:30	06:15 18:02			06:25 19:35	45	06:52 (ML24) 18:15 (ML23)	05:45 20:06	56	17:33 (ML23) 18:29 (ML23)	05:27 20:30	18:03 (ML23) 18:10 (ML23)
14	07:21 16:54		06:55 17:31	06:14 18:03			06:23 19:36	47	06:54 (ML24) 18:18 (ML23)	05:44 20:07	55	17:35 (ML23) 18:30 (ML23)	05:27 20:31	
15	07:21 16:55		06:54 17:32	06:12 18:04			06:22 19:37	49	06:55 (ML24) 18:20 (ML23)	05:43 20:08	54	17:35 (ML23) 18:29 (ML23)	05:27 20:31	
16	07:21 16:56		06:53 17:34	06:10 18:05	1	06:29 (ML26) 06:30 (ML26)	06:20 19:38	47	06:58 (ML24) 18:22 (ML23)	05:42 20:09	53	17:36 (ML23) 18:29 (ML23)	05:27 20:32	
17	07:20 16:57		06:51 17:35	06:09 18:07	4	05:27 (ML26) 06:31 (ML26)	06:18 19:39	41	17:43 (ML23) 18:24 (ML23)	05:41 20:10	52	17:36 (ML23) 18:28 (ML23)	05:27 20:32	
18	07:20 16:58		06:50 17:36	06:07 18:08	6	06:26 (ML26) 06:32 (ML26)	06:17 19:40	43	17:42 (ML23) 18:25 (ML23)	05:40 20:11	51	17:37 (ML23) 18:28 (ML23)	05:27 20:32	
19	07:19 17:00		06:49 17:37	06:05 18:09	8	06:24 (ML26) 06:32 (ML26)	06:15 19:41	46	17:40 (ML23) 18:26 (ML23)	05:39 20:12	50	17:37 (ML23) 18:27 (ML23)	05:27 20:33	
20	07:19 17:01		06:47 17:38	06:04 18:10	10	06:22 (ML26) 06:32 (ML26)	06:14 19:42	48	17:39 (ML23) 18:27 (ML23)	05:38 20:13	49	17:37 (ML23) 18:26 (ML23)	05:27 20:33	
21	07:18 17:02		06:46 17:40	06:02 18:11	12	06:21 (ML26) 06:33 (ML26)	06:12 19:43	51	17:37 (ML23) 18:28 (ML23)	05:37 20:14	48	17:39 (ML23) 18:27 (ML23)	05:28 20:33	
22	07:17 17:03		06:44 17:41	06:00 18:12	13	06:19 (ML26) 06:32 (ML26)	06:11 19:44	52	17:37 (ML23) 18:29 (ML23)	05:36 20:15	47	17:39 (ML23) 18:26 (ML23)	05:28 20:33	
23	07:17 17:04		06:43 17:42	05:59 18:13	14	06:17 (ML26) 06:31 (ML26)	06:10 19:45	54	17:35 (ML23) 18:29 (ML23)	05:36 20:15	45	17:40 (ML23) 18:25 (ML23)	05:28 20:33	
24	07:16 17:05		06:42 17:43	05:57 18:14	15	06:16 (ML26) 06:31 (ML26)	06:08 19:46	55	17:35 (ML23) 18:30 (ML23)	05:35 20:16	44	17:41 (ML23) 18:25 (ML23)	05:28 20:34	
25	07:15 17:07		06:40 17:44	05:55 18:15	16	06:14 (ML24) 06:30 (ML26)	06:07 19:47	56	17:34 (ML23) 18:30 (ML23)	05:34 20:17	42	17:42 (ML23) 18:24 (ML23)	05:29 20:34	
26	07:15 17:08		06:39 17:45	05:54 18:16	17	06:12 (ML24) 06:29 (ML26)	06:05 19:49	57	17:33 (ML23) 18:30 (ML23)	05:34 20:18	41	17:42 (ML23) 18:23 (ML23)	05:29 20:34	
27	07:14 17:09		06:37 17:47	05:52 18:17	17	06:11 (ML24) 06:28 (ML26)	06:04 19:50	58	17:33 (ML23) 18:31 (ML23)	05:33 20:19	39	17:44 (ML23) 18:23 (ML23)	05:29 20:34	
28	07:13 17:10		06:36 17:48	05:50 18:18	16	06:09 (ML24) 06:25 (ML26)	06:03 19:51	58	17:33 (ML23) 18:31 (ML23)	05:32 20:20	38	17:44 (ML23) 18:22 (ML23)	05:29 20:34	
29	07:12 17:12			06:49 19:19	16	07:07 (ML24) 07:23 (ML24)	06:01 19:52	59	17:32 (ML23) 18:31 (ML23)	05:32 20:21	36	17:46 (ML23) 18:22 (ML23)	05:30 20:34	5 18:07 (ML23) 18:12 (ML23)
30	07:11 17:12			06:47 19:20	18	07:06 (ML24) 07:24 (ML24)	06:00 19:53	59	17:32 (ML23) 18:31 (ML23)	05:31 20:21	35	17:46 (ML23) 18:21 (ML23)	05:30 20:34	9 18:06 (ML23) 18:15 (ML23)
31	07:11 17:14			06:46 19:21	20	07:04 (ML24) 07:24 (ML24)			05:31 20:22	34	17:47 (ML23) 18:21 (ML23)		

	January		February	March	April	May		June
Potential sun hours	298		298	370	398	447		451
Total, worst case		169		203	1271	1574		280
Sun reduction		0,43		0,46	0,50	0,57		0,64
Oper. time red.		0,88		0,88	0,88	0,88		0,88
Wind dir. red.		0,63		0,57	0,57	0,57		0,57
Total reduction		0,24		0,23	0,25	0,28		0,32
Total, real		40		47	316	448		90

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R18a - R18a
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October	November	December
1	05:31		18:05 (ML23) 05:54		17:43 (ML23) 06:25		06:48 (ML24) 06:54	06:28	07:02
	20:34	11	18:16 (ML23) 20:15	57	18:40 (ML23) 19:32	30	07:18 (ML24) 18:42	16:56	16:32
2	05:31		18:04 (ML23) 05:55		17:43 (ML23) 06:26		06:47 (ML24) 06:55	06:29	07:03
	20:34	14	18:18 (ML23) 20:14	57	18:40 (ML23) 19:31	31	07:18 (ML24) 18:41	16:55	16:32
3	05:32		18:03 (ML23) 05:56		17:43 (ML23) 06:27		06:47 (ML24) 06:56	06:30	07:04	08:07 (ML28)
	20:33	16	18:19 (ML23) 20:13	58	18:41 (ML23) 19:29	32	07:19 (ML24) 18:39	16:54	16:32	9	08:16 (ML28)
4	05:32		18:02 (ML23) 05:57		17:42 (ML23) 06:28		06:48 (ML24) 06:57	06:31	07:05	08:06 (ML28)
	20:33	18	18:20 (ML23) 20:12	59	18:41 (ML23) 19:28	31	07:19 (ML24) 18:37	16:53	16:32	13	08:19 (ML28)
5	05:33		18:01 (ML23) 05:58		17:42 (ML23) 06:29		06:49 (ML24) 06:58	06:32	07:06	08:05 (ML28)
	20:33	20	18:21 (ML23) 20:11	59	18:41 (ML23) 19:26	30	07:19 (ML24) 18:36	16:51	16:31	16	08:21 (ML28)
6	05:33		18:00 (ML23) 05:59		17:42 (ML23) 06:29		06:50 (ML24) 06:59	06:34	07:07	08:04 (ML28)
	20:33	23	18:23 (ML23) 20:09	59	18:41 (ML23) 19:24	29	07:19 (ML24) 18:34	16:50	16:31	18	08:22 (ML28)
7	05:34		17:59 (ML23) 06:00		17:41 (ML23) 06:30		06:51 (ML24) 07:00	06:35	07:08	08:04 (ML28)
	20:33	24	18:23 (ML23) 20:08	60	18:41 (ML23) 19:23	28	07:19 (ML24) 18:33	16:49	16:31	20	08:24 (ML28)
8	05:35		17:59 (ML23) 06:01		17:41 (ML23) 06:31		06:52 (ML24) 07:01	06:36	07:09	08:04 (ML28)
	20:32	26	18:25 (ML23) 20:07	60	18:41 (ML23) 19:21	27	07:19 (ML24) 18:31	16:48	16:31	21	08:25 (ML28)
9	05:35		17:58 (ML23) 06:02		17:41 (ML23) 06:32		06:53 (ML24) 07:02	06:37	07:10	08:04 (ML28)
	20:32	28	18:26 (ML23) 20:06	60	18:41 (ML23) 19:19	26	07:19 (ML24) 18:29	16:47	16:31	22	08:26 (ML28)
10	05:36		17:57 (ML23) 06:03		17:41 (ML23) 06:33		06:54 (ML24) 07:03	06:38	07:11	08:03 (ML28)
	20:31	29	18:26 (ML23) 20:05	60	18:41 (ML23) 19:18	24	06:55 (ML24) 07:04	16:46	16:31	23	08:26 (ML28)
11	05:37		17:56 (ML23) 06:04		17:41 (ML23) 06:34		06:55 (ML24) 07:04	06:40	07:12	08:03 (ML28)
	20:31	32	18:28 (ML23) 20:03	60	18:41 (ML23) 19:16	22	07:17 (ML24) 18:26	16:45	16:31	24	08:27 (ML28)
12	05:37		17:56 (ML23) 06:05		17:41 (ML23) 06:35		06:56 (ML24) 07:05	06:41	07:13	08:03 (ML28)
	20:31	33	18:29 (ML23) 20:02	59	18:40 (ML23) 19:14	21	07:17 (ML24) 18:25	16:44	16:31	25	08:28 (ML28)
13	05:38		17:55 (ML23) 06:06		17:40 (ML23) 06:36		06:57 (ML24) 07:07	06:42	07:13	08:03 (ML28)
	20:30	34	18:29 (ML23) 20:01	59	18:39 (ML23) 19:13	19	07:16 (ML24) 18:23	16:43	16:31	26	08:29 (ML28)
14	05:39		17:54 (ML23) 06:07		17:40 (ML23) 06:37		06:57 (ML24) 07:08	06:43	07:14	08:04 (ML28)
	20:30	36	18:30 (ML23) 19:59	58	18:38 (ML23) 19:11	16	07:13 (ML24) 18:21	16:42	16:32	26	08:30 (ML28)
15	05:40		17:54 (ML23) 06:08		17:40 (ML23) 06:38		06:58 (ML24) 07:09	06:44	07:15	08:03 (ML28)
	20:29	37	18:31 (ML23) 19:58	58	18:38 (ML23) 19:09	16	07:14 (ML26) 18:20	16:42	16:32	27	08:30 (ML28)
16	05:40		17:53 (ML23) 06:09		17:40 (ML23) 06:39		06:59 (ML26) 07:10	06:45	07:16	08:04 (ML28)
	20:28	39	18:32 (ML23) 19:57	57	18:37 (ML23) 19:08	17	07:16 (ML26) 18:18	16:41	16:32	27	08:31 (ML28)
17	05:41		17:52 (ML23) 06:10		17:40 (ML23) 06:40		07:00 (ML24) 07:11	06:47	07:16	08:04 (ML28)
	20:28	40	18:32 (ML23) 19:55	57	18:37 (ML23) 19:06	17	07:17 (ML26) 18:17	16:40	16:32	28	08:32 (ML28)
18	05:42		17:51 (ML23) 06:11		17:40 (ML23) 06:41		07:01 (ML24) 07:12	06:48	07:17	08:04 (ML28)
	20:27	42	18:33 (ML23) 19:54	56	18:36 (ML23) 19:04	16	07:17 (ML26) 18:15	16:39	16:33	28	08:32 (ML28)
19	05:43		17:51 (ML23) 06:12		17:41 (ML23) 06:42		07:02 (ML26) 07:13	06:49	07:17	08:05 (ML28)
	20:27	43	18:34 (ML23) 19:52	54	18:35 (ML23) 19:03	16	07:18 (ML26) 18:14	16:38	16:33	28	08:33 (ML28)
20	05:44		17:51 (ML23) 06:13		17:41 (ML23) 06:43		07:03 (ML26) 07:14	06:50	07:18	08:05 (ML28)
	20:26	44	18:35 (ML23) 19:51	53	18:34 (ML23) 19:01	15	07:18 (ML26) 18:12	16:38	16:34	28	08:33 (ML28)
21	05:44		17:50 (ML23) 06:14		17:42 (ML23) 06:44		07:04 (ML26) 07:15	06:51	07:19	09:06 (ML28)
	20:25	46	18:36 (ML23) 19:49	51	18:33 (ML23) 18:59	14	07:18 (ML26) 18:11	16:37	16:34	28	08:34 (ML28)
22	05:45		17:49 (ML23) 06:15		17:42 (ML23) 06:45		07:05 (ML26) 07:16	06:52	07:19	08:06 (ML28)
	20:24	47	18:36 (ML23) 19:48	50	18:32 (ML23) 18:57	12	07:17 (ML26) 18:10	16:36	16:34	28	08:34 (ML28)
23	05:46		17:48 (ML23) 06:16		17:43 (ML23) 06:46		07:06 (ML26) 07:17	06:54	07:20	08:07 (ML28)
	20:24	48	18:36 (ML23) 19:46	48	18:31 (ML23) 18:56	11	07:17 (ML26) 18:08	16:36	16:35	28	08:35 (ML28)
24	05:47		17:48 (ML23) 06:17		17:44 (ML23) 06:47		07:07 (ML26) 07:19	06:55	07:20	08:07 (ML28)
	20:23	49	18:37 (ML23) 19:45	46	18:30 (ML23) 18:54	9	07:16 (ML26) 18:07	16:35	16:36	28	08:35 (ML28)
25	05:48		17:47 (ML23) 06:18		17:45 (ML23) 06:48		07:08 (ML26) 06:20	06:56	07:21	08:07 (ML28)
	20:22	51	18:38 (ML23) 19:43	43	18:28 (ML23) 18:52	7	07:15 (ML26) 17:05	16:35	16:36	28	08:35 (ML28)
26	05:49		17:47 (ML23) 06:19		17:46 (ML23) 06:49		07:09 (ML26) 06:21	06:57	07:21	08:08 (ML28)
	20:21	51	18:38 (ML23) 19:42	40	18:26 (ML23) 18:51	5	07:14 (ML26) 17:04	16:34	16:37	28	08:36 (ML28)
27	05:50		17:46 (ML23) 06:20		07:01 (ML24) 06:50		07:10 (ML24) 06:22	06:58	07:21	09:09 (ML28)
	20:20	53	18:39 (ML23) 19:40	45	18:24 (ML23) 18:49	2	07:12 (ML26) 17:03	16:34	16:37	27	08:36 (ML28)
28	05:51		17:46 (ML23) 06:21		06:57 (ML24) 06:51			06:23	06:59	07:22	08:09 (ML28)
	20:19	54	18:40 (ML23) 19:39	49	18:22 (ML23) 18:47			17:01	16:33	16:38	27	08:36 (ML28)
29	05:51		17:46 (ML23) 06:22		06:53 (ML24) 06:52			06:24	07:00	07:22	08:10 (ML28)
	20:18	54	18:40 (ML23) 19:37	48	18:18 (ML23) 18:46			17:00	16:33	16:39	27	08:37 (ML28)
30	05:52		17:44 (ML23) 06:23		06:51 (ML24) 06:53			06:25	07:01	07:22	08:11 (ML28)
	20:17	55	18:39 (ML23) 19:36	45	18:14 (ML23) 18:44			16:59	16:33	16:40	26	08:37 (ML28)
31	05:53		17:44 (ML23) 06:24		06:50 (ML24)			06:27		07:22	08:12 (ML28)
	20:16	56	18:40 (ML23) 19:34	36	18:08 (ML23)			16:57		16:40	25	08:37 (ML28)

	July		August		September		October	November	December
Potential sun hours	458		427		375		346	299	289
Total, worst case	1153		1661		523				709
Sun reduction	0,72		0,73		0,67				0,44
Oper. time red.	0,68		0,88		0,88				0,88
Wind dir. red.	0,57		0,57		0,57				0,63
Total reduction	0,36		0,37		0,34				0,24
Total, real	414		609		175				172

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)

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SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R18b - R18b
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January		February	March		April		May		June	
1	07:23 / 16:41 34	07:54 (ML28) / 08:28 (ML28)	07:10 / 17:15	06:34 / 17:49		06:44 / 19:22 13	07:02 (ML24) / 07:15 (ML24)	05:59 / 19:54 55	17:42 (ML23) / 18:37 (ML23)	05:30 / 20:23 63	17:40 (ML23) / 18:43 (ML23)
2	07:23 / 16:42 34	07:54 (ML28) / 08:28 (ML28)	07:09 / 17:16	06:33 / 17:50		06:42 / 19:23 15	07:01 (ML24) / 07:16 (ML24)	05:57 / 19:55 57	17:41 (ML23) / 18:38 (ML23)	05:30 / 20:24 62	17:41 (ML23) / 18:43 (ML23)
3	07:23 / 16:43 33	07:55 (ML28) / 08:28 (ML28)	07:08 / 17:18	06:31 / 17:51		06:41 / 19:24 17	06:59 (ML24) / 07:16 (ML24)	05:56 / 19:56 59	17:39 (ML23) / 18:38 (ML23)	05:29 / 20:24 63	17:41 (ML23) / 18:44 (ML23)
4	07:23 / 16:44 32	07:56 (ML28) / 08:28 (ML28)	07:07 / 17:19	06:30 / 17:52		06:39 / 19:26 18	06:57 (ML24) / 07:15 (ML24)	05:55 / 19:57 60	17:39 (ML23) / 18:39 (ML23)	05:29 / 20:25 62	17:41 (ML23) / 18:43 (ML23)
5	07:23 / 16:45 33	07:56 (ML28) / 08:29 (ML28)	07:06 / 17:20	06:28 / 17:53		06:37 / 19:27 20	06:56 (ML24) / 07:16 (ML24)	05:54 / 19:58 62	17:38 (ML23) / 18:40 (ML23)	05:29 / 20:26 61	17:42 (ML23) / 18:43 (ML23)
6	07:23 / 16:46 32	07:57 (ML28) / 08:29 (ML28)	07:05 / 17:21	06:26 / 17:55		06:36 / 19:28 21	06:54 (ML24) / 07:15 (ML24)	05:52 / 19:59 62	17:38 (ML23) / 18:40 (ML23)	05:28 / 20:26 61	17:43 (ML23) / 18:44 (ML23)
7	07:23 / 16:47 31	07:58 (ML28) / 08:29 (ML28)	07:03 / 17:23	06:25 / 17:56		06:34 / 19:29 23	06:53 (ML24) / 07:16 (ML24)	05:51 / 20:00 63	17:38 (ML23) / 18:41 (ML23)	05:28 / 20:27 61	17:43 (ML23) / 18:44 (ML23)
8	07:23 / 16:48 30	07:58 (ML28) / 08:28 (ML28)	07:02 / 17:24	06:23 / 17:57		06:33 / 19:30 24	06:51 (ML24) / 07:15 (ML24)	05:50 / 20:01 63	17:38 (ML23) / 18:41 (ML23)	05:28 / 20:28 60	17:43 (ML23) / 18:43 (ML23)
9	07:23 / 16:49 29	07:59 (ML28) / 08:28 (ML28)	07:01 / 17:25	06:22 / 17:58		06:31 / 19:31 25	06:49 (ML24) / 07:14 (ML24)	05:49 / 20:02 65	17:37 (ML23) / 18:42 (ML23)	05:27 / 20:28 60	17:43 (ML23) / 18:43 (ML23)
10	07:22 / 16:50 29	08:00 (ML28) / 08:29 (ML28)	07:00 / 17:26	06:20 / 17:59		06:29 / 19:32 25	06:48 (ML24) / 07:13 (ML24)	05:48 / 20:03 65	17:36 (ML23) / 18:41 (ML23)	05:27 / 20:29 59	17:44 (ML23) / 18:43 (ML23)
11	07:22 / 16:51 27	08:02 (ML28) / 08:29 (ML28)	06:59 / 17:28	06:18 / 18:00		06:28 / 19:33 26	06:46 (ML24) / 07:12 (ML24)	05:47 / 20:04 65	17:36 (ML23) / 18:41 (ML23)	05:27 / 20:29 60	17:44 (ML23) / 18:44 (ML23)
12	07:22 / 16:52 26	08:02 (ML28) / 08:28 (ML28)	06:58 / 17:29	06:17 / 18:01		06:26 / 19:34 27	06:45 (ML24) / 07:12 (ML24)	05:46 / 20:05 66	17:36 (ML23) / 18:42 (ML23)	05:27 / 20:30 59	17:45 (ML23) / 18:44 (ML23)
13	07:22 / 16:53 25	08:03 (ML28) / 08:28 (ML28)	06:56 / 17:30	06:15 / 18:02		06:25 / 19:35 27	06:43 (ML24) / 07:10 (ML24)	05:45 / 20:06 66	17:37 (ML23) / 18:43 (ML23)	05:27 / 20:30 59	17:45 (ML23) / 18:44 (ML23)
14	07:21 / 16:54 22	08:05 (ML28) / 08:27 (ML28)	06:55 / 17:31	06:14 / 18:03		06:23 / 19:36 25	06:44 (ML24) / 07:09 (ML24)	05:44 / 20:07 66	17:37 (ML23) / 18:43 (ML23)	05:27 / 20:31 59	17:45 (ML23) / 18:44 (ML23)
15	07:21 / 16:55 20	08:06 (ML28) / 08:26 (ML28)	06:54 / 17:32	06:12 / 18:04		06:22 / 19:37 21	06:47 (ML24) / 07:06 (ML24)	05:43 / 20:08 67	17:36 (ML23) / 18:43 (ML23)	05:27 / 20:31 58	17:46 (ML23) / 18:44 (ML23)
16	07:21 / 16:56 18	08:08 (ML28) / 08:26 (ML28)	06:53 / 17:34	06:10 / 18:05		06:20 / 19:38 18	06:47 (ML24) / 07:05 (ML24)	05:42 / 20:09 67	17:36 (ML23) / 18:43 (ML23)	05:27 / 20:32 58	17:46 (ML23) / 18:44 (ML23)
17	07:20 / 16:57 14	08:10 (ML28) / 08:24 (ML28)	06:51 / 17:35	06:09 / 18:07		06:18 / 19:39 11	06:50 (ML24) / 07:01 (ML24)	05:41 / 20:10 67	17:36 (ML23) / 18:43 (ML23)	05:27 / 20:32 58	17:46 (ML23) / 18:44 (ML23)
18	07:20 / 16:58 9	08:13 (ML28) / 08:22 (ML28)	06:50 / 17:36	06:07 / 18:08		06:17 / 19:40		05:40 / 20:11 67	17:36 (ML23) / 18:43 (ML23)	05:27 / 20:32 58	17:46 (ML23) / 18:44 (ML23)
19	07:19 / 17:00		06:49 / 17:37	06:05 / 18:09	1	06:24 (ML26) / 06:15		05:39 / 20:12 67	17:36 (ML23) / 18:43 (ML23)	05:27 / 20:33 57	17:47 (ML23) / 18:44 (ML23)
20	07:19 / 17:01		06:47 / 17:38	06:04 / 18:10	3	06:25 (ML26) / 19:41		05:38 / 20:13 67	17:36 (ML23) / 18:43 (ML23)	05:27 / 20:33 57	17:47 (ML23) / 18:44 (ML23)
21	07:18 / 17:02		06:46 / 17:40	06:02 / 18:11	5	06:25 (ML26) / 19:42		05:37 / 20:14 67	17:37 (ML23) / 18:44 (ML23)	05:27 / 20:33 57	17:48 (ML23) / 18:45 (ML23)
22	07:17 / 17:03		06:44 / 17:41	06:00 / 18:12	7	06:26 (ML26) / 19:43 18	18:01 (ML23) / 18:19 (ML23)	05:36 / 20:14 67	17:37 (ML23) / 18:44 (ML23)	05:28 / 20:33 57	17:48 (ML23) / 18:45 (ML23)
23	07:17 / 17:04		06:43 / 17:42	05:59 / 18:13	9	06:26 (ML26) / 19:44 26	17:58 (ML23) / 18:24 (ML23)	05:36 / 20:15 66	17:37 (ML23) / 18:43 (ML23)	05:28 / 20:33 57	17:48 (ML23) / 18:45 (ML23)
24	07:16 / 17:05		06:42 / 17:43	05:57 / 18:14	10	06:17 (ML26) / 19:45 32	17:54 (ML23) / 18:26 (ML23)	05:35 / 20:15 66	17:38 (ML23) / 18:43 (ML23)	05:28 / 20:34 57	17:48 (ML23) / 18:45 (ML23)
25	07:15 / 17:07		06:40 / 17:44	05:55 / 18:15	11	06:16 (ML26) / 19:46 37	17:52 (ML23) / 18:29 (ML23)	05:34 / 20:16 66	17:38 (ML23) / 18:44 (ML23)	05:28 / 20:34 57	17:48 (ML23) / 18:45 (ML23)
26	07:15 / 17:08		06:39 / 17:45	05:54 / 18:16	12	06:25 (ML26) / 19:47 41	17:50 (ML23) / 18:31 (ML23)	05:34 / 20:17 65	17:38 (ML23) / 18:43 (ML23)	05:29 / 20:34 58	17:48 (ML23) / 18:46 (ML23)
27	07:14 / 17:09		06:37 / 17:47	05:52 / 18:17	13	06:24 (ML26) / 19:49 44	17:48 (ML23) / 18:32 (ML23)	05:33 / 20:18 65	17:39 (ML23) / 18:43 (ML23)	05:29 / 20:34 58	17:49 (ML23) / 18:46 (ML23)
28	07:13 / 17:10		06:36 / 17:48	05:50 / 18:18	13	06:24 (ML26) / 19:50 47	17:46 (ML23) / 18:33 (ML23)	05:32 / 20:19 65	17:39 (ML23) / 18:44 (ML23)	05:29 / 20:34 58	17:49 (ML23) / 18:46 (ML23)
29	07:12 / 17:12		06:49	05:50 / 18:18	13	06:22 (ML24) / 19:51 50	17:45 (ML23) / 18:35 (ML23)	05:32 / 20:20 64	17:39 (ML23) / 18:43 (ML23)	05:30 / 20:34 58	17:49 (ML23) / 18:47 (ML23)
30	07:11 / 17:12		06:47 / 19:19	07:07 (ML24) / 06:01	13	07:20 (ML26) / 19:52 52	17:43 (ML23) / 18:35 (ML23)	05:32 / 20:21 65	17:39 (ML23) / 18:44 (ML23)	05:30 / 20:34 59	17:49 (ML23) / 18:47 (ML23)
31	07:11 / 17:14		06:46 / 19:21	10	07:04 (ML24) / 07:14 (ML24)		05:31 / 20:22 63	17:42 (ML23) / 18:36 (ML23)	05:31 / 18:43 (ML23)		17:40 (ML23)

	January		February	March		April		May		June	
Potential sun hours	298		298	370		398		447		451	
Total, worst case	478		119			757		1992		1773	
Sun reduction	0,43		0,46			0,50		0,57		0,64	
Oper. time red.	0,88		0,88			0,88		0,88		0,88	
Wind dir. red.	0,63		0,57			0,56		0,56		0,56	
Total reduction	0,24		0,23			0,25		0,28		0,32	
Total, real	114		27			188		562		565	

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)

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SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R18b - R18b

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October	November			December		
1	05:31		17:48 (ML23)	05:54		17:46 (ML23)	06:25		06:45 (ML24)	06:54	06:28			07:02		07:44 (ML28)
	20:34	60	18:48 (ML23)	20:15	66	18:52 (ML23)	19:32	26	07:11 (ML24)	18:42	16:56			16:32	27	08:11 (ML28)
2	05:31		17:49 (ML23)	05:55		17:47 (ML23)	06:26		06:46 (ML24)	06:55	16:55			07:03		07:43 (ML28)
	20:34	60	18:49 (ML23)	20:14	65	18:52 (ML23)	19:31	25	07:11 (ML24)	18:41	16:55			16:32	29	08:12 (ML28)
3	05:32		17:49 (ML23)	05:56		17:47 (ML23)	06:27		06:47 (ML24)	06:56	06:30			07:04		07:43 (ML28)
	20:33	59	18:48 (ML23)	20:13	65	18:52 (ML23)	19:29	25	07:12 (ML24)	18:39	16:54			16:32	29	08:12 (ML28)
4	05:32		17:49 (ML23)	05:57		17:47 (ML23)	06:28		06:48 (ML24)	06:57	06:31			07:05		07:43 (ML28)
	20:33	60	18:49 (ML23)	20:12	64	18:51 (ML23)	19:28	24	07:12 (ML24)	18:37	16:53			16:32	30	08:13 (ML28)
5	05:33		17:48 (ML23)	05:58		17:47 (ML23)	06:29		06:49 (ML24)	06:58	06:32			07:06		07:43 (ML28)
	20:33	61	18:49 (ML23)	20:11	64	18:51 (ML23)	19:26	23	07:12 (ML24)	18:36	16:51			16:31	31	08:14 (ML28)
6	05:33		17:49 (ML23)	05:59		17:46 (ML23)	06:29		06:50 (ML24)	06:59	06:34			07:07		07:43 (ML28)
	20:33	61	18:50 (ML23)	20:09	62	16:50 (ML23)	19:24	21	07:11 (ML24)	18:34	16:50			16:31	32	08:15 (ML28)
7	05:34		17:48 (ML23)	06:00		17:48 (ML23)	06:30		06:51 (ML24)	07:00	06:35			07:08		07:43 (ML28)
	20:33	61	18:49 (ML23)	20:08	62	18:50 (ML23)	19:23	20	07:11 (ML24)	18:33	16:49			16:31	33	08:16 (ML28)
8	05:35		17:48 (ML23)	06:01		17:48 (ML23)	06:31		06:52 (ML24)	07:01	06:36			07:09		07:44 (ML28)
	20:32	62	18:50 (ML23)	20:07	61	18:49 (ML23)	19:21	18	07:10 (ML24)	18:31	16:48			16:31	32	08:16 (ML28)
9	05:35		17:49 (ML23)	06:02		17:49 (ML23)	06:32		06:53 (ML24)	07:02	06:37			07:10		07:44 (ML28)
	20:32	62	18:51 (ML23)	20:06	59	18:48 (ML23)	19:19	17	07:10 (ML24)	18:29	16:47			16:31	33	08:17 (ML28)
10	05:36		17:48 (ML23)	06:03		17:49 (ML23)	06:33		06:54 (ML24)	07:03	06:38			07:11		07:43 (ML28)
	20:31	62	18:50 (ML23)	20:05	59	18:48 (ML23)	19:18	15	07:09 (ML24)	18:28	16:46			16:31	34	08:17 (ML28)
11	05:37		17:48 (ML23)	06:04		17:50 (ML23)	06:34		06:55 (ML24)	07:04	06:40			07:12		07:44 (ML28)
	20:31	63	18:51 (ML23)	20:03	57	18:47 (ML23)	19:16	13	07:08 (ML24)	18:26	16:45			16:31	34	08:18 (ML28)
12	05:37		17:48 (ML23)	06:05		17:51 (ML23)	06:35		06:56 (ML24)	07:05	06:41			07:13		07:44 (ML28)
	20:31	64	18:52 (ML23)	20:02	55	18:46 (ML23)	19:14	11	07:07 (ML24)	18:25	16:44			16:31	35	08:19 (ML28)
13	05:38		17:48 (ML23)	06:06		17:50 (ML23)	06:36		06:57 (ML24)	07:07	06:42			07:13		07:45 (ML28)
	20:30	63	18:51 (ML23)	20:01	54	18:44 (ML23)	19:13	12	07:09 (ML24)	18:23	16:43			16:31	34	08:19 (ML28)
14	05:39		17:48 (ML23)	06:07		17:51 (ML23)	06:37		06:57 (ML24)	07:08	06:43			07:14		07:45 (ML28)
	20:30	64	18:52 (ML23)	19:59	52	18:43 (ML23)	19:11	13	07:10 (ML26)	18:21	16:42			16:32	35	08:20 (ML28)
15	05:40		17:48 (ML23)	06:08		17:52 (ML23)	06:38		06:58 (ML24)	07:09	06:44			07:15		07:45 (ML28)
	20:29	64	18:52 (ML23)	19:58	49	18:41 (ML23)	19:09	13	07:11 (ML26)	18:20	16:42			16:32	35	08:20 (ML28)
16	05:40		17:48 (ML23)	06:09		17:53 (ML23)	06:39		06:59 (ML24)	07:10	06:45			07:16		07:46 (ML28)
	20:28	65	18:53 (ML23)	19:57	47	18:40 (ML23)	19:08	13	07:12 (ML26)	18:18	16:41			16:32	35	08:21 (ML28)
17	05:41		17:47 (ML23)	06:10		17:55 (ML23)	06:40		07:00 (ML26)	07:11	06:47			07:16		07:46 (ML28)
	20:28	65	18:52 (ML23)	19:55	43	18:38 (ML23)	19:06	12	07:12 (ML26)	18:17	16:40			16:32	36	08:22 (ML28)
18	05:42		17:47 (ML23)	06:11		17:56 (ML23)	06:41		07:01 (ML26)	07:12	06:48			07:17		07:46 (ML28)
	20:27	66	18:53 (ML23)	19:54	40	18:36 (ML23)	19:04	11	07:12 (ML26)	18:15	16:39			16:33	36	08:22 (ML28)
19	05:43		17:47 (ML23)	06:12		17:58 (ML23)	06:42		07:02 (ML26)	07:13	06:49			07:17		07:47 (ML28)
	20:27	66	18:53 (ML23)	19:52	36	18:34 (ML23)	19:03	10	07:12 (ML26)	18:14	16:38			16:33	36	08:23 (ML28)
20	05:44		17:47 (ML23)	06:13		18:00 (ML23)	06:43		07:03 (ML26)	07:14	06:50			07:18		07:47 (ML28)
	20:26	66	18:53 (ML23)	19:51	31	18:31 (ML23)	19:01	9	07:12 (ML26)	18:12	16:38			16:34	36	08:23 (ML28)
21	05:44		17:48 (ML23)	06:14		18:03 (ML23)	06:44		07:04 (ML26)	07:15	06:51			07:19		07:48 (ML28)
	20:25	66	18:54 (ML23)	19:49	25	18:28 (ML23)	18:59	8	07:12 (ML26)	18:11	16:37			16:34	36	08:24 (ML28)
22	05:45		17:47 (ML23)	06:15		18:07 (ML23)	06:45		07:05 (ML26)	07:16	06:52			07:19		07:48 (ML28)
	20:24	66	18:53 (ML23)	19:48	16	18:23 (ML23)	18:57	6	07:11 (ML26)	18:10	16:36			16:34	36	08:24 (ML28)
23	05:46		17:47 (ML23)	06:16			06:46		07:06 (ML26)	07:17	06:54			07:20		07:49 (ML28)
	20:24	66	18:53 (ML23)	19:46			18:56	4	07:10 (ML26)	18:08	16:36			16:35	36	08:25 (ML28)
24	05:47		17:47 (ML23)	06:17			06:47		07:07 (ML26)	07:19	06:55		07:51 (ML28)	07:20		07:49 (ML28)
	20:23	66	18:53 (ML23)	19:45			18:54	2	07:09 (ML26)	18:07	16:35	8	07:59 (ML28)	16:36	36	08:25 (ML28)
25	05:48		17:47 (ML23)	06:18			06:48			06:20	06:56		07:48 (ML28)	07:21		07:49 (ML28)
	20:22	66	18:53 (ML23)	19:43			18:52			17:05	16:35	14	08:02 (ML28)	16:36	36	08:25 (ML28)
26	05:49		17:47 (ML23)	06:19		06:52 (ML24)	06:49			06:21	06:57		07:46 (ML28)	07:21		07:50 (ML28)
	20:21	67	18:54 (ML23)	19:42	12	07:04 (ML24)	18:51			17:04	16:34	18	08:04 (ML28)	16:37	36	08:26 (ML28)
27	05:50		17:47 (ML23)	06:20		06:49 (ML24)	06:50			06:22	06:58		07:45 (ML28)	07:21		07:51 (ML28)
	20:20	67	18:54 (ML23)	19:40	18	07:07 (ML24)	18:49			17:03	16:34	20	08:05 (ML28)	16:37	35	08:26 (ML28)
28	05:51		17:47 (ML23)	06:21		06:47 (ML24)	06:51			06:23	06:59		07:44 (ML28)	07:22		07:51 (ML28)
	20:19	67	18:54 (ML23)	19:39	22	07:09 (ML24)	18:47			17:01	16:33	22	08:06 (ML28)	16:38	35	08:26 (ML28)
29	05:51		17:47 (ML23)	06:22		06:44 (ML24)	06:52			06:24	07:00		07:45 (ML28)	07:22		07:52 (ML28)
	20:18	67	18:54 (ML23)	19:37	25	07:09 (ML24)	18:46			17:00	16:33	24	08:09 (ML28)	16:39	35	08:27 (ML28)
30	05:52		17:46 (ML23)	06:23		06:43 (ML24)	06:53			06:25	07:01		07:44 (ML28)	07:22		07:53 (ML28)
	20:17	67	18:53 (ML23)	19:36	27	07:10 (ML24)	18:44			16:59	16:33	26	08:10 (ML28)	16:40	34	08:27 (ML28)
31	05:53		17:46 (ML23)	06:24		06:44 (ML24)				06:27				07:22		07:53 (ML28)
	20:16	66	18:52 (ML23)	19:34	26	07:10 (ML24)				16:57				16:40	35	08:28 (ML28)
Potential sun hours	458			427			375			346	299			289		
Total, worst case	1985			1262			351				132			1052		
Sun reduction	0,72			0,73			0,67				0,51			0,44		
Oper. time red.	0,88			0,88			0,88				0,88			0,88		
Wind dir. red.	0,56			0,56			0,57				0,63			0,63		
Total reduction	0,36			0,36			0,34				0,28			0,24		
Total, real	706			459			118				37			254		

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R18c - R18c
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January			February	March			April			May			June	
1	07:23 16:41	32	07:56 (ML28) 08:28 (ML28)	07:10 17:15	06:34 17:49			06:44 19:22	19	07:02 (ML24) 07:21 (ML24)	05:59 19:54	65	17:25 (ML23) 18:30 (ML23)	05:30 20:23	60	17:30 (ML23) 18:30 (ML23)
2	07:23 16:42	31	07:57 (ML28) 08:28 (ML28)	07:09 17:16	06:33 17:50			06:42 19:23	20	07:01 (ML24) 07:21 (ML24)	05:57 19:55	66	17:25 (ML23) 18:31 (ML23)	05:30 20:24	59	17:31 (ML23) 18:30 (ML23)
3	07:23 16:43	30	07:58 (ML28) 08:28 (ML28)	07:08 17:18	06:31 17:51			06:41 19:24	22	06:59 (ML24) 07:21 (ML24)	05:56 19:56	66	17:24 (ML23) 18:30 (ML23)	05:29 20:24	58	17:32 (ML23) 18:30 (ML23)
4	07:23 16:44	29	07:59 (ML28) 08:28 (ML28)	07:07 17:19	06:30 17:52			06:39 19:26	23	06:57 (ML24) 07:20 (ML24)	05:55 19:57	67	17:24 (ML23) 18:31 (ML23)	05:29 20:25	57	17:32 (ML23) 18:29 (ML23)
5	07:23 16:45	29	07:59 (ML28) 08:28 (ML28)	07:06 17:20	06:28 17:53			06:37 19:27	24	06:56 (ML24) 07:20 (ML24)	05:54 19:58	68	17:23 (ML23) 18:31 (ML23)	05:29 20:26	57	17:33 (ML23) 18:30 (ML23)
6	07:23 16:46	28	08:00 (ML28) 08:28 (ML28)	07:05 17:21	06:26 17:55			06:36 19:28	25	06:54 (ML24) 07:19 (ML24)	05:52 19:59	69	17:23 (ML23) 18:32 (ML23)	05:28 20:26	56	17:34 (ML23) 18:30 (ML23)
7	07:23 16:47	28	08:01 (ML28) 08:29 (ML28)	07:03 17:23	06:25 17:56			06:34 19:29	26	06:53 (ML24) 07:19 (ML24)	05:51 20:00	69	17:23 (ML23) 18:32 (ML23)	05:28 20:27	56	17:34 (ML23) 18:30 (ML23)
8	07:23 16:48	27	08:01 (ML28) 08:28 (ML28)	07:02 17:24	06:23 17:57			06:33 19:30	28	06:51 (ML24) 07:17 (ML24)	05:50 20:01	69	17:23 (ML23) 18:32 (ML23)	05:28 20:28	55	17:34 (ML23) 18:29 (ML23)
9	07:23 16:49	25	08:03 (ML28) 08:28 (ML28)	07:01 17:25	06:22 17:58			06:31 19:31	26	06:49 (ML24) 07:15 (ML24)	05:49 20:02	69	17:23 (ML23) 18:32 (ML23)	05:27 20:28	54	17:35 (ML23) 18:29 (ML23)
10	07:22 16:50	24	08:04 (ML28) 08:28 (ML28)	07:00 17:26	06:20 17:59			06:29 19:32	25	06:50 (ML24) 07:15 (ML24)	05:48 20:03	68	17:23 (ML23) 18:31 (ML23)	05:27 20:29	54	17:35 (ML23) 18:29 (ML23)
11	07:22 16:51	22	08:05 (ML28) 08:27 (ML28)	06:59 17:28	06:18 18:00			06:28 19:33	21	06:51 (ML24) 07:12 (ML24)	05:47 20:04	68	17:23 (ML23) 18:31 (ML23)	05:27 20:29	53	17:36 (ML23) 18:29 (ML23)
12	07:22 16:52	20	08:06 (ML28) 08:26 (ML28)	06:58 17:29	06:17 18:01			06:26 19:34	18	06:53 (ML24) 07:11 (ML24)	05:46 20:05	68	17:23 (ML23) 18:31 (ML23)	05:27 20:30	53	17:36 (ML23) 18:29 (ML23)
13	07:22 16:53	18	08:08 (ML28) 08:26 (ML28)	06:56 17:30	06:15 18:02			06:25 19:35	12	06:55 (ML24) 07:07 (ML24)	05:45 20:06	68	17:24 (ML23) 18:32 (ML23)	05:27 20:30	52	17:37 (ML23) 18:29 (ML23)
14	07:21 16:54	15	08:10 (ML28) 08:25 (ML28)	06:55 17:31	06:14 18:03			06:23 19:36			05:44 20:07	68	17:24 (ML23) 18:32 (ML23)	05:27 20:31	53	17:37 (ML23) 18:20 (ML23)
15	07:21 16:55	11	08:12 (ML28) 08:23 (ML28)	06:54 17:32	06:12 18:04			06:22 19:37	13	17:53 (ML23) 18:06 (ML23)	05:43 20:08	68	17:24 (ML23) 18:32 (ML23)	05:27 20:31	52	17:38 (ML23) 18:30 (ML23)
16	07:21 16:56	3	08:17 (ML28) 08:20 (ML28)	06:53 17:34	06:10 18:05			06:20 19:38	24	17:48 (ML23) 18:12 (ML23)	05:42 20:09	68	17:24 (ML23) 18:32 (ML23)	05:27 20:32	52	17:38 (ML23) 18:30 (ML23)
17	07:20 16:57			06:51 17:35	06:09 18:07	1	06:27 (ML26) 06:28 (ML26)	06:18 19:39	31	17:44 (ML23) 18:15 (ML23)	05:41 20:10	68	17:24 (ML23) 18:32 (ML23)	05:27 20:32	52	17:38 (ML23) 18:30 (ML23)
18	07:20 16:58			06:50 17:36	06:07 18:08	3	06:26 (ML26) 06:29 (ML26)	06:17 19:40	37	17:41 (ML23) 18:18 (ML23)	05:40 20:11	67	17:25 (ML23) 18:32 (ML23)	05:27 20:32	52	17:38 (ML23) 18:30 (ML23)
19	07:19 17:00			06:49 17:37	06:05 18:09	5	06:24 (ML26) 06:29 (ML26)	06:15 19:41	41	17:38 (ML23) 18:19 (ML23)	05:39 20:12	66	17:25 (ML23) 18:31 (ML23)	05:27 20:33	51	17:39 (ML23) 18:30 (ML23)
20	07:19 17:01			06:47 17:38	06:04 18:10	7	06:22 (ML26) 06:29 (ML26)	06:14 19:42	44	17:37 (ML23) 18:21 (ML23)	05:38 20:13	66	17:25 (ML23) 18:31 (ML23)	05:27 20:33	51	17:39 (ML23) 18:30 (ML23)
21	07:18 17:02			06:46 17:40	06:02 18:11	9	06:21 (ML26) 06:30 (ML26)	06:12 19:43	48	17:34 (ML23) 18:22 (ML23)	05:37 20:14	66	17:26 (ML23) 18:32 (ML23)	05:27 20:33	51	17:40 (ML23) 18:31 (ML23)
22	07:17 17:03			06:44 17:41	06:00 18:12	10	06:19 (ML26) 06:29 (ML26)	06:11 19:44	51	17:33 (ML23) 18:24 (ML23)	05:36 20:15	65	17:26 (ML23) 18:31 (ML23)	05:28 20:33	51	17:40 (ML23) 18:31 (ML23)
23	07:17 17:04			06:43 17:42	05:59 18:13	11	06:17 (ML26) 06:28 (ML26)	06:10 19:45	53	17:31 (ML23) 18:24 (ML23)	05:36 20:15	65	17:26 (ML23) 18:31 (ML23)	05:28 20:33	51	17:40 (ML23) 18:31 (ML23)
24	07:16 17:05			06:42 17:43	05:57 18:14	12	06:16 (ML26) 06:28 (ML26)	06:08 19:46	56	17:30 (ML23) 18:26 (ML23)	05:35 20:16	64	17:27 (ML23) 18:31 (ML23)	05:28 20:34	52	17:39 (ML23) 18:31 (ML23)
25	07:15 17:07			06:40 17:44	05:55 18:15	13	06:14 (ML24) 06:27 (ML24)	06:07 19:47	57	17:30 (ML23) 18:27 (ML23)	05:34 20:17	64	17:27 (ML23) 18:31 (ML23)	05:28 20:34	52	17:40 (ML23) 18:32 (ML23)
26	07:15 17:08			06:39 17:45	05:54 18:16	13	06:12 (ML24) 06:25 (ML26)	06:05 19:49	59	17:28 (ML23) 18:27 (ML23)	05:34 20:18	63	17:27 (ML23) 18:30 (ML23)	05:29 20:34	52	17:40 (ML23) 18:32 (ML23)
27	07:14 17:09			06:37 17:47	05:52 18:17	13	06:11 (ML24) 06:24 (ML26)	06:04 19:50	61	17:27 (ML23) 18:28 (ML23)	05:33 20:19	62	17:29 (ML23) 18:31 (ML23)	05:29 20:34	52	17:40 (ML23) 18:32 (ML23)
28	07:13 17:10			06:36 17:48	05:50 18:18	12	06:09 (ML24) 06:21 (ML26)	06:03 19:51	62	17:27 (ML23) 18:29 (ML23)	05:32 20:20	61	17:29 (ML23) 18:30 (ML23)	05:29 20:34	53	17:40 (ML23) 18:33 (ML23)
29	07:12 17:12				06:49 19:19	13	07:07 (ML24) 07:20 (ML24)	06:01 19:52	63	17:26 (ML23) 18:29 (ML23)	05:32 20:21	61	17:30 (ML23) 18:31 (ML23)	05:30 20:34	53	17:40 (ML23) 18:33 (ML23)
30	07:11 17:13				06:47 19:20	15	07:06 (ML24) 07:21 (ML24)	06:00 19:53	65	17:25 (ML23) 18:30 (ML23)	05:31 20:21	60	17:30 (ML23) 18:30 (ML23)	05:30 20:34	52	17:41 (ML23) 18:33 (ML23)
31	07:11 17:14				06:46 19:21	17	07:04 (ML24) 07:21 (ML24)				05:31 20:22	59	17:31 (ML23) 18:30 (ML23)			
Potential sun hours	298			298	370			398			447			451		
Total, worst case		372			154				1052			2041			1606	
Sun reduction		0,43			0,46				0,50			0,57			0,64	
Oper. time red.		0,88			0,88				0,88			0,88			0,88	
Wind dir. red.		0,63			0,57				0,56			0,56			0,56	
Total reduction		0,24			0,23				0,25			0,28			0,32	
Total, real		89			35				261			580			515	

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk   14/11/2023 15:50 / 46   windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R18c - R18c
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October		November			December		
1	05:31		17:40 (ML23)	05:54		17:33 (ML23)	06:25		06:50 (ML24)	06:54		06:28			07:02		07:48 (ML28)
	20:34	53	18:33 (ML23)	20:15	69	18:42 (ML23)	19:32	21	07:11 (ML24)	18:42		16:56			16:32	21	08:09 (ML28)
2	05:31		17:41 (ML23)	05:55		17:33 (ML23)	06:26		06:48 (ML24)	06:55		06:29			07:03		07:47 (ML28)
	20:34	53	18:34 (ML23)	20:14	69	16:42 (ML23)	19:31	25	07:13 (ML24)	18:41		16:55			16:32	24	08:11 (ML28)
3	05:32		17:40 (ML23)	05:56		17:33 (ML23)	06:27		06:47 (ML24)	06:56		06:30			07:04		07:47 (ML28)
	20:33	54	18:34 (ML23)	20:13	69	18:42 (ML23)	19:29	26	07:13 (ML24)	18:39		16:54			16:32	25	08:12 (ML28)
4	05:32		17:40 (ML23)	05:57		17:33 (ML23)	06:28		06:48 (ML24)	06:57		06:31			07:05		07:47 (ML28)
	20:33	55	18:35 (ML23)	20:12	69	18:42 (ML23)	19:28	26	07:14 (ML24)	18:37		16:53			16:32	26	08:13 (ML28)
5	05:33		17:40 (ML23)	05:58		17:33 (ML23)	06:29		06:49 (ML24)	06:58		06:32			07:06		07:46 (ML28)
	20:33	55	18:35 (ML23)	20:11	69	18:42 (ML23)	19:26	26	07:15 (ML24)	18:36		16:51			16:31	28	08:14 (ML28)
6	05:33		17:40 (ML23)	05:59		17:33 (ML23)	06:29		06:50 (ML24)	06:59		06:34			07:07		07:46 (ML28)
	20:33	56	18:36 (ML23)	20:09	68	18:41 (ML23)	19:24	25	07:15 (ML24)	18:34		16:50			16:31	28	08:14 (ML28)
7	05:34		17:39 (ML23)	06:00		17:33 (ML23)	06:30		06:51 (ML24)	07:00		06:35			07:08		07:47 (ML28)
	20:33	57	18:36 (ML23)	20:08	68	18:41 (ML23)	19:23	24	07:15 (ML24)	18:33		16:49			16:31	28	08:15 (ML28)
8	05:35		17:39 (ML23)	06:01		17:33 (ML23)	06:31		06:52 (ML24)	07:01		06:36			07:09		07:47 (ML28)
	20:32	57	18:36 (ML23)	20:07	68	18:41 (ML23)	19:21	23	07:15 (ML24)	18:31		16:48			16:31	29	08:16 (ML28)
9	05:35		17:40 (ML23)	06:02		17:33 (ML23)	06:32		06:53 (ML24)	07:02		06:37			07:10		07:47 (ML28)
	20:32	57	18:37 (ML23)	20:06	67	18:40 (ML23)	19:19	22	07:15 (ML24)	18:29		16:47			16:31	30	08:17 (ML28)
10	05:36		17:39 (ML23)	06:03		17:33 (ML23)	06:33		06:54 (ML24)	07:03		06:38			07:11		07:46 (ML28)
	20:31	58	18:37 (ML23)	20:05	67	18:40 (ML23)	19:18	20	07:14 (ML24)	18:28		16:46			16:31	31	08:17 (ML28)
11	05:37		17:39 (ML23)	06:04		17:34 (ML23)	06:34		06:55 (ML24)	07:04		06:40			07:12		07:47 (ML28)
	20:31	59	18:38 (ML23)	20:03	65	18:39 (ML23)	19:16	19	07:14 (ML24)	18:26		16:45			16:31	31	08:18 (ML28)
12	05:37		17:39 (ML23)	06:05		17:34 (ML23)	06:35		06:56 (ML24)	07:05		06:41			07:13		07:47 (ML28)
	20:31	59	18:38 (ML23)	20:02	65	18:39 (ML23)	19:14	17	07:13 (ML24)	18:25		16:44			16:31	32	08:19 (ML28)
13	05:38		17:38 (ML23)	06:06		17:33 (ML23)	06:36		06:57 (ML24)	07:07		06:42			07:13		07:47 (ML28)
	20:30	60	18:38 (ML23)	20:01	64	18:37 (ML23)	19:13	16	07:13 (ML24)	18:23		16:43			16:31	32	08:19 (ML28)
14	05:39		17:38 (ML23)	06:07		17:33 (ML23)	06:37		06:57 (ML24)	07:08		06:43			07:14		07:48 (ML28)
	20:30	61	18:39 (ML23)	19:59	63	18:36 (ML23)	19:11	14	07:11 (ML24)	18:21		16:42			16:32	32	08:20 (ML28)
15	05:40		17:38 (ML23)	06:08		17:34 (ML23)	06:38		06:58 (ML24)	07:09		06:44			07:15		07:48 (ML28)
	20:29	61	18:39 (ML23)	19:58	62	18:36 (ML23)	19:09	12	07:10 (ML24)	18:20		16:42			16:32	32	08:20 (ML28)
16	05:40		17:38 (ML23)	06:09		17:34 (ML23)	06:39		06:59 (ML24)	07:10		06:45			07:16		07:48 (ML28)
	20:28	62	18:40 (ML23)	19:57	61	18:35 (ML23)	19:08	13	07:12 (ML24)	18:18		16:41			16:32	33	08:21 (ML28)
17	05:41		17:37 (ML23)	06:10		17:35 (ML23)	06:40		07:00 (ML24)	07:11		06:47			07:16		07:49 (ML28)
	20:28	63	18:40 (ML23)	19:55	59	18:34 (ML23)	19:06	13	07:13 (ML26)	18:17		16:40			16:32	33	08:22 (ML28)
18	05:42		17:37 (ML23)	06:11		17:36 (ML23)	06:41		07:01 (ML24)	07:12		06:48			07:17		07:49 (ML28)
	20:27	63	18:40 (ML23)	19:54	56	18:32 (ML23)	19:04	13	07:14 (ML26)	18:15		16:39			16:33	33	08:22 (ML28)
19	05:43		17:37 (ML23)	06:12		17:36 (ML23)	06:42		07:02 (ML24)	07:13		06:49			07:17		07:50 (ML28)
	20:27	64	18:41 (ML23)	19:52	55	18:31 (ML23)	19:03	12	07:14 (ML26)	18:14		16:38			16:33	33	08:23 (ML28)
20	05:44		17:37 (ML23)	06:13		17:37 (ML23)	06:43		07:03 (ML26)	07:14		06:50			07:18		07:50 (ML28)
	20:26	64	18:41 (ML23)	19:51	53	18:30 (ML23)	19:01	12	07:15 (ML26)	18:12		16:38			16:34	33	08:23 (ML28)
21	05:44		17:37 (ML23)	06:14		17:38 (ML23)	06:44		07:04 (ML26)	07:15		06:51			07:19		07:50 (ML28)
	20:25	65	18:42 (ML23)	19:49	50	18:28 (ML23)	18:59	11	07:15 (ML26)	18:11		16:37			16:34	34	08:24 (ML28)
22	05:45		17:36 (ML23)	06:15		17:40 (ML23)	06:45		07:05 (ML26)	07:16		06:52			07:19		07:50 (ML28)
	20:24	65	18:41 (ML23)	19:48	47	18:27 (ML23)	18:57	9	07:14 (ML26)	18:10		16:36			16:34	34	08:24 (ML28)
23	05:46		17:35 (ML23)	06:16		17:41 (ML23)	06:46		07:06 (ML26)	07:17		06:54			07:20		07:52 (ML28)
	20:24	66	18:41 (ML23)	19:46	44	18:25 (ML23)	18:56	8	07:14 (ML26)	18:08		16:36			16:35	33	08:25 (ML28)
24	05:47		17:35 (ML23)	06:17		17:43 (ML23)	06:47		07:07 (ML26)	07:19		06:55			07:20		07:52 (ML28)
	20:23	67	18:42 (ML23)	19:45	40	18:23 (ML23)	18:54	6	07:13 (ML26)	18:07		16:35			16:36	33	08:25 (ML28)
25	05:48		17:35 (ML23)	06:18		17:44 (ML23)	06:48		07:08 (ML26)	06:20		06:56			07:21		07:52 (ML28)
	20:22	67	18:42 (ML23)	19:43	36	18:20 (ML23)	18:52	4	07:12 (ML26)	17:05		06:57			16:36	33	08:25 (ML28)
26	05:49		17:35 (ML23)	06:19		17:47 (ML23)	06:49		07:09 (ML26)	06:21		06:57		07:56 (ML28)	07:21		07:53 (ML28)
	20:21	67	18:42 (ML23)	19:42	30	18:17 (ML23)	18:51	2	07:11 (ML26)	17:04		16:34	1	07:57 (ML28)	16:37	33	08:26 (ML28)
27	05:50		17:35 (ML23)	06:20		17:50 (ML23)	06:50			06:22		06:58		07:51 (ML28)	07:21		07:53 (ML28)
	20:20	68	18:43 (ML23)	19:40	23	18:13 (ML23)	18:49			17:03		16:34	11	08:02 (ML28)	16:37	33	08:26 (ML28)
28	05:51		17:35 (ML23)	06:21		17:56 (ML23)	06:51			06:23		06:59		07:49 (ML28)	07:22		07:54 (ML28)
	20:19	68	18:43 (ML23)	19:39	12	18:08 (ML23)	18:47			17:01		16:33	15	08:04 (ML28)	16:38	32	08:26 (ML28)
29	05:51		17:35 (ML23)	06:22			06:52			06:24		07:00		07:49 (ML28)	07:22		07:55 (ML28)
	20:18	68	18:43 (ML23)	19:37			18:46			17:00		16:33	18	08:07 (ML28)	16:39	32	08:27 (ML28)
30	05:52		17:34 (ML23)	06:23		06:55 (ML24)	06:53			06:25		07:01		07:48 (ML28)	07:22		07:55 (ML28)
	20:17	68	18:42 (ML23)	19:36	12	07:07 (ML24)	18:44			16:59		16:33	20	08:08 (ML28)	16:40	32	08:27 (ML28)
31	05:53		17:33 (ML23)	06:24		06:52 (ML24)				06:27		16:57			07:22		07:56 (ML28)
	20:16	69	18:42 (ML23)	19:34	18	07:10 (ML24)				16:57					16:40	31	08:27 (ML28)
Potential sun hours	458			427			375			346		299			289		
Total, worst case	1909			1598			419					65			954		
Sun reduction	0,72			0,73			0,67					0,51			0,44		
Oper. time red.	0,88			0,88			0,88					0,88			0,88		
Wind dir. red.	0,56			0,56			0,57					0,63			0,63		
Total reduction	0,36			0,37			0,34					0,28			0,24		
Total, real	684			585			140					18			230		

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R19 - R19
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:23 / 16:41	07:10 / 17:15	06:34 / 17:49 44	07:18 (ML28) 08:02 (ML28) / 06:44 / 19:22	05:59 / 19:54 20	06:23 (ML26) 06:43 (ML26) / 05:30 / 20:23 31	05:51 (ML24) 06:22 (ML24)
2	07:23 / 16:42	07:09 / 17:16	06:33 / 17:50 44	07:17 (ML28) 08:01 (ML28) / 06:42 / 19:23	05:57 / 19:55 18	06:24 (ML26) 06:42 (ML26) / 05:30 / 20:24 32	05:51 (ML24) 06:23 (ML24)
3	07:23 / 16:43	07:08 / 17:18	06:31 / 17:51 43	07:18 (ML28) 08:01 (ML28) / 06:41 / 19:24	05:56 / 19:56 15	06:24 (ML26) 06:39 (ML26) / 05:29 / 20:24 32	05:51 (ML24) 06:23 (ML24)
4	07:23 / 16:44	07:07 / 17:19	06:30 / 17:52 41	07:18 (ML28) 07:59 (ML28) / 06:39 / 19:26	05:55 / 19:57 12	06:26 (ML26) 06:38 (ML26) / 05:29 / 20:25 33	05:50 (ML24) 06:23 (ML24)
5	07:23 / 16:45	07:06 / 17:20	06:28 / 17:53 40	07:19 (ML28) 07:59 (ML28) / 06:37 / 19:27	05:54 / 19:58 6	06:29 (ML26) 06:35 (ML26) / 05:29 / 20:26 34	05:50 (ML24) 06:24 (ML24)
6	07:23 / 16:46	07:05 / 17:21	06:26 / 17:55 39	07:19 (ML28) 07:58 (ML28) / 06:36 / 19:28	05:52 / 19:59	/ 05:28 / 20:26 34	05:50 (ML24) 06:24 (ML24)
7	07:23 / 16:47	07:03 / 17:23	06:25 / 17:56 37	07:20 (ML28) 07:57 (ML28) / 06:34 / 19:29	05:51 / 20:00	/ 05:28 / 20:27 35	05:50 (ML24) 06:25 (ML24)
8	07:23 / 16:48	07:02 / 17:24	06:23 / 17:57 35	07:20 (ML28) 07:55 (ML28) / 06:33 / 19:30	05:50 / 20:01	/ 05:28 / 20:28 34	05:50 (ML24) 06:24 (ML24)
9	07:23 / 16:49	07:01 / 17:25	06:22 / 17:58 32	07:21 (ML28) 07:53 (ML28) / 06:31 / 19:31	05:49 / 20:02	/ 05:27 / 20:28 35	05:50 (ML24) 06:25 (ML24)
10	07:22 / 16:50	07:00 / 17:26	06:20 / 17:59 29	07:23 (ML28) 07:52 (ML28) / 06:29 / 19:32	05:48 / 20:03	/ 05:27 / 20:29 35	05:50 (ML24) 06:25 (ML24)
11	07:22 / 16:51	06:59 / 17:28	06:18 / 18:00 25	07:24 (ML28) 07:49 (ML28) / 06:28 / 19:33	05:47 / 20:04	/ 05:27 / 20:29 34	05:51 (ML24) 06:25 (ML24)
12	07:22 / 16:52	06:58 / 17:29	06:17 / 18:01 20	07:26 (ML28) 07:46 (ML28) / 06:26 / 19:34	05:46 / 20:05	/ 05:27 / 20:30 35	05:51 (ML24) 06:26 (ML24)
13	07:22 / 16:53	06:56 / 17:30 14	07:34 (ML28) 07:48 (ML28) / 06:15 / 18:02 13	07:30 (ML28) 07:43 (ML28) / 06:25 / 19:35	05:45 / 20:06	/ 05:27 / 20:30 35	05:51 (ML24) 06:26 (ML24)
14	07:21 / 16:54	06:55 / 17:31 21	07:30 (ML28) 07:51 (ML28) / 06:14 / 18:03	/ 06:23 / 19:36	05:44 / 20:07	/ 05:27 / 20:31 35	05:51 (ML24) 06:26 (ML24)
15	07:21 / 16:55	06:54 / 17:32 26	07:28 (ML28) 07:54 (ML28) / 06:12 / 18:04	/ 06:22 / 19:37	05:43 / 20:08	/ 05:27 / 20:31 35	05:52 (ML24) 06:26 (ML24)
16	07:21 / 16:56	06:53 / 17:34 29	07:27 (ML28) 07:56 (ML28) / 06:10 / 18:05	/ 06:20 / 19:38	05:42 / 20:09	/ 05:27 / 20:31 34	05:52 (ML24) 06:26 (ML24)
17	07:20 / 16:57	06:51 / 17:35 32	07:25 (ML28) 07:57 (ML28) / 06:09 / 18:07	/ 06:18 / 19:39	05:41 / 20:10	/ 05:27 / 20:32 35	05:52 (ML24) 06:27 (ML24)
18	07:20 / 16:58	06:50 / 17:36 34	07:24 (ML28) 07:58 (ML28) / 06:07 / 18:08	06:36 (ML26) 06:41 (ML26) / 05:40 / 19:40 5	06:01 (ML24) 06:09 (ML24) / 05:27 / 20:32 35	05:52 (ML24) 06:27 (ML24)
19	07:19 / 17:00	06:49 / 17:37 37	07:23 (ML28) 08:00 (ML28) / 06:05 / 18:09	06:34 (ML26) 06:42 (ML26) / 05:39 / 19:41 8	05:59 (ML24) 06:11 (ML24) / 05:27 / 20:32 35	05:52 (ML24) 06:27 (ML24)
20	07:19 / 17:01	06:47 / 17:38 39	07:21 (ML28) 08:00 (ML28) / 06:04 / 18:10	06:33 (ML26) 06:44 (ML26) / 05:38 / 19:42 11	05:58 (ML24) 06:13 (ML24) / 05:27 / 20:33 35	05:52 (ML24) 06:27 (ML24)
21	07:18 / 17:02	06:46 / 17:40 40	07:21 (ML28) 08:01 (ML28) / 06:02 / 18:11	06:31 (ML26) 06:44 (ML26) / 05:37 / 19:43 13	05:58 (ML24) 06:15 (ML24) / 05:27 / 20:33 35	05:53 (ML24) 06:28 (ML24)
22	07:17 / 17:03	06:44 / 17:41 41	07:20 (ML28) 08:01 (ML28) / 06:00 / 18:12	06:30 (ML26) 06:45 (ML26) / 05:36 / 19:44 15	05:57 (ML24) 06:16 (ML24) / 05:28 / 20:33 35	05:53 (ML24) 06:28 (ML24)
23	07:17 / 17:04	06:43 / 17:42 43	07:19 (ML28) 08:02 (ML28) / 05:59 / 18:13	06:28 (ML26) 06:45 (ML26) / 05:36 / 19:45 17	05:56 (ML24) 06:17 (ML24) / 05:28 / 20:33 35	05:53 (ML24) 06:28 (ML24)
24	07:16 / 17:05	06:42 / 17:43 44	07:19 (ML28) 08:03 (ML28) / 05:57 / 18:14	06:27 (ML26) 06:45 (ML26) / 05:35 / 19:46 18	05:56 (ML24) 06:18 (ML24) / 05:28 / 20:34 35	05:53 (ML24) 06:28 (ML24)
25	07:15 / 17:07	06:40 / 17:44 44	07:18 (ML28) 08:02 (ML28) / 05:55 / 18:15	06:26 (ML26) 06:46 (ML26) / 05:34 / 19:47 20	05:55 (ML24) 06:19 (ML24) / 05:28 / 20:34 35	05:54 (ML24) 06:29 (ML24)
26	07:15 / 17:08	06:39 / 17:45 44	07:19 (ML28) 08:03 (ML28) / 05:54 / 18:16	06:24 (ML26) 06:45 (ML26) / 05:34 / 19:49 21	05:54 (ML24) 06:19 (ML24) / 05:29 / 20:34 34	05:54 (ML24) 06:28 (ML24)
27	07:14 / 17:09	06:37 / 17:47 44	07:18 (ML28) 08:02 (ML28) / 05:52 / 18:17	06:23 (ML26) 06:45 (ML26) / 05:33 / 19:50 22	05:54 (ML24) 06:20 (ML24) / 05:29 / 20:34 35	05:53 (ML24) 06:28 (ML24)
28	07:13 / 17:10	06:36 / 17:48 44	07:18 (ML28) 08:02 (ML28) / 05:50 / 18:18	06:22 (ML26) 06:45 (ML26) / 05:32 / 19:51 23	05:53 (ML24) 06:20 (ML24) / 05:29 / 20:34 35	05:54 (ML24) 06:29 (ML24)
29	07:12 / 17:12		06:49 / 19:19	/ 06:01 / 19:52 23	06:21 (ML26) 06:44 (ML26) / 05:32 / 20:21 28	06:21 (ML24) 06:21 (ML24) / 05:30 / 20:34 35	05:54 (ML24) 06:29 (ML24)
30	07:11 / 17:13		06:47 / 19:20	/ 06:00 / 19:53 21	06:22 (ML26) 06:43 (ML26) / 05:31 / 20:21 29	06:21 (ML24) 06:21 (ML24) / 05:30 / 20:34 35	05:55 (ML24) 06:30 (ML24)
31	07:11 / 17:14		06:46 / 19:21		/ 05:31 / 20:22 30	06:22 (ML24) 05:52 (ML24)	

	January	February	March	April	May	June
Potential sun hours	298	298	370	398	447	451
Total, worst case		576	442	217	374	1032
Sun reduction		0,45	0,46	0,50	0,57	0,64
Oper. time red.		0,88	0,88	0,88	0,88	0,88
Wind dir. red.		0,57	0,57	0,56	0,58	0,59
Total reduction		0,23	0,23	0,24	0,29	0,33
Total, real		130	102	53	109	344

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R19 - R19
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July			August			September		October			November	December
1	05:31		05:55 (ML24)	05:54			06:25		06:54		08:07 (ML28)	06:28	07:02
	20:34	34	06:29 (ML24)	20:15			19:32		18:42	17	08:24 (ML28)	16:56	16:32
2	05:31		05:55 (ML24)	05:55			06:26		06:55		08:04 (ML28)	06:29	07:03
	20:34	35	06:30 (ML24)	20:14			19:31		18:41	23	08:27 (ML28)	16:55	16:32
3	05:32		05:55 (ML24)	05:56			06:27		06:56		08:01 (ML28)	06:30	07:04
	20:33	35	06:30 (ML24)	20:13			19:29		18:39	26	08:29 (ML28)	16:54	16:32
4	05:32		05:56 (ML24)	05:57			06:28		06:57		07:59 (ML28)	06:31	07:05
	20:33	34	06:30 (ML24)	20:12			19:28		18:37	31	08:30 (ML28)	16:53	16:32
5	05:33		05:56 (ML24)	05:58			06:29		06:58		07:58 (ML28)	06:32	07:06
	20:33	34	06:30 (ML24)	20:11			19:26		18:36	33	08:31 (ML28)	16:52	16:31
6	05:33		05:56 (ML24)	05:59			06:29		06:59		07:56 (ML28)	06:34	07:07
	20:33	34	06:30 (ML24)	20:09			19:24		18:34	36	08:32 (ML28)	16:50	16:31
7	05:34		05:56 (ML24)	06:00			06:30		07:00		07:55 (ML28)	06:35	07:08
	20:33	34	06:30 (ML24)	20:08			19:23		18:33	38	08:33 (ML28)	16:49	16:31
8	05:35		05:57 (ML24)	06:01		06:37 (ML26)	06:31		07:01		07:54 (ML28)	06:36	07:09
	20:32	33	06:30 (ML24)	20:07	9	06:46 (ML26)	19:21		18:31	39	08:33 (ML28)	16:48	16:31
9	05:35		05:58 (ML24)	06:02		06:35 (ML26)	06:32		07:02		07:53 (ML28)	06:37	07:10
	20:32	33	06:31 (ML24)	20:06	13	06:48 (ML26)	19:19		18:29	41	08:34 (ML28)	16:47	16:31
10	05:36		05:58 (ML24)	06:03		06:33 (ML26)	06:33		07:03		07:52 (ML28)	06:38	07:11
	20:31	32	06:30 (ML24)	20:05	17	06:50 (ML26)	19:18		18:28	42	08:34 (ML28)	16:46	16:31
11	05:37		05:59 (ML24)	06:04		06:32 (ML26)	06:34		07:04		07:52 (ML28)	06:40	07:12
	20:31	31	06:30 (ML24)	20:03	19	06:51 (ML26)	19:16		18:26	43	08:35 (ML28)	16:45	16:31
12	05:37		06:00 (ML24)	06:05		06:31 (ML26)	06:35		07:05		07:52 (ML28)	06:41	07:12
	20:31	31	06:31 (ML24)	20:02	20	06:51 (ML26)	19:14		18:25	43	08:35 (ML28)	16:44	16:31
13	05:38		06:00 (ML24)	06:06		06:29 (ML26)	06:36		07:07		07:51 (ML28)	06:42	07:13
	20:30	30	06:30 (ML24)	20:01	22	06:51 (ML26)	19:13		18:23	44	08:35 (ML28)	16:43	16:31
14	05:39		06:01 (ML24)	06:07		06:29 (ML26)	06:37		07:08		07:51 (ML28)	06:43	07:14
	20:30	29	06:30 (ML24)	19:59	22	06:51 (ML26)	19:11		18:21	44	08:35 (ML28)	16:42	16:32
15	05:40		06:02 (ML24)	06:08		06:29 (ML26)	06:38		07:09		07:50 (ML28)	06:44	07:15
	20:29	28	06:30 (ML24)	19:58	23	06:52 (ML26)	19:09		18:20	44	08:34 (ML28)	16:42	16:32
16	05:40		06:03 (ML24)	06:09		06:30 (ML26)	06:39		07:10		07:50 (ML28)	06:45	07:16
	20:28	27	06:30 (ML24)	19:57	22	06:52 (ML26)	19:08		18:18	44	08:34 (ML28)	16:41	16:32
17	05:41		06:03 (ML24)	06:10		06:31 (ML26)	06:40		07:11		07:50 (ML28)	06:47	07:16
	20:28	26	06:29 (ML24)	19:55	21	06:52 (ML26)	19:06		18:17	44	08:34 (ML28)	16:40	16:32
18	05:42		06:04 (ML24)	06:11		06:32 (ML26)	06:41		07:12		07:50 (ML28)	06:48	07:17
	20:27	24	06:28 (ML24)	19:54	20	06:52 (ML26)	19:04		18:15	43	08:33 (ML28)	16:39	16:33
19	05:43		06:05 (ML24)	06:12		06:33 (ML26)	06:42		07:13		07:51 (ML28)	06:49	07:17
	20:27	23	06:28 (ML24)	19:52	18	06:51 (ML26)	19:03		18:14	42	08:33 (ML28)	16:38	16:33
20	05:44		06:06 (ML24)	06:13		06:34 (ML26)	06:43		07:14		07:51 (ML28)	06:50	07:18
	20:26	22	06:28 (ML24)	19:51	17	06:51 (ML26)	19:01		18:12	41	08:32 (ML28)	16:38	16:34
21	05:44		06:07 (ML24)	06:14		06:35 (ML26)	06:44		07:15		07:52 (ML28)	06:51	07:19
	20:25	20	06:27 (ML24)	19:49	15	06:50 (ML26)	18:59		18:11	39	08:31 (ML28)	16:37	16:34
22	05:45		06:07 (ML24)	06:15		06:36 (ML26)	06:45		07:16		07:52 (ML28)	06:52	07:19
	20:24	18	06:25 (ML24)	19:48	13	06:49 (ML26)	18:57		18:10	38	08:30 (ML28)	16:36	16:34
23	05:46		06:08 (ML24)	06:16		06:37 (ML26)	06:46		07:17		07:53 (ML28)	06:54	07:20
	20:24	16	06:24 (ML24)	19:46	11	06:48 (ML26)	18:56		18:08	36	08:29 (ML28)	16:36	16:35
24	05:47		06:09 (ML24)	06:17		06:38 (ML26)	06:47		07:19		07:54 (ML28)	06:55	07:20
	20:23	14	06:23 (ML24)	19:45	8	06:46 (ML26)	18:54		18:07	34	08:28 (ML28)	16:35	16:36
25	05:48		06:10 (ML24)	06:18		06:39 (ML26)	06:48		06:20		06:56 (ML28)	06:56	07:21
	20:22	11	06:21 (ML24)	19:43	4	06:43 (ML26)	18:52		17:05	31	07:27 (ML28)	16:35	16:36
26	05:49			06:19			06:49		06:21		06:57 (ML28)	06:57	07:21
	20:21			19:42			18:51		17:04	28	06:59 (ML28)	16:34	16:37
27	05:50			06:20			06:50		06:22		06:59 (ML28)	06:58	07:21
	20:20			19:40			18:49		17:03	24	07:23 (ML28)	16:34	16:37
28	05:51			06:21			06:51		06:23		07:01 (ML28)	06:59	07:22
	20:19			19:39			18:47		17:01	19	07:20 (ML28)	16:33	16:38
29	05:51			06:22			06:52		06:24		07:04 (ML28)	07:00	07:22
	20:18			19:37			18:46		17:00	12	07:16 (ML28)	16:33	16:39
30	05:52			06:23			06:53	08:12 (ML28)	06:25			07:01	07:22
	20:17			19:36			18:44	8	08:20 (ML28)	16:59			16:33	16:40
31	05:53			06:24					06:27				07:22
	20:16			19:34					16:57				16:40
Potential sun hours	458			427			375		346			299	289
Total, worst case		688			294			8		1021			
Sun reduction		0,72			0,73			0,67		0,56			
Oper. time red.		0,88			0,88			0,88		0,86			
Wind dir. red.		0,59			0,56			0,57		0,57			
Total reduction		0,37			0,36			0,34		0,28			
Total, real		256			105			3		288			

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor: R20 - R20**
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February		March		April			May	June
1	07:23 / 16:41	07:10 / 17:15		06:34 / 17:49	36	07:10 (ML28) / 07:46 (ML28)	06:44 / 19:22		05:59 / 19:54	05:30 / 20:23
2	07:23 / 16:42	07:09 / 17:16		06:33 / 17:50	36	07:09 (ML28) / 07:45 (ML28)	06:42 / 19:23		05:57 / 19:55	05:30 / 20:24
3	07:23 / 16:43	07:08 / 17:18		06:31 / 17:51	35	07:10 (ML28) / 07:45 (ML28)	06:41 / 19:24		05:56 / 19:56	05:29 / 20:24
4	07:23 / 16:44	07:07 / 17:19		06:30 / 17:52	34	07:10 (ML28) / 07:44 (ML28)	06:39 / 19:26		05:55 / 19:57	05:29 / 20:25
5	07:23 / 16:45	07:06 / 17:20		06:28 / 17:53	32	07:11 (ML28) / 07:43 (ML28)	06:37 / 19:27		05:54 / 19:58	05:29 / 20:26
6	07:23 / 16:46	07:05 / 17:21		06:26 / 17:55	30	07:12 (ML28) / 07:42 (ML28)	06:36 / 19:28		05:52 / 19:59	05:28 / 20:26
7	07:23 / 16:47	07:03 / 17:23		06:25 / 17:56	28	07:13 (ML28) / 07:41 (ML28)	06:34 / 19:29		05:51 / 20:00	05:28 / 20:27
8	07:23 / 16:48	07:02 / 17:24		06:23 / 17:57	25	07:14 (ML28) / 07:39 (ML28)	06:33 / 19:30		05:50 / 20:01	05:28 / 20:28
9	07:23 / 16:49	07:01 / 17:25		06:22 / 17:58	21	07:15 (ML28) / 07:36 (ML28)	06:31 / 19:31		05:49 / 20:02	05:27 / 20:28
10	07:22 / 16:50	07:00 / 17:26		06:20 / 17:59	16	07:18 (ML28) / 07:34 (ML28)	06:29 / 19:32		05:48 / 20:03	05:27 / 20:29
11	07:22 / 16:51	06:59 / 17:28		06:18 / 18:00	5	07:23 (ML28) / 07:28 (ML28)	06:28 / 19:33		05:47 / 20:04	05:27 / 20:29
12	07:22 / 16:52	06:58 / 17:29		06:17 / 18:01			06:26 / 19:34		05:46 / 20:05	05:27 / 20:30
13	07:22 / 16:53	06:56 / 17:30		06:15 / 18:02			06:25 / 19:35	3 / 06:43 (ML26) / 06:46 (ML26)	05:45 / 20:06	05:27 / 20:30
14	07:21 / 16:54	06:55 / 17:31		06:14 / 18:03			06:23 / 19:36	7 / 06:42 (ML26) / 06:49 (ML26)	05:44 / 20:07	05:27 / 20:31
15	07:21 / 16:55	06:54 / 17:32	7 / 07:26 (ML28) / 07:33 (ML28)	06:12 / 18:04			06:22 / 19:37	9 / 06:40 (ML26) / 06:49 (ML26)	05:43 / 20:08	05:27 / 20:31
16	07:21 / 16:56	06:53 / 17:34	15 / 07:22 (ML28) / 07:37 (ML28)	06:10 / 18:05			06:20 / 19:38	11 / 06:39 (ML26) / 06:50 (ML26)	05:42 / 20:09	05:27 / 20:31
17	07:20 / 16:57	06:51 / 17:35	20 / 07:19 (ML28) / 07:39 (ML28)	06:09 / 18:07			06:18 / 19:39	13 / 06:37 (ML26) / 06:50 (ML26)	05:41 / 20:10	05:27 / 20:32
18	07:20 / 16:58	06:50 / 17:36	24 / 07:17 (ML28) / 07:41 (ML28)	06:07 / 18:08			06:17 / 19:40	15 / 06:36 (ML26) / 06:51 (ML26)	05:40 / 20:11	05:27 / 20:32
19	07:19 / 17:00	06:49 / 17:37	27 / 07:16 (ML28) / 07:43 (ML28)	06:05 / 18:09			06:15 / 19:41	16 / 06:34 (ML26) / 06:50 (ML26)	05:39 / 20:12	05:27 / 20:33
20	07:19 / 17:01	06:47 / 17:38	30 / 07:14 (ML28) / 07:44 (ML28)	06:04 / 18:10			06:14 / 19:42	17 / 06:33 (ML26) / 06:50 (ML26)	05:38 / 20:13	05:27 / 20:33
21	07:18 / 17:02	06:46 / 17:40	32 / 07:13 (ML28) / 07:45 (ML28)	06:02 / 18:11			06:12 / 19:43	18 / 06:31 (ML26) / 06:49 (ML26)	05:37 / 20:14	05:27 / 20:33
22	07:17 / 17:03	06:44 / 17:41	33 / 07:12 (ML28) / 07:45 (ML28)	06:00 / 18:12			06:11 / 19:44	19 / 06:30 (ML26) / 06:49 (ML26)	05:36 / 20:15	05:28 / 20:33
23	07:17 / 17:04	06:43 / 17:42	34 / 07:12 (ML28) / 07:46 (ML28)	05:59 / 18:13			06:10 / 19:45	19 / 06:29 (ML26) / 06:48 (ML26)	05:36 / 20:15	05:28 / 20:33
24	07:16 / 17:05	06:42 / 17:43	36 / 07:11 (ML28) / 07:47 (ML28)	05:57 / 18:14			06:08 / 19:46	17 / 06:30 (ML26) / 06:47 (ML26)	05:35 / 20:16	05:28 / 20:34
25	07:15 / 17:07	06:40 / 17:44	37 / 07:10 (ML28) / 07:47 (ML28)	05:55 / 18:15			06:07 / 19:47	15 / 06:31 (ML26) / 06:46 (ML26)	05:34 / 20:17	05:28 / 20:34
26	07:15 / 17:08	06:39 / 17:45	36 / 07:11 (ML28) / 07:47 (ML28)	05:54 / 18:16			06:05 / 19:49	11 / 06:32 (ML26) / 06:43 (ML26)	05:34 / 20:18	05:29 / 20:34
27	07:14 / 17:09	06:37 / 17:47	37 / 07:10 (ML28) / 07:47 (ML28)	05:52 / 18:17			06:04 / 19:50	6 / 06:35 (ML26) / 06:41 (ML26)	05:33 / 20:19	05:29 / 20:34
28	07:13 / 17:10	06:36 / 17:48	37 / 07:10 (ML28) / 07:47 (ML28)	05:51 / 18:18			06:03 / 19:51		05:32 / 20:20	05:29 / 20:34
29	07:12 / 17:12			06:49 / 19:19			06:01 / 19:52		05:32 / 20:21	05:30 / 20:34
30	07:11 / 17:13			06:47 / 19:20			06:00 / 19:53		05:31 / 20:21	05:30 / 20:34
31	07:11 / 17:14			06:46 / 19:21					05:31 / 20:22	

	January	February	March	April	May	June
Potential sun hours	298	298	370	398	447	451
Total, worst case		405	298	196		
Sun reduction		0,45	0,46	0,50		
Oper. time red.		0,88	0,88	0,88		
Wind dir. red.		0,56	0,56	0,56		
Total reduction		0,22	0,23	0,25		
Total, real		90	68	48		

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)

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SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R20 - R20
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July	August		September	October		November	December
1	05:31	05:54		06:25	06:54		06:28	07:02
	20:34	20:15		19:32	18:42		16:56	16:32
2	05:31	05:55		06:26	06:55		06:29	07:03
	20:34	20:14		19:31	18:41		16:55	16:32
3	05:32	05:56		06:27	06:56	07:57 (ML28)	06:30	07:04
	20:33	20:13		19:29	18:39	13 08:10 (ML28)	16:54	16:32
4	05:32	05:57		06:28	06:57	07:54 (ML28)	06:31	07:05
	20:33	20:12		19:28	18:37	19 08:13 (ML28)	16:53	16:32
5	05:33	05:58		06:29	06:58	07:51 (ML28)	06:32	07:06
	20:33	20:11		19:26	18:36	23 08:14 (ML28)	16:52	16:31
6	05:33	05:59		06:30	06:59	07:49 (ML28)	06:34	07:07
	20:33	20:09		19:24	18:34	27 08:16 (ML28)	16:50	16:31
7	05:34	06:00		06:30	07:00	07:48 (ML28)	06:35	07:08
	20:33	20:08		19:23	18:33	29 08:17 (ML28)	16:49	16:31
8	05:35	06:01		06:31	07:01	07:46 (ML28)	06:36	07:09
	20:32	20:07		19:21	18:31	32 08:18 (ML28)	16:48	16:31
9	05:35	06:02		06:32	07:02	07:45 (ML28)	06:37	07:10
	20:32	20:06		19:19	18:29	33 08:16 (ML28)	16:47	16:31
10	05:36	06:03		06:33	07:03	07:44 (ML28)	06:38	07:11
	20:31	20:05		19:18	18:28	34 08:18 (ML28)	16:46	16:31
11	05:37	06:04		06:34	07:04	07:44 (ML28)	06:40	07:12
	20:31	20:03		19:16	18:26	36 08:20 (ML28)	16:45	16:31
12	05:37	06:05		06:35	07:05	07:44 (ML28)	06:41	07:13
	20:31	20:02		19:14	18:25	36 08:20 (ML28)	16:44	16:31
13	05:38	06:06		06:36	07:07	07:43 (ML28)	06:42	07:13
	20:30	20:01		19:13	18:23	37 08:20 (ML28)	16:43	16:31
14	05:39	06:07		06:37	07:08	07:43 (ML28)	06:43	07:14
	20:30	19:59		19:11	18:21	36 08:19 (ML28)	16:42	16:32
15	05:40	06:08		06:38	07:09	07:42 (ML28)	06:44	07:15
	20:29	19:58		19:09	18:20	37 08:19 (ML28)	16:42	16:32
16	05:40	06:09	06:41 (ML26)	06:39	07:10	07:42 (ML28)	06:45	07:16
	20:28	19:57	7 06:48 (ML26)	19:08	18:18	37 08:19 (ML28)	16:41	16:32
17	05:41	06:10	06:38 (ML26)	06:40	07:11	07:42 (ML28)	06:47	07:16
	20:28	19:55	12 06:50 (ML26)	19:06	18:17	36 08:18 (ML28)	16:40	16:32
18	05:42	06:11	06:36 (ML26)	06:41	07:12	07:42 (ML28)	06:48	07:17
	20:27	19:54	16 06:52 (ML26)	19:04	18:15	35 08:17 (ML28)	16:39	16:33
19	05:43	06:12	06:35 (ML26)	06:42	07:13	07:43 (ML28)	06:49	07:17
	20:27	19:52	18 06:53 (ML26)	19:03	18:14	34 08:17 (ML28)	16:38	16:33
20	05:44	06:13	06:34 (ML26)	06:43	07:14	07:44 (ML28)	06:50	07:18
	20:26	19:51	19 06:53 (ML26)	19:01	18:12	33 08:17 (ML28)	16:38	16:34
21	05:44	06:14	06:35 (ML26)	06:44	07:15	07:44 (ML28)	06:51	07:19
	20:25	19:49	19 06:54 (ML26)	18:59	18:11	31 08:15 (ML28)	16:37	16:34
22	05:45	06:15	06:36 (ML26)	06:45	07:16	07:45 (ML28)	06:52	07:19
	20:24	19:48	18 06:54 (ML26)	18:57	18:10	29 08:14 (ML28)	16:36	16:35
23	05:46	06:16	06:37 (ML26)	06:46	07:17	07:46 (ML28)	06:54	07:20
	20:24	19:46	17 06:54 (ML26)	18:56	18:08	26 08:12 (ML28)	16:36	16:35
24	05:47	06:17	06:38 (ML26)	06:47	07:19	07:47 (ML28)	06:55	07:20
	20:23	19:45	16 06:54 (ML26)	18:54	18:07	24 08:11 (ML28)	16:35	16:36
25	05:48	06:18	06:39 (ML26)	06:48	06:20	06:50 (ML28)	06:56	07:21
	20:22	19:43	14 06:53 (ML26)	18:52	17:05	19 07:09 (ML28)	16:35	16:36
26	05:49	06:19	06:40 (ML28)	06:49	06:21	06:52 (ML28)	06:57	07:21
	20:21	19:42	13 06:53 (ML26)	18:51	17:04	14 07:06 (ML28)	16:34	16:37
27	05:50	06:20	06:41 (ML26)	06:50	06:22	06:58 (ML28)	06:58	07:21
	20:20	19:40	11 06:52 (ML26)	18:49	17:03	2 07:00 (ML28)	16:34	16:37
28	05:51	06:21	06:42 (ML26)	06:51	06:23		06:59	07:22
	20:19	19:39	9 06:51 (ML26)	18:47	17:01		16:33	16:38
29	05:52	06:22	06:42 (ML26)	06:52	06:24		07:00	07:22
	20:18	19:37	6 06:48 (ML26)	18:46	17:00		16:33	16:39
30	05:52	06:23	06:43 (ML26)	06:53	06:25		07:01	07:22
	20:17	19:36	3 06:46 (ML26)	18:44	16:59		16:33	16:40
31	05:53	06:24			06:27			07:22
	20:16	19:34			16:57			16:40
Potential sun hours	458	427		375	346		299	289
Total, worst case		198			712			
Sun reduction		0,73			0,56			
Oper. time red.		0,88			0,88			
Wind dir. red.		0,56			0,56			
Total reduction		0,36			0,28			
Total, real		72			198			

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)

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SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R21 - R21
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February	March		April		May		June	
1	07:23 / 16:41	07:10 / 17:15	06:34 / 17:49		06:44 / 19:22	11	07:42 (ML28) / 07:53 (ML28)		05:59 / 19:54	13	06:18 (ML26) / 06:31 (ML26)		05:30 / 20:23	13	05:51 (ML24) / 06:04 (ML24)
2	07:23 / 16:42	07:09 / 17:16	06:33 / 17:50		06:42 / 19:23		05:57 / 19:55	14	06:17 (ML26) / 06:31 (ML26)		05:30 / 20:24	14	05:51 (ML24) / 06:05 (ML24)
3	07:23 / 16:43	07:08 / 17:18	06:31 / 17:51		06:41 / 19:24		05:56 / 19:56	15	06:15 (ML26) / 06:30 (ML26)		05:29 / 20:24	15	05:51 (ML24) / 06:06 (ML24)
4	07:23 / 16:44	07:07 / 17:19	06:30 / 17:52		06:39 / 19:26		05:55 / 19:57	16	06:14 (ML26) / 06:30 (ML26)		05:29 / 20:25	16	05:50 (ML24) / 06:06 (ML24)
5	07:23 / 16:45	07:06 / 17:20	06:28 / 17:53		06:37 / 19:27		05:54 / 19:58	17	06:13 (ML26) / 06:30 (ML26)		05:29 / 20:26	17	05:50 (ML24) / 06:07 (ML24)
6	07:23 / 16:46	07:05 / 17:21	06:26 / 17:55		06:36 / 19:28		05:52 / 19:59	17	06:12 (ML26) / 06:29 (ML26)		05:28 / 20:26	17	05:50 (ML24) / 06:07 (ML24)
7	07:23 / 16:47	07:03 / 17:23	06:25 / 17:56		06:34 / 19:29		05:51 / 20:00	18	06:11 (ML26) / 06:29 (ML26)		05:28 / 20:27	18	05:50 (ML24) / 06:08 (ML24)
8	07:23 / 16:48	07:02 / 17:24	06:23 / 17:57		06:33 / 19:30		05:50 / 20:01	17	06:11 (ML26) / 06:28 (ML26)		05:28 / 20:28	18	05:49 (ML24) / 06:07 (ML24)
9	07:23 / 16:49	07:01 / 17:25	06:22 / 17:58		06:31 / 19:31		05:49 / 20:02	14	06:13 (ML26) / 06:27 (ML26)		05:27 / 20:28	19	05:49 (ML24) / 06:08 (ML24)
10	07:22 / 16:50	07:00 / 17:26	06:20 / 17:59	14	06:48 (ML28) / 07:02 (ML28) / 06:29 / 19:32		05:48 / 20:03	12	06:14 (ML26) / 06:26 (ML26)		05:27 / 20:29	20	05:49 (ML24) / 06:09 (ML24)
11	07:22 / 16:51	06:59 / 17:28	06:18 / 18:00	21	06:44 (ML28) / 07:05 (ML28) / 06:28 / 19:33		05:47 / 20:04	8	06:15 (ML26) / 06:23 (ML26)		05:27 / 20:29	20	05:49 (ML24) / 06:09 (ML24)
12	07:22 / 16:52	06:58 / 17:29	06:17 / 18:01	24	06:42 (ML28) / 07:06 (ML28) / 06:26 / 19:34		05:46 / 20:05		05:27 / 20:30	20	05:49 (ML24) / 06:09 (ML24)
13	07:22 / 16:53	06:56 / 17:30	06:15 / 18:02	28	06:40 (ML28) / 07:08 (ML28) / 06:25 / 19:35		05:45 / 20:06		05:27 / 20:30	21	05:49 (ML24) / 06:10 (ML24)
14	07:21 / 16:54	06:55 / 17:31	06:14 / 18:03	30	06:39 (ML28) / 07:09 (ML28) / 06:23 / 19:36		05:44 / 20:07		05:27 / 20:31	21	05:49 (ML24) / 06:10 (ML24)
15	07:21 / 16:55	06:54 / 17:32	06:12 / 18:04	32	06:38 (ML28) / 07:10 (ML28) / 06:22 / 19:37		05:43 / 20:08		05:27 / 20:31	21	05:49 (ML24) / 06:10 (ML24)
16	07:21 / 16:56	06:53 / 17:34	06:10 / 18:05	34	06:36 (ML28) / 07:10 (ML28) / 06:20 / 19:38		05:42 / 20:09		05:27 / 20:31	21	05:49 (ML24) / 06:10 (ML24)
17	07:20 / 16:57	06:51 / 17:35	06:09 / 18:07	35	06:35 (ML28) / 07:10 (ML28) / 06:18 / 19:39		05:41 / 20:10		05:27 / 20:32	22	05:49 (ML24) / 06:11 (ML24)
18	07:20 / 16:58	06:50 / 17:36	06:07 / 18:08	36	06:35 (ML28) / 07:11 (ML28) / 06:17 / 19:40		05:40 / 20:11		05:27 / 20:32	22	05:49 (ML24) / 06:11 (ML24)
19	07:19 / 17:00	06:49 / 17:37	06:05 / 18:09	37	06:34 (ML28) / 07:11 (ML28) / 06:15 / 19:41		05:39 / 20:12		05:27 / 20:33	22	05:49 (ML24) / 06:11 (ML24)
20	07:19 / 17:01	06:47 / 17:38	06:04 / 18:10	37	06:33 (ML28) / 07:10 (ML28) / 06:14 / 19:42		05:38 / 20:13		05:27 / 20:33	22	05:49 (ML24) / 06:11 (ML24)
21	07:18 / 17:02	06:46 / 17:40	06:02 / 18:11	37	06:34 (ML28) / 07:11 (ML28) / 06:12 / 19:43		05:37 / 20:14		05:27 / 20:33	22	05:50 (ML24) / 06:12 (ML24)
22	07:17 / 17:03	06:44 / 17:41	06:00 / 18:12	37	06:33 (ML28) / 07:10 (ML28) / 06:11 / 19:44		05:36 / 20:15		05:28 / 20:33	22	05:50 (ML24) / 06:12 (ML24)
23	07:17 / 17:04	06:43 / 17:42	05:59 / 18:13	36	06:33 (ML28) / 07:09 (ML28) / 06:10 / 19:45		05:36 / 20:15		05:28 / 20:33	22	05:50 (ML24) / 06:12 (ML24)
24	07:16 / 17:05	06:42 / 17:43	05:57 / 18:14	36	06:33 (ML28) / 07:09 (ML28) / 06:08 / 19:46		05:35 / 20:16		05:28 / 20:34	22	05:50 (ML24) / 06:12 (ML24)
25	07:15 / 17:07	06:40 / 17:44	05:55 / 18:15	35	06:33 (ML28) / 07:08 (ML28) / 06:07 / 19:47		05:34 / 20:17		05:28 / 20:34	22	05:51 (ML24) / 06:13 (ML24)
26	07:15 / 17:08	06:39 / 17:45	05:54 / 18:16	33	06:33 (ML28) / 07:06 (ML28) / 06:05 / 19:49	3	06:24 (ML26) / 06:27 (ML26) / 05:34 / 20:18	3	05:54 (ML24) / 05:57 (ML24) / 05:29 / 20:34	22	05:51 (ML24) / 06:13 (ML24)
27	07:14 / 17:09	06:37 / 17:47	05:52 / 18:17	32	06:34 (ML28) / 07:06 (ML28) / 06:04 / 19:50	6	06:23 (ML26) / 06:29 (ML26) / 05:33 / 20:19	5	05:54 (ML24) / 05:59 (ML24) / 05:29 / 20:34	21	05:51 (ML24) / 06:12 (ML24)
28	07:13 / 17:10	06:36 / 17:48	05:51 / 18:18	29	06:35 (ML28) / 07:04 (ML28) / 06:03 / 19:51	8	06:22 (ML26) / 06:30 (ML26) / 05:32 / 20:20	7	05:53 (ML24) / 06:00 (ML24) / 05:29 / 20:34	21	05:52 (ML24) / 06:13 (ML24)
29	07:12 / 17:12		06:49 / 19:19	26	07:36 (ML28) / 08:02 (ML28) / 06:01 / 19:52	10	06:20 (ML26) / 06:30 (ML26) / 05:32 / 20:21	9	05:53 (ML24) / 06:02 (ML24) / 05:30 / 20:34	21	05:52 (ML24) / 06:13 (ML24)
30	07:11 / 17:13		06:47 / 19:20	22	07:38 (ML28) / 08:00 (ML28) / 06:00 / 19:53	11	06:19 (ML26) / 06:30 (ML26) / 05:31 / 20:21	10	05:52 (ML24) / 06:02 (ML24) / 05:30 / 20:34	20	05:53 (ML24) / 06:13 (ML24)
31	07:11 / 17:14		06:46 / 19:21	18	07:39 (ML28) / 07:57 (ML28)		05:31 / 20:22	12	05:52 (ML24) / 06:04 (ML24)		

	January	February	March	April	May	June
Potential sun hours	298	298	370	398	447	451
Total, worst case			669	49	207	594
Sun reduction			0,46	0,50	0,57	0,64
Oper. time red.			0,88	0,88	0,88	0,88
Wind dir. red.			0,56	0,56	0,57	0,59
Total reduction			0,23	0,25	0,29	0,34
Total, real			151	12	59	200

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)

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SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R21 - R21
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July		August			September			October			November	December
1	05:31		05:53 (ML24)	05:54		06:28 (ML26)	06:25			06:54			06:28	07:02
	20:34	20	06:13 (ML24)	20:15	3	06:31 (ML26)	19:32			18:42	25	07:46 (ML28)	16:56	16:32
2	05:31		05:54 (ML24)	05:55		06:25 (ML26)	06:26			06:55		07:22 (ML28)	06:29	07:03
	20:34	20	06:14 (ML24)	20:14	9	06:34 (ML26)	19:31			18:41	22	07:44 (ML28)	16:55	16:32
3	05:32		05:54 (ML24)	05:56		06:36 (ML26)	06:27			06:56		07:24 (ML28)	06:30	07:04
	20:33	19	06:13 (ML24)	20:13	13	06:36 (ML26)	19:29			18:39	17	07:41 (ML28)	16:54	16:32
4	05:32		05:55 (ML24)	05:57		06:22 (ML26)	06:28			06:57		07:28 (ML28)	06:31	07:05
	20:33	19	06:14 (ML24)	20:12	15	06:37 (ML26)	19:28			18:37	9	07:37 (ML28)	16:53	16:32
5	05:33		05:55 (ML24)	05:58		06:21 (ML26)	06:29			06:58			06:32	07:06
	20:33	18	05:56 (ML24)	20:11	17	06:38 (ML26)	19:26			18:36			16:52	16:31
6	05:33		05:56 (ML24)	05:59		06:21 (ML26)	06:30			06:59			06:34	07:07
	20:33	18	06:14 (ML24)	20:09	18	06:39 (ML26)	19:24			16:34			16:50	16:31
7	05:34		05:56 (ML24)	06:00		06:22 (ML26)	06:30			07:00			06:35	07:08
	20:33	17	06:13 (ML24)	20:08	17	06:39 (ML26)	19:23			18:33			16:49	16:31
8	05:35		05:57 (ML24)	06:01		06:23 (ML26)	06:31			07:01			06:36	07:09
	20:32	16	06:13 (ML24)	20:07	16	06:39 (ML26)	19:21			18:31			16:48	16:31
9	05:35		05:58 (ML24)	06:02		06:24 (ML26)	06:32			07:02			06:37	07:10
	20:32	15	06:13 (ML24)	20:06	16	06:40 (ML26)	19:19			16:29			16:47	16:31
10	05:36		05:58 (ML24)	06:03		06:25 (ML26)	06:33			07:03			06:38	07:11
	20:31	14	06:12 (ML24)	20:05	15	06:40 (ML26)	19:18			18:28			16:46	16:31
11	05:37		05:59 (ML24)	06:04		06:26 (ML26)	06:34		07:35 (ML28)	07:04			06:40	07:12
	20:31	13	06:12 (ML24)	20:03	14	06:40 (ML26)	19:16	11	07:46 (ML28)	18:26			16:45	16:31
12	05:37		06:00 (ML24)	06:05		06:27 (ML26)	06:35		07:32 (ML28)	07:05			06:41	07:13
	20:31	12	06:12 (ML24)	20:02	12	06:39 (ML26)	19:14	17	07:49 (ML28)	18:25			16:44	16:31
13	05:38		06:00 (ML24)	06:06		06:27 (ML26)	06:36		07:29 (ML28)	07:07			06:42	07:13
	20:30	11	06:11 (ML24)	20:01	11	06:38 (ML26)	19:13	22	07:51 (ML28)	18:23			16:43	16:32
14	05:39		06:01 (ML24)	06:07		06:28 (ML26)	06:37		07:26 (ML28)	07:08			06:43	07:14
	20:30	10	06:11 (ML24)	19:59	9	06:37 (ML26)	19:11	26	07:52 (ML28)	18:21			16:42	16:32
15	05:40		06:02 (ML24)	06:08		06:29 (ML26)	06:38		07:24 (ML28)	07:09			06:44	07:15
	20:29	8	06:10 (ML24)	19:58	7	06:36 (ML26)	19:09	29	07:53 (ML26)	18:20			16:42	16:32
16	05:40		06:03 (ML24)	06:09		06:30 (ML26)	06:39		07:23 (ML28)	07:10			06:45	07:16
	20:28	6	06:09 (ML24)	19:57	5	06:35 (ML26)	19:08	31	07:54 (ML28)	18:18			16:41	16:32
17	05:41		06:03 (ML24)	06:10		06:31 (ML26)	06:40		07:22 (ML28)	07:11			06:47	07:16
	20:28	4	06:07 (ML24)	19:55	2	06:33 (ML26)	19:06	32	07:54 (ML28)	18:17			16:40	16:32
18	05:42			06:11			06:41		07:21 (ML28)	07:12			06:48	07:17
	20:27			19:54			19:04	34	07:55 (ML28)	18:15			16:39	16:33
19	05:43			06:12			06:42		07:20 (ML28)	07:13			06:49	07:17
	20:27			19:52			19:03	35	07:55 (ML28)	18:14			16:38	16:33
20	05:44			06:13			06:43		07:19 (ML28)	07:14			06:50	07:18
	20:26			19:51			19:01	36	07:55 (ML28)	18:12			16:38	16:34
21	05:44			06:14			06:44		07:18 (ML28)	07:15			06:51	07:19
	20:25			19:49			18:59	37	07:55 (ML28)	18:11			16:37	16:34
22	05:45			06:15			06:45		07:18 (ML28)	07:16			06:52	07:19
	20:24			19:48			18:57	37	07:55 (ML28)	18:10			16:36	16:35
23	05:46			06:16			06:46		07:18 (ML28)	07:17			06:54	07:20
	20:24			19:46			18:56	37	07:55 (ML28)	18:08			16:36	16:35
24	05:47			06:17			06:47		07:17 (ML28)	07:19			06:55	07:20
	20:23			19:45			18:54	37	07:54 (ML28)	18:07			16:35	16:36
25	05:48			06:18			06:48		07:17 (ML28)	06:20			06:56	07:21
	20:22			19:43			18:52	37	07:54 (ML28)	17:05			16:35	16:36
26	05:49			06:19			06:49		07:17 (ML28)	06:21			06:57	07:21
	20:21			19:42			18:51	36	07:53 (ML28)	17:04			16:34	16:37
27	05:50			06:20			06:50		07:18 (ML28)	06:22			06:58	07:21
	20:20			19:40			18:49	34	07:52 (ML28)	17:03			16:34	16:37
28	05:51			06:21			06:51		07:18 (ML28)	06:23			06:59	07:22
	20:19			19:39			18:47	33	07:51 (ML28)	17:01			16:33	16:38
29	05:52			06:22			06:52		07:19 (ML28)	06:24			07:00	07:22
	20:18			19:37			18:46	31	07:50 (ML28)	17:00			16:33	16:39
30	05:52			06:23			06:53		07:19 (ML28)	06:25			07:01	07:22
	20:17			19:36			18:44	29	07:48 (ML28)	16:59			16:33	16:40
31	05:53			06:24						06:27				07:22
	20:16			19:34						16:57				16:40

	July		August		September		October		November	December
Potential sun hours	458		427		375		346		299	289
Total, worst case	240		199		621		73			
Sun reduction	0,72		0,73		0,67		0,56			
Oper. time red.	0,88		0,88		0,88		0,88			
Wind dir. red.	0,59		0,56		0,56		0,56			
Total reduction	0,38		0,36		0,33		0,28			
Total, real	90		72		205		20			

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)

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SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R22 - R22
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	Potential sun hours	Total, worst case	Sun reduction	Oper. time red.	Wind dir. red.	Total reduction	Total, real
January	298						
February	298	433	0,46	0,88	0,56	0,23	99
March	370						
April	398	144	0,50	0,88	0,56	0,25	36
May	447						
June	451						
July	458						
August	427						
September	375	589	0,67	0,88	0,56	0,33	196
October	346						
November	299						
December	289						

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)

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SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R23 - R23
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February	March		April			May			June
1	07:23	07:10	06:34		06:53 (ML28)	06:44		05:59		06:18 (ML24)	05:30
	16:41	17:15	17:49	9	07:02 (ML28)	19:22		19:54	6	06:24 (ML24)	20:23
2	07:23	07:09	06:33		06:51 (ML28)	06:42		05:57		06:17 (ML24)	05:30
	16:42	17:16	17:50	13	07:04 (ML28)	19:23		19:55	8	06:25 (ML24)	20:24
3	07:23	07:08	06:31		06:50 (ML28)	06:41		05:56		06:15 (ML24)	05:29
	16:43	17:18	17:51	17	07:07 (ML28)	19:24		19:56	10	06:25 (ML24)	20:24
4	07:23	07:07	06:30		06:48 (ML28)	06:39		05:55		06:14 (ML24)	05:29
	16:44	17:19	17:52	20	07:08 (ML28)	19:26		19:57	11	06:25 (ML24)	20:25
5	07:23	07:06	06:28		06:47 (ML28)	06:37		05:54		06:13 (ML24)	05:29
	16:45	17:20	17:53	22	07:09 (ML28)	19:27		19:58	13	06:26 (ML24)	20:26
6	07:23	07:05	06:26		06:45 (ML28)	06:36		05:52		06:12 (ML24)	05:28
	16:46	17:21	17:55	24	07:09 (ML28)	19:28		19:59	14	06:26 (ML24)	20:26
7	07:23	07:03	06:25		06:44 (ML28)	06:34		05:51		06:11 (ML24)	05:28
	16:47	17:23	17:56	26	07:10 (ML28)	19:29		20:00	15	06:26 (ML24)	20:27
8	07:23	07:02	06:23		06:42 (ML28)	06:33		05:50		06:10 (ML24)	05:28
	16:48	17:24	17:57	28	07:10 (ML28)	19:30		20:01	16	06:26 (ML24)	20:28
9	07:23	07:01	06:22		06:41 (ML28)	06:31		05:49		06:09 (ML24)	05:28
	16:49	17:25	17:58	28	07:09 (ML28)	19:31		20:02	17	06:26 (ML24)	20:28
10	07:22	07:00	06:20		06:42 (ML28)	06:29		05:48		06:08 (ML24)	05:27
	16:50	17:26	17:59	28	07:10 (ML28)	19:32		20:03	18	06:06 (ML24)	20:29
11	07:22	06:59	06:18		06:41 (ML28)	06:28		05:47		06:06 (ML24)	05:29
	16:51	17:28	18:00	28	07:09 (ML28)	19:33		20:04	18	06:24 (ML24)	20:29
12	07:22	06:58	06:17		06:41 (ML28)	06:26		05:46		06:05 (ML24)	05:27
	16:52	17:29	18:01	27	07:08 (ML28)	19:34		20:05	19	06:24 (ML24)	20:30
13	07:22	06:56	06:15		06:42 (ML28)	06:25		05:45		06:05 (ML24)	05:27
	16:53	17:30	18:02	26	07:08 (ML28)	19:35		20:06	19	06:24 (ML24)	20:30
14	07:21	06:55	06:14		06:42 (ML28)	06:23	06:42 (ML26)	05:44		06:05 (ML24)	05:27
	16:54	17:31	18:03	24	07:06 (ML28)	19:36	2 06:44 (ML26)	20:07	18	06:23 (ML24)	20:31
15	07:21	06:54	06:12		06:43 (ML28)	06:22	06:40 (ML26)	05:43		06:05 (ML24)	05:27
	16:55	17:32	18:04	22	07:05 (ML28)	19:37	4 06:44 (ML26)	20:08	17	06:22 (ML24)	20:31
16	07:21	06:53	06:10		06:44 (ML28)	06:20	06:39 (ML26)	05:42		06:06 (ML24)	05:27
	16:56	17:34	18:05	19	07:03 (ML28)	19:38	6 06:45 (ML26)	20:09	15	06:21 (ML24)	20:32
17	07:20	06:51	06:09		06:46 (ML28)	06:18	06:37 (ML26)	05:41		06:08 (ML24)	05:27
	16:57	17:35	18:07	15	07:01 (ML28)	19:39	16 19:11 (ML19)	20:10	12	06:20 (ML24)	20:32
18	07:20	06:50	06:07		06:49 (ML28)	06:17	06:36 (ML26)	05:40		06:09 (ML24)	05:27
	16:58	17:36	18:08	9	06:58 (ML28)	19:40	20 19:13 (ML19)	20:11	9	06:18 (ML24)	20:32
19	07:19	06:49	06:05			06:15	06:34 (ML26)	05:39			05:27
	17:00	17:37	18:09			19:41	23 19:13 (ML19)	20:12			20:33
20	07:19	06:47	06:04			06:14	06:33 (ML26)	05:38			05:27
	17:01	17:38	18:10			19:42	24 19:13 (ML19)	20:13			20:33
21	07:18	06:46	06:02			06:12	06:31 (ML26)	05:37			05:27
	17:02	17:40	18:11			19:43	26 19:13 (ML19)	20:14			20:33
22	07:18	06:44	06:00			06:11	06:30 (ML26)	05:36			05:28
	17:03	17:41	18:12			19:44	26 19:13 (ML19)	20:15			20:33
23	07:17	06:43	05:59			06:10	06:29 (ML26)	05:36			05:28
	17:04	17:42	18:13			19:45	23 19:12 (ML19)	20:15			20:33
24	07:16	06:42	05:57			06:08	06:33 (ML26)	05:35			05:28
	17:05	17:43	18:14			19:46	14 19:11 (ML19)	20:16			20:34
25	07:15	06:40	05:55			06:07	19:00 (ML19)	05:34			05:28
	17:07	17:44	18:15			19:47	11 19:11 (ML19)	20:17			20:34
26	07:15	06:39	05:54			06:05	19:01 (ML19)	05:34			05:29
	17:08	17:45	18:16			19:49	7 19:08 (ML19)	20:18			20:34
27	07:14	06:37	05:52			06:04		05:33			05:29
	17:09	17:47	18:17			19:50		20:19			20:34
28	07:13	06:36	05:51			06:03		05:32			05:29
	17:10	17:48	18:18			19:51		20:20			20:34
29	07:12		06:49			06:01		05:32			05:30
	17:12		19:19			19:52		20:21			20:34
30	07:11		06:47			06:00	06:19 (ML24)	05:31			05:30
	17:13		19:20			19:53	3 06:22 (ML24)	20:21			20:34
31	07:11		06:46					05:31			
	17:14		19:21					20:22			
Potential sun hours	298	298	370		398			447			451
Total, worst case				385		205			255		
Sun reduction				0,46		0,50			0,57		
Oper. time red.				0,88		0,88			0,88		
Wind dir. red.				0,55		0,56			0,57		
Total reduction				0,22		0,24			0,29		
Total, real				86		50			73		

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)

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SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R23 - R23
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October			November	December
1	05:31		05:54		06:16 (ML24)	06:25		06:54		07:21 (ML28)	06:28	07:02
	20:34		20:15	19	06:35 (ML24)	19:32		18:42	26	07:47 (ML28)	16:56	16:32
2	05:31		05:55		06:17 (ML24)	06:26		06:55		07:20 (ML28)	06:29	07:03
	20:34		20:14	18	06:35 (ML24)	19:31		18:41	27	07:47 (ML28)	16:55	16:32
3	05:32		05:56		06:18 (ML24)	06:27		06:56		07:19 (ML28)	06:30	07:04
	20:33		20:13	17	06:35 (ML24)	19:29		18:39	28	07:47 (ML28)	16:54	16:32
4	05:32		05:57		06:19 (ML24)	06:28		06:57		07:19 (ML28)	06:31	07:05
	20:33		20:12	17	06:36 (ML24)	19:28		18:37	28	07:47 (ML28)	16:53	16:32
5	05:33		05:58		06:20 (ML24)	06:29		06:58		07:18 (ML28)	06:32	07:06
	20:33		20:11	16	06:36 (ML24)	19:26		18:36	28	07:46 (ML28)	16:52	16:31
6	05:33		05:59		06:21 (ML24)	06:30		06:59		07:19 (ML28)	06:34	07:07
	20:33		20:09	15	06:36 (ML24)	19:24		18:34	27	07:46 (ML28)	16:50	16:31
7	05:34		06:00		06:22 (ML24)	06:30		07:00		07:20 (ML28)	06:35	07:08
	20:33		20:08	13	06:35 (ML24)	19:23		18:33	25	07:45 (ML28)	16:49	16:31
8	05:35		06:01		06:23 (ML24)	06:31		07:01		07:21 (ML28)	06:36	07:09
	20:32		20:07	12	06:35 (ML24)	19:21		18:31	23	07:44 (ML28)	16:48	16:31
9	05:35		06:02		06:24 (ML24)	06:32		07:02		07:22 (ML28)	06:37	07:10
	20:32		20:06	11	06:35 (ML24)	19:19		18:29	21	07:43 (ML28)	16:47	16:31
10	05:36		06:03		06:25 (ML24)	06:33		07:03		07:23 (ML28)	06:38	07:11
	20:32		20:05	9	06:34 (ML24)	19:18		18:28	18	07:41 (ML28)	16:46	16:31
11	05:37		06:04		06:26 (ML24)	06:34		07:04		07:25 (ML28)	06:40	07:12
	20:31		20:03	7	06:33 (ML24)	19:16		18:26	15	07:40 (ML28)	16:45	16:31
12	05:37		06:05		06:27 (ML24)	06:35		07:06		07:26 (ML28)	06:41	07:13
	20:31		20:02	5	06:32 (ML24)	19:14		18:25	12	07:38 (ML28)	16:44	16:31
13	05:38		06:06		06:27 (ML24)	06:36		07:07		07:28 (ML28)	06:42	07:13
	20:30		20:01	2	06:29 (ML24)	19:13		18:23	5	07:33 (ML28)	16:43	16:32
14	05:39		06:07			06:37		07:08			06:43	07:14
	20:30		19:59			19:11		18:21			16:42	16:32
15	05:40		06:08			06:38		07:09			06:44	07:15
	20:29		19:58			19:09		18:20			16:42	16:32
16	05:40		06:09			06:39		07:10			06:45	07:16
	20:28		19:57			19:08		18:18			16:41	16:32
17	05:41		06:10		19:07 (ML19)	06:40		07:11			06:47	07:16
	20:28		19:55	8	19:15 (ML19)	19:06		18:17			16:40	16:32
18	05:42		06:11		19:05 (ML19)	06:41		07:12			06:48	07:17
	20:27		19:54	12	19:17 (ML19)	19:04		18:15			16:39	16:33
19	05:43		06:12		06:37 (ML26)	06:42		07:13			06:49	07:17
	20:27		19:52	18	19:17 (ML19)	19:03		18:14			16:38	16:33
20	05:44		06:13		06:34 (ML26)	06:43		07:14			06:50	07:18
	20:26		19:51	25	19:18 (ML19)	19:01		18:12			16:38	16:34
21	05:44		06:14		06:35 (ML26)	06:44		07:15			06:51	07:19
	20:25		19:49	26	19:18 (ML19)	18:59		18:11			16:37	16:34
22	05:45		06:15		06:36 (ML26)	06:45		07:16			06:52	07:19
	20:24		19:48	26	19:18 (ML19)	18:58		18:10			16:36	16:35
23	05:46		06:16		06:37 (ML26)	06:46		07:18			06:54	07:20
	20:24		19:46	24	19:17 (ML19)	18:56		18:08			16:36	16:35
24	05:47		06:17		06:38 (ML26)	06:47		07:19			06:55	07:20
	20:23		19:45	22	19:16 (ML19)	18:54		18:07			16:35	16:36
25	05:48		06:18		06:39 (ML26)	06:48	07:34 (ML28)	06:20			06:56	07:21
	20:22	6	06:21 (ML24) 19:43	19	19:15 (ML19)	18:52	4	07:38 (ML28) 17:05			16:35	16:36
26	05:49		06:19 (ML24) 06:19		06:40 (ML26)	06:49		07:29 (ML28) 06:21			06:57	07:21
	20:21	10	06:29 (ML24) 19:42	14	19:13 (ML19)	18:51	13	07:42 (ML28) 17:04			16:34	16:37
27	05:50		06:18 (ML24) 06:20		06:41 (ML26)	06:50		07:26 (ML28) 06:22			06:58	07:21
	20:20	13	06:31 (ML24) 19:40	6	06:47 (ML26)	18:49	18	07:44 (ML28) 17:03			16:34	16:37
28	05:51		06:17 (ML24) 06:21		06:42 (ML26)	06:51		07:24 (ML28) 06:23			06:59	07:22
	20:19	15	06:32 (ML24) 19:39	4	06:46 (ML26)	18:47	21	07:45 (ML28) 17:01			16:33	16:38
29	05:52		06:16 (ML24) 06:22		06:43 (ML26)	06:52		07:23 (ML28) 06:24			07:00	07:22
	20:18	17	06:33 (ML24) 19:37	2	06:45 (ML26)	18:46	23	07:46 (ML28) 17:00			16:33	16:39
30	05:52		06:14 (ML24) 06:23			06:53		07:22 (ML28) 06:25			07:01	07:22
	20:17	19	06:33 (ML24) 19:36			18:44	25	07:47 (ML28) 16:59			16:33	16:40
31	05:53		06:15 (ML24) 06:24					06:27				07:22
	20:16	19	06:34 (ML24) 19:34					16:57				16:40
Potential sun hours	458		427			375		346			299	289
Total, worst case	99		367		104		283					
Sun reduction	0,72		0,73		0,67		0,56					
Oper. time red.	0,88		0,88		0,88		0,68					
Wind dir. red.	0,57		0,56		0,55		0,55					
Total reduction	0,36		0,36		0,33		0,27					
Total, real	36		133		34		77					

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R24 - R24

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
Potential sun hours	298	298	320	398	774	451	458	1310	375	346	299	289
Total, worst case					839	317						
Sun reduction					0,50	0,70		0,73				
Oper. time red.					0,88	0,88		0,88				
Wind dir. red.					0,56	0,56		0,56				
Total reduction					0,24	0,36		0,36				
Total, red					189	113		473				

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)

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windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R25a - R25a
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April		May		June	
1	07:23 16:41	07:10 17:15	06:34 17:49	06:44 19:22		05:59 19:54 23	18:34 (ML19) 05:30 18:57 (ML19) 20:23 85	18:20 (ML19) 19:53 (ML17)
2	07:23 16:42	07:09 17:17	06:33 17:50	06:42 19:24		05:57 19:55 29	18:31 (ML19) 05:30 19:00 (ML19) 20:24 85	18:20 (ML19) 19:53 (ML17)
3	07:23 16:43	07:08 17:18	06:31 17:51	06:41 19:25		05:56 19:56 32	18:29 (ML19) 05:29 19:01 (ML19) 20:24 86	18:20 (ML19) 19:54 (ML17)
4	07:23 16:44	07:07 17:19	06:30 17:52	06:39 19:26		05:55 19:57 36	18:27 (ML19) 05:29 19:03 (ML19) 20:25 84	18:20 (ML19) 19:53 (ML17)
5	07:23 16:45	07:06 17:20	06:28 17:53	06:37 19:27 5	06:56 (ML23) 05:54 07:01 (ML23) 19:58 38	18:26 (ML19) 05:29 19:04 (ML19) 20:26 85	18:21 (ML19) 19:54 (ML17)
6	07:23 16:46	07:05 17:22	06:27 17:55	06:36 19:28 8	06:54 (ML23) 05:52 07:02 (ML23) 19:59 40	18:25 (ML19) 05:28 19:05 (ML19) 20:26 85	18:21 (ML19) 19:54 (ML17)
7	07:23 16:47	07:04 17:23	06:25 17:56	06:34 19:29 11	06:53 (ML23) 05:51 07:04 (ML23) 20:00 42	18:24 (ML19) 05:28 19:06 (ML19) 20:27 84	18:22 (ML19) 19:55 (ML17)
8	07:23 16:48	07:02 17:24	06:23 17:57	06:33 19:30 14	06:51 (ML23) 05:50 07:05 (ML23) 20:01 44	18:23 (ML19) 05:28 19:07 (ML19) 20:28 85	18:21 (ML19) 19:54 (ML17)
9	07:23 16:49	07:01 17:25	06:22 17:58	06:31 19:31 16	06:49 (ML23) 05:49 07:05 (ML23) 20:02 46	18:22 (ML19) 05:28 19:08 (ML19) 20:28 85	18:22 (ML19) 19:55 (ML17)
10	07:23 16:50	07:00 17:26	06:20 17:59	06:29 19:32 17	06:48 (ML23) 05:48 07:05 (ML23) 20:03 48	18:21 (ML19) 05:27 19:09 (ML19) 20:29 84	18:22 (ML19) 19:55 (ML17)
11	07:22 16:51	06:59 17:28	06:19 18:00	06:28 19:33 19	06:46 (ML23) 05:47 07:05 (ML23) 20:04 48	18:21 (ML19) 05:27 19:09 (ML19) 20:29 83	18:23 (ML19) 19:55 (ML17)
12	07:22 16:52	06:58 17:29	06:17 18:01	06:26 19:34 20	06:45 (ML23) 05:46 07:05 (ML23) 20:05 50	18:20 (ML19) 05:27 19:10 (ML19) 20:30 85	18:23 (ML19) 19:56 (ML17)
13	07:22 16:53	06:57 17:30	06:15 18:02	06:25 19:35 20	06:44 (ML23) 05:45 07:04 (ML23) 20:06 50	18:20 (ML19) 05:27 19:10 (ML19) 20:30 84	18:24 (ML19) 19:56 (ML17)
14	07:21 16:54	06:55 17:31	06:14 18:03	06:23 19:36 19	06:45 (ML23) 05:44 07:04 (ML23) 20:07 52	18:19 (ML19) 05:27 19:11 (ML19) 20:31 83	18:24 (ML19) 19:56 (ML17)
15	07:21 16:55	06:54 17:33	06:12 18:05	06:22 19:37 17	06:45 (ML23) 05:43 07:02 (ML23) 20:08 52	18:19 (ML19) 05:27 19:11 (ML19) 20:31 83	18:24 (ML19) 19:56 (ML17)
16	07:21 16:56	06:53 17:34	06:10 18:06	06:20 19:38 16	06:46 (ML23) 05:42 07:02 (ML23) 20:09 52	18:19 (ML19) 05:27 19:11 (ML19) 20:32 83	18:24 (ML19) 19:56 (ML17)
17	07:20 16:57	06:51 17:35	06:09 18:07	06:19 19:39 12	06:47 (ML23) 05:41 06:59 (ML23) 20:10 58	18:18 (ML19) 05:27 19:38 (ML17) 20:32 82	18:25 (ML19) 19:56 (ML17)
18	07:20 16:59	06:50 17:36	06:07 18:08	06:17 19:40 8	06:49 (ML23) 05:40 06:57 (ML23) 20:11 66	18:18 (ML19) 05:27 19:42 (ML17) 20:32 82	18:25 (ML19) 19:57 (ML17)
19	07:19 17:00	06:49 17:37	06:06 18:09	06:16 19:41		05:39 20:12 69	18:18 (ML19) 05:27 19:43 (ML17) 20:33 82	18:25 (ML19) 19:57 (ML17)
20	07:19 17:01	06:47 17:38	06:04 18:10	06:14 19:42		05:38 20:13 74	18:18 (ML19) 05:27 19:46 (ML17) 20:33 82	18:26 (ML19) 19:58 (ML17)
21	07:18 17:02	06:46 17:40	06:02 18:11	06:13 19:43		05:37 20:14 76	18:18 (ML19) 05:27 19:47 (ML17) 20:33 82	18:26 (ML19) 19:58 (ML17)
22	07:18 17:03	06:45 17:41	06:01 18:12	06:11 19:44		05:37 20:15 77	18:18 (ML19) 05:28 19:47 (ML17) 20:33 82	18:26 (ML19) 19:58 (ML17)
23	07:17 17:04	06:43 17:42	05:59 18:13	06:10 19:45		05:36 20:16 79	18:17 (ML19) 05:28 19:48 (ML17) 20:34 82	18:26 (ML19) 19:58 (ML17)
24	07:16 17:06	06:42 17:43	05:57 18:14	06:08 19:47		05:35 20:16 80	18:18 (ML19) 05:28 19:49 (ML17) 20:34 82	18:27 (ML19) 19:59 (ML17)
25	07:16 17:07	06:40 17:44	05:56 18:15	06:07 19:48		05:34 20:17 82	18:18 (ML19) 05:28 19:50 (ML17) 20:34 82	18:27 (ML19) 19:58 (ML17)
26	07:15 17:08	06:39 17:46	05:54 18:16	06:05 19:49		05:34 20:18 83	18:19 (ML19) 05:29 19:51 (ML17) 20:34 83	18:26 (ML19) 19:58 (ML17)
27	07:14 17:09	06:37 17:47	05:52 18:17	06:04 19:50		05:33 20:19 82	18:19 (ML19) 05:29 19:51 (ML17) 20:34 83	18:27 (ML19) 19:59 (ML17)
28	07:13 17:10	06:36 17:48	05:51 18:18	06:03 19:51		05:32 20:20 84	18:18 (ML19) 05:30 19:51 (ML17) 20:34 83	18:27 (ML19) 19:59 (ML17)
29	07:12 17:12		06:49 19:19	06:01 19:52 6	18:42 (ML19) 05:32 18:48 (ML19) 20:21 85	18:19 (ML19) 05:30 19:52 (ML17) 20:34 83	18:27 (ML19) 19:59 (ML17)
30	07:12 17:13		06:47 19:20	06:00 19:53 17	18:37 (ML19) 05:31 18:54 (ML19) 20:21 84	18:19 (ML19) 05:30 19:52 (ML17) 20:34 85	18:27 (ML19) 20:00 (ML17)
31	07:11 17:14		06:46 19:21			05:31 20:22 86	18:19 (ML19) 19:53 (ML17)	
Potential sun hours	298	298	370	398		447		451	
Total, worst case					225		1847		2504
Sun reduction					0,50		0,57		0,64
Oper. time red.					0,88		0,88		0,88
Wind dir. red.					0,56		0,55		0,56
Total reduction					0,25		0,28		0,32
Total, real					55		512		795

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

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

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R25a - R25a
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

Day	July			August			September			October	November	December
1	05:31		18:27 (ML19)	05:54		18:30 (ML19)	06:25		06:45 (ML23)	05:54	06:28	07:02
	20:34	83	19:59 (ML17)	20:15	49	19:19 (ML19)	19:33	19	07:04 (ML23)	18:42	16:56	16:32
2	05:31		18:27 (ML19)	05:55		18:31 (ML19)	06:26		06:46 (ML23)	06:55	06:29	07:03
	20:34	84	20:00 (ML17)	20:14	48	19:19 (ML19)	19:31	17	07:03 (ML23)	18:41	16:55	16:32
3	05:32		18:27 (ML19)	05:56		18:31 (ML19)	06:27		06:47 (ML23)	06:56	06:30	07:04
	20:34	84	20:00 (ML17)	20:13	47	19:18 (ML19)	19:29	16	07:03 (ML23)	18:39	16:54	16:32
4	05:32		18:28 (ML19)	05:57		18:32 (ML19)	06:28		06:48 (ML23)	06:57	06:31	07:05
	20:33	84	20:00 (ML17)	20:12	45	19:17 (ML19)	19:28	14	07:02 (ML23)	18:38	16:53	16:32
5	05:33		18:27 (ML19)	05:58		18:33 (ML19)	06:29		06:49 (ML23)	06:58	06:33	07:06
	20:33	85	20:00 (ML17)	20:11	44	19:17 (ML19)	19:26	11	07:00 (ML23)	18:36	16:52	16:31
6	05:33		18:28 (ML19)	05:59		18:34 (ML19)	06:30		06:50 (ML23)	06:59	06:34	07:07
	20:33	84	20:01 (ML17)	20:10	42	19:16 (ML19)	19:24	9	06:59 (ML23)	18:34	16:50	16:31
7	05:34		18:28 (ML19)	06:00		18:35 (ML19)	06:31		06:51 (ML23)	07:00	06:35	07:08
	20:33	85	20:01 (ML17)	20:08	40	19:15 (ML19)	19:23	5	06:56 (ML23)	18:33	16:49	16:31
8	05:35		18:27 (ML19)	06:01		18:36 (ML19)	06:32			07:01	06:36	07:09
	20:32	86	20:01 (ML17)	20:07	37	19:13 (ML19)	19:21			18:31	16:48	16:31
9	05:35		18:28 (ML19)	06:02		18:37 (ML19)	06:33			07:02	06:37	07:10
	20:32	85	20:01 (ML17)	20:06	35	19:12 (ML19)	19:19			18:29	16:47	16:31
10	05:36		18:27 (ML19)	06:03		18:39 (ML19)	06:33			07:03	06:38	07:11
	20:32	85	20:00 (ML17)	20:05	31	19:10 (ML19)	19:18			18:28	16:46	16:31
11	05:37		18:27 (ML19)	06:04		18:41 (ML19)	06:34			07:05	06:40	07:12
	20:31	85	20:01 (ML17)	20:03	27	19:08 (ML19)	19:16			18:26	16:45	16:31
12	05:37		18:28 (ML19)	06:05		18:43 (ML19)	06:35			07:06	06:41	07:13
	20:31	85	20:01 (ML17)	20:02	22	19:05 (ML19)	19:14			18:25	16:44	16:31
13	05:38		18:28 (ML19)	06:06		18:46 (ML19)	06:36			07:07	06:42	07:13
	20:30	84	20:01 (ML17)	20:01	16	19:02 (ML19)	19:13			18:23	16:43	16:32
14	05:39		18:27 (ML19)	06:07			06:37			07:08	06:43	07:14
	20:30	85	20:00 (ML17)	19:59			19:11			18:22	16:43	16:32
15	05:40		18:28 (ML19)	06:08			06:38			07:09	06:44	07:15
	20:29	83	20:00 (ML17)	19:58			19:09			18:20	16:42	16:32
16	05:40		18:28 (ML19)	06:09			06:39			07:10	06:46	07:16
	20:29	84	20:01 (ML17)	19:57			19:08			18:18	16:41	16:32
17	05:41		18:28 (ML19)	06:10			06:40			07:11	06:47	07:16
	20:28	83	20:00 (ML17)	19:55			19:06			18:17	16:40	16:33
18	05:42		18:27 (ML19)	06:11			06:41			07:12	06:48	07:17
	20:27	82	19:59 (ML17)	19:54			19:04			18:15	16:39	16:33
19	05:43		18:28 (ML19)	06:12			06:42			07:13	06:49	07:18
	20:27	81	19:59 (ML17)	19:52			19:03			18:14	16:38	16:33
20	05:44		18:28 (ML19)	06:13			06:43			07:14	06:50	07:18
	20:26	80	19:59 (ML17)	19:51			19:01			18:13	16:38	16:34
21	05:44		18:28 (ML19)	06:14			06:44			07:15	06:51	07:19
	20:25	78	19:58 (ML17)	19:49			18:59			18:11	16:37	16:34
22	05:45		18:28 (ML19)	06:15			06:45			07:16	06:53	07:19
	20:24	77	19:58 (ML17)	19:48			18:58			18:10	16:36	16:35
23	05:46		18:28 (ML19)	06:16			06:46			07:18	06:54	07:20
	20:24	74	19:56 (ML17)	19:47			18:56			18:08	16:36	16:35
24	05:47		18:28 (ML19)	06:17			06:47			07:19	06:55	07:20
	20:23	71	19:55 (ML17)	19:45			18:54			18:07	16:35	16:36
25	05:48		18:28 (ML19)	06:18		06:52 (ML23)	06:48			06:20	06:56	07:21
	20:22	67	19:53 (ML17)	19:43	8	07:00 (ML23)	18:53			17:05	16:35	16:36
26	05:49		18:29 (ML19)	06:19		06:49 (ML23)	06:49			06:21	06:57	07:21
	20:21	62	19:51 (ML17)	19:42	13	07:02 (ML23)	18:51			17:04	16:34	16:37
27	05:50		18:29 (ML19)	06:20		06:48 (ML23)	06:50			06:22	06:58	07:21
	20:20	53	19:22 (ML19)	19:40	16	07:04 (ML23)	18:49			17:03	16:34	16:38
28	05:51		18:29 (ML19)	06:21		06:46 (ML23)	06:51			06:23	06:59	07:22
	20:19	53	19:22 (ML19)	19:39	18	07:04 (ML23)	18:47			17:01	16:33	16:38
29	05:52		18:30 (ML19)	06:22		06:46 (ML23)	06:52			06:24	07:00	07:22
	20:18	52	19:22 (ML19)	19:37	19	07:05 (ML23)	18:46			17:00	16:33	16:39
30	05:53		18:30 (ML19)	06:23		06:45 (ML23)	06:53			06:26	07:01	07:22
	20:17	51	19:21 (ML19)	19:36	20	07:05 (ML23)	18:44			16:59	16:33	16:40
31	05:53		18:30 (ML19)	06:24		06:44 (ML23)				06:27		07:22
	20:16	50	19:20 (ML19)	19:34	20	07:04 (ML23)				16:58		16:40

	July		August		September		October	November	December
Potential sun hours	458		427		375		346	299	289
Total, worst case	2365		597		91				
Sun reduction	0,72		0,73		0,67				
Oper. time red.	0,88		0,88		0,88				
Wind dir. red.	0,56		0,55		0,57				
Total reduction	0,35		0,35		0,33				
Total, real	833		211		30				

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk

14/11/2023 15:50 / 59   **windPRO**

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R25b - R25b
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April		May			June		
1	07:23	07:10	06:34	06:44		05:59		18:39 (ML19)	05:30		18:24 (ML19)
	16:41	17:15	17:49	19:22		19:54	17	18:56 (ML19)	20:23	81	19:52 (ML17)
2	07:23	07:09	06:33	06:42		05:57		18:36 (ML19)	05:30		18:23 (ML19)
	16:42	17:17	17:50	19:24		19:55	23	18:59 (ML19)	20:24	81	19:52 (ML17)
3	07:23	07:08	06:31	06:41		05:56		18:33 (ML19)	05:29		18:24 (ML19)
	16:43	17:18	17:51	19:25		19:56	28	19:01 (ML19)	20:24	82	19:53 (ML17)
4	07:23	07:07	06:30	06:39		05:55		18:31 (ML19)	05:29		18:24 (ML19)
	16:44	17:19	17:52	19:26		19:57	31	19:02 (ML19)	20:25	80	19:52 (ML17)
5	07:23	07:06	06:28	06:37		05:54		18:30 (ML19)	05:29		18:24 (ML19)
	16:45	17:20	17:53	19:27		19:58	34	19:04 (ML19)	20:26	81	19:53 (ML17)
6	07:23	07:05	06:27	06:36		05:52		18:29 (ML19)	05:28		18:25 (ML19)
	16:46	17:22	17:55	19:28		19:59	36	19:05 (ML19)	20:26	81	19:53 (ML17)
7	07:23	07:04	06:25	06:34	06:53 (ML23)	05:51		18:28 (ML19)	05:28		18:25 (ML19)
	16:47	17:23	17:56	19:29	8 07:01 (ML23)	20:00	39	19:07 (ML19)	20:27	81	19:54 (ML17)
8	07:23	07:02	06:23	06:33	06:51 (ML23)	05:50		18:27 (ML19)	05:28		18:25 (ML19)
	16:48	17:24	17:57	19:30	11 07:02 (ML23)	20:01	41	19:08 (ML19)	20:28	80	19:53 (ML17)
9	07:23	07:01	06:22	06:31	06:49 (ML23)	05:49		18:26 (ML19)	05:28		18:26 (ML19)
	16:49	17:25	17:58	19:31	14 07:03 (ML23)	20:02	42	19:08 (ML19)	20:28	80	19:54 (ML17)
10	07:23	07:00	06:20	06:29	06:48 (ML23)	05:48		18:25 (ML19)	05:27		18:26 (ML19)
	16:50	17:26	17:59	19:32	16 07:04 (ML23)	20:03	44	19:09 (ML19)	20:29	80	19:54 (ML17)
11	07:22	06:59	06:19	06:28	06:46 (ML23)	05:47		18:25 (ML19)	05:27		18:26 (ML19)
	16:51	17:28	18:00	19:33	18 07:04 (ML23)	20:04	45	19:10 (ML19)	20:29	80	19:54 (ML17)
12	07:22	06:58	06:17	06:26	06:45 (ML23)	05:46		18:24 (ML19)	05:27		18:27 (ML19)
	16:52	17:29	18:01	19:34	19 07:04 (ML23)	20:05	46	19:10 (ML19)	20:30	79	19:54 (ML17)
13	07:22	06:57	06:15	06:25	06:43 (ML23)	05:45		18:23 (ML19)	05:27		18:27 (ML19)
	16:53	17:30	18:02	19:35	21 07:04 (ML23)	20:06	48	19:11 (ML19)	20:30	79	19:55 (ML17)
14	07:21	06:55	06:14	06:23	06:43 (ML23)	05:44		18:23 (ML19)	05:27		18:28 (ML19)
	16:54	17:31	18:03	19:36	21 07:04 (ML23)	20:07	48	19:11 (ML19)	20:31	78	19:55 (ML17)
15	07:21	06:54	06:12	06:22	06:43 (ML23)	05:43		18:23 (ML19)	05:27		18:28 (ML19)
	16:55	17:33	18:04	19:37	20 07:03 (ML23)	20:08	49	19:12 (ML19)	20:31	78	19:55 (ML17)
16	07:21	06:53	06:10	06:20	06:43 (ML23)	05:42		18:22 (ML19)	05:27		18:28 (ML19)
	16:56	17:34	18:06	19:38	20 07:03 (ML23)	20:09	50	19:12 (ML19)	20:32	78	19:55 (ML17)
17	07:20	06:51	06:09	06:19	06:43 (ML23)	05:41		18:22 (ML19)	05:27		18:28 (ML19)
	16:57	17:35	18:07	19:39	18 07:01 (ML23)	20:10	50	19:12 (ML19)	20:32	79	19:55 (ML19)
18	07:20	06:50	06:07	06:17	06:45 (ML23)	05:40		18:21 (ML19)	05:27		18:28 (ML19)
	16:59	17:36	18:08	19:40	15 07:00 (ML23)	20:11	62	19:41 (ML17)	20:33	78	19:55 (ML17)
19	07:19	06:49	06:06	06:16	06:45 (ML23)	05:39		18:21 (ML19)	05:27		18:29 (ML19)
	17:00	17:37	18:09	19:41	13 06:58 (ML23)	20:12	66	19:43 (ML17)	20:33	77	19:55 (ML17)
20	07:19	06:47	06:04	06:14	06:48 (ML23)	05:38		18:22 (ML19)	05:27		18:30 (ML19)
	17:01	17:38	18:10	19:42	8 06:56 (ML23)	20:13	69	19:45 (ML17)	20:33	78	19:57 (ML17)
21	07:18	06:46	06:02	06:13		05:37		18:22 (ML19)	05:27		18:30 (ML19)
	17:02	17:40	18:11	19:43		20:14	71	19:46 (ML17)	20:33	78	19:57 (ML17)
22	07:18	06:45	06:01	06:11		05:37		18:21 (ML19)	05:28		18:30 (ML19)
	17:03	17:41	18:12	19:44		20:15	74	19:47 (ML17)	20:33	78	19:57 (ML17)
23	07:17	06:43	05:59	06:10		05:36		18:21 (ML19)	05:28		18:30 (ML19)
	17:04	17:42	18:13	19:45		20:16	75	19:47 (ML17)	20:34	78	19:57 (ML17)
24	07:16	06:42	05:57	06:08		05:35		18:22 (ML19)	05:28		18:30 (ML19)
	17:06	17:43	18:14	19:47		20:16	77	19:49 (ML17)	20:34	78	19:57 (ML17)
25	07:16	06:40	05:56	06:07		05:34		18:22 (ML19)	05:28		18:30 (ML19)
	17:07	17:44	18:15	19:48		20:17	78	19:49 (ML17)	20:34	78	19:57 (ML17)
26	07:15	06:39	05:54	06:05		05:34		18:22 (ML19)	05:29		18:30 (ML19)
	17:08	17:46	18:16	19:49		20:18	79	19:50 (ML17)	20:34	78	19:57 (ML17)
27	07:14	06:37	05:52	06:04		05:33		18:22 (ML19)	05:29		18:31 (ML19)
	17:09	17:47	18:17	19:50		20:19	79	19:50 (ML17)	20:34	78	19:58 (ML17)
28	07:13	06:36	05:51	06:03		05:32		18:22 (ML19)	05:30		18:31 (ML19)
	17:10	17:48	18:18	19:51		20:20	80	19:50 (ML17)	20:34	78	19:58 (ML17)
29	07:12		06:49	06:01		05:32		18:23 (ML19)	05:30		18:30 (ML19)
	17:12		19:19	19:52		20:21	80	19:51 (ML17)	20:34	79	19:58 (ML17)
30	07:12		06:47	06:00	18:45 (ML19)	05:31		18:22 (ML19)	05:30		18:31 (ML19)
	17:13		19:20	19:53	5 18:50 (ML19)	20:21	81	19:51 (ML17)	20:34	79	19:59 (ML17)
31	07:11		06:46			05:31		18:23 (ML19)			
	17:14		19:21			20:22	81	19:52 (ML17)			
Potential sun hours	298	298	370	398		447			451		
Total, worst case				227		1723			2373		
Sun reduction				0,50		0,57			0,64		
Oper. time red.				0,88		0,88			0,88		
Wind dir. red.				0,56		0,55			0,56		
Total reduction				0,25		0,28			0,32		
Total, real				56		477			752		

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R25b - R25b
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October	November	December
1	05:31 18:31 (ML19)	05:54 19:58 (ML17)	18:34 (ML19) 19:20 (ML19)	06:25 07:03 (ML23)	06:45 (ML23)	06:54 18:42	06:28 16:56	07:02 16:32
2	05:31 20:34	05:55 20:14	18:34 (ML19) 19:19 (ML19)	06:26 19:23	06:46 (ML23) 07:02 (ML23)	06:55 18:41	06:29 16:55	07:03 16:32
3	05:32 20:34	05:56 20:13	18:35 (ML19) 19:19 (ML19)	06:27 19:29	06:47 (ML23) 07:01 (ML23)	06:56 18:39	06:30 16:54	07:04 16:32
4	05:32 20:33	05:57 20:12	18:36 (ML19) 19:18 (ML19)	06:28 19:28	06:48 (ML23) 06:59 (ML23)	06:57 18:38	06:31 16:53	07:05 16:32
5	05:33 20:33	05:58 20:11	18:37 (ML19) 19:17 (ML19)	06:29 19:26	06:49 (ML23) 06:57 (ML23)	06:58 18:36	06:33 16:52	07:06 16:31
6	05:33 20:33	05:59 20:10	18:38 (ML19) 19:16 (ML19)	06:30 19:24		06:59 18:34	06:34 16:50	07:07 16:31
7	05:34 20:33	06:00 20:08	18:39 (ML19) 19:15 (ML19)	06:31 19:23		07:00 18:33	06:35 16:49	07:08 16:31
8	05:35 20:32	06:01 20:07	18:40 (ML19) 19:13 (ML19)	06:32 19:21		07:01 18:31	06:36 16:48	07:09 16:31
9	05:35 20:32	06:02 20:06	18:42 (ML19) 19:12 (ML19)	06:33 19:19		07:02 18:29	06:37 16:47	07:10 16:31
10	05:36 20:32	06:03 20:05	18:43 (ML19) 19:10 (ML19)	06:33 19:18		07:03 18:28	06:38 16:46	07:11 16:31
11	05:37 20:31	06:04 20:03	18:46 (ML19) 19:07 (ML19)	06:34 19:16		07:05 18:26	06:40 16:45	07:12 16:31
12	05:37 20:31	06:05 20:02	18:49 (ML19) 19:04 (ML19)	06:35 19:14		07:06 18:25	06:41 16:44	07:13 16:31
13	05:38 20:30	06:06 20:01		06:36 19:13		07:07 18:23	06:42 16:43	07:13 16:32
14	05:39 20:30	06:07 19:59		06:37 19:11		07:08 18:22	06:43 16:43	07:14 16:32
15	05:40 20:29	06:08 19:58		06:38 19:09		07:09 18:20	06:44 16:42	07:15 16:32
16	05:40 20:29	06:09 19:57		06:39 19:08		07:10 18:18	06:46 16:41	07:16 16:32
17	05:41 20:28	06:10 19:55		06:40 19:06		07:11 18:17	06:47 16:40	07:16 16:33
18	05:42 20:27	06:11 19:54		06:41 19:04		07:12 18:15	06:48 16:39	07:17 16:33
19	05:43 20:27	06:12 19:52		06:42 19:03		07:13 18:14	06:49 16:38	07:18 16:33
20	05:44 20:26	06:13 19:51		06:43 19:01		07:14 18:13	06:50 16:38	07:18 16:34
21	05:44 20:25	06:14 19:49		06:44 18:59		07:15 18:11	06:51 16:37	07:19 16:34
22	05:45 20:24	06:15 19:48		06:45 18:58		07:16 18:10	06:52 16:36	07:19 16:35
23	05:46 20:24	06:16 19:47	06:51 (ML23) 07:00 (ML23)	06:46 18:56		07:18 18:08	06:54 16:36	07:20 16:35
24	05:47 20:23	06:17 19:45	06:49 (ML23) 07:02 (ML23)	06:47 18:54		07:19 18:07	06:55 16:35	07:20 16:36
25	05:48 20:22	06:18 19:43	06:47 (ML23) 07:03 (ML23)	06:48 18:53		06:20 17:05	06:56 16:35	07:21 16:36
26	05:49 20:21	06:19 19:42	06:46 (ML23) 07:04 (ML23)	06:49 18:51		06:21 17:04	06:57 16:34	07:21 16:37
27	05:50 20:20	06:20 19:40	06:45 (ML23) 07:05 (ML23)	06:50 18:49		06:22 17:03	06:58 16:34	07:22 16:37
28	05:51 20:19	06:21 19:39	06:44 (ML23) 07:05 (ML23)	06:51 18:47		06:23 17:01	06:59 16:33	07:22 16:38
29	05:52 20:18	06:22 19:37	06:44 (ML23) 07:05 (ML23)	06:52 18:46		06:24 17:00	07:00 16:33	07:22 16:39
30	05:53 20:17	06:23 19:36	06:44 (ML23) 07:05 (ML23)	06:53 18:44		06:26 16:59	07:01 16:33	07:22 16:40
31	05:53 20:16	06:24 19:34	06:44 (ML23) 07:03 (ML23)			06:27 16:58		07:22 16:40

July flicker minutes column: 79, 80, 79, 80, 80, 81, 80, 81, 82, 80, 81, 81, 80, 81, 81, 80, 80, 78, 77, 76, 74, 73, 71, 67, 64, 59, 51, 49, 49, 48, 47

August flicker minutes column: 46, 45, 44, 42, 40, 38, 36, 33, 30, 27, 21, 15, —, —, —, —, —, —, —, —, —, —, 9, 13, 16, 18, 20, 21, 21, 21, 19

September flicker minutes column: 18, 16, 14, 11, 8

	July	August	September	October	November	December
Potential sun hours	458	427	375	346	299	289
Total, worst case	2249	575	67			
Sun reduction	0,72	0,73	0,67			
Oper. time red.	0,88	0,88	0,88			
Wind dir. red.	0,56	0,55	0,56			
Total reduction	0,35	0,35	0,33			
Total, real	791	204	22			

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: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R25c - R25c
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April		May		June	
1	07:23	07:10	06:34	06:44		05:59	18:31 (ML19)	05:30	18:17 (ML19)
	16:41	17:15	17:49	19:22	25	19:54	18:56 (ML19) 20:23	56	19:13 (ML19)
2	07:23	07:09	06:33	06:42		05:57	18:28 (ML19)	05:30	18:16 (ML19)
	16:42	17:17	17:50	19:24	30	19:55	18:58 (ML19) 20:24	57	19:13 (ML19)
3	07:23	07:08	06:31	06:41		05:56	18:26 (ML19)	05:29	18:17 (ML19)
	16:43	17:18	17:51	19:25	33	19:56	18:59 (ML19) 20:24	56	19:13 (ML19)
4	07:23	07:07	06:30	06:39	06:57 (ML23)	05:55	18:24 (ML19)	05:29	18:17 (ML19)
	16:44	17:19	17:52	19:26	3 07:00 (ML23)	19:57	37 19:01 (ML19) 20:25	56	19:13 (ML19)
5	07:23	07:06	06:28	06:37	06:56 (ML23)	05:54	18:23 (ML19)	05:29	18:17 (ML19)
	16:45	17:20	17:53	19:27	7 07:03 (ML23)	19:58	39 19:02 (ML19) 20:26	56	19:13 (ML19)
6	07:23	07:05	06:27	06:36	06:54 (ML23)	05:52	18:22 (ML19)	05:28	18:18 (ML19)
	16:46	17:22	17:55	19:28	10 07:04 (ML23)	19:59	42 19:04 (ML19) 20:26	55	19:13 (ML19)
7	07:23	07:04	06:25	06:34	06:53 (ML23)	05:51	18:21 (ML19)	05:28	18:18 (ML19)
	16:47	17:23	17:56	19:29	13 07:06 (ML23)	20:00	44 19:05 (ML19) 20:27	56	19:14 (ML19)
8	07:23	07:02	06:23	06:33	06:51 (ML23)	05:50	18:20 (ML19)	05:28	18:18 (ML19)
	16:48	17:24	17:57	19:30	15 07:06 (ML23)	20:01	46 19:06 (ML19) 20:28	55	19:13 (ML19)
9	07:23	07:01	06:22	06:31	06:49 (ML23)	05:49	18:19 (ML19)	05:28	18:18 (ML19)
	16:49	17:25	17:58	19:31	17 07:06 (ML23)	20:02	48 19:07 (ML19) 20:28	55	19:13 (ML19)
10	07:23	07:00	06:20	06:29	06:48 (ML23)	05:48	18:18 (ML19)	05:27	18:19 (ML19)
	16:50	17:26	17:59	19:32	18 07:06 (ML23)	20:03	49 19:07 (ML19) 20:29	54	19:13 (ML19)
11	07:22	06:59	06:19	06:28	06:46 (ML23)	05:47	18:18 (ML19)	05:27	18:19 (ML19)
	16:51	17:28	18:00	19:33	19 07:05 (ML23)	20:04	50 19:08 (ML19) 20:29	55	19:14 (ML19)
12	07:22	06:57	06:17	06:26	06:45 (ML23)	05:46	18:17 (ML19)	05:27	18:20 (ML19)
	16:52	17:29	18:01	19:34	20 07:05 (ML23)	20:05	52 19:09 (ML19) 20:30	54	19:14 (ML19)
13	07:22	06:57	06:15	06:25	06:45 (ML23)	05:45	18:17 (ML19)	05:27	18:20 (ML19)
	16:53	17:30	18:02	19:35	19 07:04 (ML23)	20:06	52 19:09 (ML19) 20:30	54	19:14 (ML19)
14	07:21	06:55	06:14	06:23	06:46 (ML23)	05:44	18:16 (ML19)	05:27	18:20 (ML19)
	16:54	17:31	18:03	19:36	18 07:04 (ML23)	20:07	53 19:09 (ML19) 20:31	54	19:14 (ML19)
15	07:21	06:54	06:12	06:22	06:47 (ML23)	05:43	18:16 (ML19)	05:27	18:21 (ML19)
	16:55	17:33	18:05	19:37	15 07:02 (ML23)	20:08	54 19:10 (ML19) 20:31	53	19:14 (ML19)
16	07:21	06:53	06:10	06:20	06:48 (ML23)	05:42	18:15 (ML19)	05:27	18:21 (ML19)
	16:56	17:34	18:06	19:38	13 07:01 (ML23)	20:09	55 19:10 (ML19) 20:32	53	19:14 (ML19)
17	07:20	06:51	06:09	06:19	06:50 (ML23)	05:41	18:15 (ML19)	05:27	18:21 (ML19)
	16:57	17:35	18:07	19:39	7 06:57 (ML23)	20:10	55 19:10 (ML19) 20:32	54	19:15 (ML19)
18	07:20	06:50	06:07	06:17		05:40	18:15 (ML19)	05:27	18:21 (ML19)
	16:59	17:36	18:08	19:40		20:11	55 19:10 (ML19) 20:32	54	19:15 (ML19)
19	07:19	06:49	06:06	06:16		05:39	18:14 (ML19)	05:27	18:21 (ML19)
	17:00	17:37	18:09	19:41		20:12	56 19:10 (ML19) 20:33	54	19:15 (ML19)
20	07:19	06:47	06:04	06:14		05:38	18:15 (ML19)	05:27	18:22 (ML19)
	17:01	17:38	18:10	19:42		20:13	57 19:12 (ML19) 20:33	54	19:16 (ML19)
21	07:18	06:46	06:02	06:13		05:37	18:15 (ML19)	05:27	18:22 (ML19)
	17:02	17:40	18:11	19:43		20:14	56 19:11 (ML19) 20:33	54	19:16 (ML19)
22	07:18	06:45	06:01	06:11		05:37	18:15 (ML19)	05:28	18:22 (ML19)
	17:03	17:41	18:12	19:44		20:15	56 19:11 (ML19) 20:33	54	19:16 (ML19)
23	07:17	06:43	05:59	06:10		05:36	18:14 (ML19)	05:28	18:22 (ML19)
	17:04	17:42	18:13	19:45		20:16	57 19:11 (ML19) 20:34	54	19:16 (ML19)
24	07:16	06:42	05:57	06:08		05:35	18:15 (ML19)	05:28	18:23 (ML19)
	17:06	17:43	18:14	19:47		20:16	57 19:12 (ML19) 20:34	54	19:17 (ML19)
25	07:16	06:40	05:56	06:07		05:34	18:15 (ML19)	05:28	18:23 (ML19)
	17:07	17:44	18:15	19:48		20:17	57 19:12 (ML19) 20:34	54	19:17 (ML19)
26	07:15	06:39	05:54	06:05		05:34	18:16 (ML19)	05:29	18:23 (ML19)
	17:08	17:46	18:16	19:49		20:18	57 19:13 (ML19) 20:34	53	19:16 (ML19)
27	07:14	06:37	05:52	06:04		05:33	18:15 (ML19)	05:29	18:24 (ML19)
	17:09	17:47	18:17	19:50		20:19	57 19:12 (ML19) 20:34	53	19:17 (ML19)
28	07:13	06:36	05:51	06:03		05:32	18:15 (ML19)	05:30	18:23 (ML19)
	17:10	17:48	18:18	19:51		20:20	57 19:12 (ML19) 20:34	54	19:17 (ML19)
29	07:12		06:49	06:01	18:39 (ML19)	05:32	18:16 (ML19)	05:30	18:23 (ML19)
	17:12		19:19	19:52	8 18:47 (ML19)	20:21	57 19:13 (ML19) 20:34	54	19:17 (ML19)
30	07:12		06:47	06:00	18:34 (ML19)	05:31	18:15 (ML19)	05:30	18:24 (ML19)
	17:13		19:20	19:53	19 18:53 (ML19)	20:21	57 19:12 (ML19) 20:34	54	19:18 (ML19)
31	07:11		06:46			05:31	18:16 (ML19)		
	17:14		19:21			20:22	57 19:13 (ML19)		
Potential sun hours	298	298	370	398		447		451	
Total, worst case					221	1557		1633	
Sun reduction					0,50	0,57		0,64	
Oper. time red.					0,88	0,88		0,88	
Wind dir. red.					0,56	0,55		0,55	
Total reduction					0,25	0,27		0,31	
Total, real					55	426		504	

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: GE.AGB01.C8 SOLO PROGETTO   **Shadow receptor:** R25c - R25c
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October	November	December
1	05:31		05:54		06:25		06:54	06:28	07:02
	20:34	55 18:23 (ML19)	20:15	51 18:27 (ML19)	19:33	19 06:45 (ML19)	18:42	16:56	16:32
2	05:31		05:55		06:26		06:55	06:29	07:03
	20:34	55 18:24 (ML19)	20:14	49 18:28 (ML19)	19:31	18 06:46 (ML23)	18:41	16:55	16:32
3	05:32		05:56		06:27		06:56	06:30	07:04
	20:34	54 18:24 (ML19)	20:13	49 18:28 (ML19)	19:29	17 06:47 (ML23)	18:39	16:54	16:32
4	05:32		05:57		06:28		06:57	06:31	07:05
	20:33	55 18:24 (ML19)	20:12	47 18:29 (ML19)	19:28	15 06:48 (ML23)	18:38	16:53	16:32
5	05:33		05:58		06:29		06:58	06:33	07:06
	20:33	55 18:24 (ML19)	20:11	45 18:30 (ML19)	19:26	13 06:49 (ML23)	18:36	16:52	16:31
6	05:33		05:59		06:30		06:59	06:34	07:07
	20:33	55 18:24 (ML19)	20:10	43 18:31 (ML19)	19:24	11 06:50 (ML23)	18:34	16:50	16:31
7	05:34		06:00		06:31		07:00	06:35	07:08
	20:33	56 18:24 (ML19)	20:08	41 18:32 (ML19)	19:23	8 06:51 (ML23)	18:33	16:49	16:31
8	05:35		06:01		06:32		07:01	06:36	07:09
	20:32	56 18:24 (ML19)	20:07	39 18:33 (ML19)	19:21	4 06:52 (ML23)	18:31	16:48	16:31
9	05:35		06:02		06:33		07:02	06:37	07:10
	20:32	56 18:24 (ML19)	20:06	36 18:34 (ML19)	19:19	06:56 (ML23)	18:29	16:47	16:31
10	05:36		06:03		06:33		07:03	06:38	07:11
	20:32	56 18:24 (ML19)	20:05	32 18:36 (ML19)	19:18		18:28	16:46	16:31
11	05:37		06:04		06:34		07:05	06:40	07:12
	20:31	56 18:24 (ML19)	20:03	28 18:38 (ML19)	19:16		18:26	16:45	16:31
12	05:37		06:05		06:35		07:06	06:41	07:13
	20:31	57 18:24 (ML19)	20:02	24 18:40 (ML19)	19:14		18:25	16:44	16:31
13	05:38		06:06		06:36		07:07	06:42	07:13
	20:30	56 18:25 (ML19)	20:01	17 18:43 (ML19)	19:13		18:23	16:43	16:32
14	05:39		06:07		06:37		07:08	06:43	07:14
	20:30	57 18:24 (ML19)	19:59	2 18:50 (ML19)	19:11		18:22	16:43	16:32
15	05:40		06:08		06:38		07:09	06:44	07:15
	20:29	57 18:24 (ML19)	19:58	18:52 (ML19)	19:09		18:20	16:42	16:32
16	05:40		06:09		06:39		07:10	06:46	07:16
	20:29	57 18:25 (ML19)	19:57		19:08		18:18	16:41	16:32
17	05:41		06:10		06:40		07:11	06:47	07:16
	20:28	57 18:25 (ML19)	19:55		19:06		18:17	16:40	16:33
18	05:42		06:11		06:41		07:12	06:48	07:17
	20:27	57 18:24 (ML19)	19:54		19:04		18:15	16:39	16:33
19	05:43		06:12		06:42		07:13	06:49	07:18
	20:27	58 18:24 (ML19)	19:52		19:03		18:14	16:38	16:33
20	05:44		06:13		06:43		07:14	06:50	07:18
	20:26	57 18:25 (ML19)	19:51		19:01		18:13	16:38	16:34
21	05:44		06:14		06:44		07:15	06:51	07:19
	20:25	57 18:25 (ML19)	19:49		18:59		18:11	16:37	16:34
22	05:45		06:15		06:45		07:16	06:53	07:19
	20:24	57 18:25 (ML19)	19:48		18:58		18:10	16:36	16:35
23	05:46		06:16		06:46		07:18	06:54	07:20
	20:24	56 18:25 (ML19)	19:47		18:56		18:08	16:36	16:35
24	05:47		06:17		06:47		07:19	06:55	07:20
	20:23	56 18:25 (ML19)	19:45		18:54		18:07	16:35	16:36
25	05:48		06:18		06:48		06:20	06:56	07:21
	20:22	56 18:25 (ML19)	19:44		18:53		17:05	16:35	16:36
26	05:49		06:19		06:49	06:53 (ML23)	06:21	06:57	07:21
	20:21	56 18:25 (ML19)	19:42	7 07:00 (ML23)	18:51		17:04	16:34	16:37
27	05:50		06:20		06:50	06:50 (ML23)	06:22	06:58	07:21
	20:20	55 18:26 (ML19)	19:40	13 07:03 (ML23)	18:49		17:03	16:34	16:38
28	05:51		06:21		06:51	06:48 (ML23)	06:23	06:59	07:22
	20:19	55 18:26 (ML19)	19:39	16 07:04 (ML23)	18:47		17:01	16:33	16:38
29	05:52		06:22		06:52	06:47 (ML23)	06:24	07:00	07:22
	20:18	53 18:27 (ML19)	19:37	18 07:05 (ML23)	18:46		17:00	16:33	16:39
30	05:53		06:23		06:53	06:46 (ML23)	06:26	07:01	07:22
	20:17	53 18:27 (ML19)	19:36	19 07:05 (ML23)	18:44		16:59	16:33	16:40
31	05:53		06:24			06:44 (ML23)	06:27		07:22
	20:16	52 18:27 (ML19)	19:34	20 07:04 (ML23)			16:58		16:40
Potential sun hours	458		427		375		346	299	289
Total, worst case	1728		596		105				
Sun reduction	0,72		0,73		0,67				
Oper. time red.	0,88		0,88		0,88				
Wind dir. red.	0,55		0,55		0,57				
Total reduction	0,34		0,35		0,33				
Total, real	596		211		35				

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)

windPRO 4.0.423 by EMD International A/S, Tel. +45 69 16 48 50, www.emd-international.com, support@emd.dk   14/11/2023 15:50 / 63   windPRO

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R26 - R26
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

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

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

Day in month	Sun rise (hh:mm)		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)

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SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R27 - R27

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January	February	March			April			May	June	July	August			September			October	November	December
1	07:23	07:10	06:34			06:44		07:37 (ML 19)	05:59	05:30	05:31	05:54			06:25		07:35 (ML 19)	06:54	06:28	07:02
	16:42	17:15	17:49			19:23	36	08:13 (ML 19)	19:54	20:23	20:34	20:15			19:33	30	08:05 (ML 19)	18:43	16:56	16:32
2	07:23	07:09	06:33			06:42		07:37 (ML 19)	05:57	05:30	05:31	05:55			06:26		07:34 (ML 19)	06:55	06:29	07:03
	16:42	17:17	17:50			19:24	36	08:13 (ML 19)	19:55	20:24	20:34	20:14			19:31	32	08:06 (ML 19)	18:41	16:55	16:32
3	07:23	07:08	06:31			06:41		07:36 (ML 19)	05:56	05:29	05:32	05:56			06:27		07:33 (ML 19)	06:56	06:30	07:04
	16:43	17:18	17:51			19:25	37	08:13 (ML 19)	19:56	20:24	20:34	20:13			19:29	34	08:07 (ML 19)	18:39	16:54	16:32
4	07:23	07:07	06:30			06:39		07:36 (ML 19)	05:55	05:29	05:32	05:57			06:28		07:32 (ML 19)	06:57	06:31	07:05
	16:44	17:19	17:52			19:26	37	08:13 (ML 19)	19:57	20:25	20:33	20:12			19:28	35	08:07 (ML 19)	18:38	16:53	16:32
5	07:23	07:06	06:28			06:38		07:35 (ML 19)	05:54	05:29	05:33	05:58			06:29		07:31 (ML 19)	06:58	06:33	07:06
	16:45	17:20	17:54			19:27	37	08:12 (ML 19)	19:58	20:26	20:33	20:11			19:26	36	08:07 (ML 19)	18:36	16:52	16:32
6	07:23	07:05	06:27			06:36		07:35 (ML 19)	05:53	05:28	05:34	05:59			06:30		07:31 (ML 19)	06:59	06:34	07:07
	16:46	17:22	17:55			19:28	36	08:11 (ML 19)	19:59	20:27	20:33	20:10			19:24	36	08:07 (ML 19)	18:34	16:51	16:31
7	07:23	07:04	06:25			06:34		07:35 (ML 19)	05:51	05:28	05:34	06:00			06:31		07:30 (ML 19)	07:00	06:35	07:08
	16:47	17:23	17:56			19:29	36	08:11 (ML 19)	20:00	20:27	20:33	20:08			19:23	37	08:07 (ML 19)	18:33	16:49	16:31
8	07:23	07:03	06:23			06:33		07:35 (ML 19)	05:50	05:28	05:35	06:01			06:32		07:30 (ML 19)	07:01	06:36	07:09
	16:48	17:24	17:57			19:30	35	08:10 (ML 19)	20:01	20:28	20:32	20:07			19:21	37	08:07 (ML 19)	18:31	16:48	16:31
9	07:23	07:01	06:22			06:31		07:35 (ML 19)	05:49	05:28	05:35	06:02			06:33		07:30 (ML 19)	07:03	06:37	07:10
	16:49	17:25	17:58			19:31	34	08:09 (ML 19)	20:02	20:28	20:32	20:06			19:20	37	08:07 (ML 19)	18:29	16:47	16:31
10	07:23	07:00	06:20			06:30		07:36 (ML 19)	05:48	05:27	05:36	06:03			06:34		07:30 (ML 19)	07:04	06:39	07:11
	16:50	17:27	17:59			19:32	32	08:08 (ML 19)	20:03	20:29	20:32	20:05			19:18	36	08:06 (ML 19)	18:28	16:46	16:31
11	07:22	06:59	06:19			06:28		07:36 (ML 19)	05:47	05:27	05:37	06:04			06:35		07:30 (ML 19)	07:05	06:40	07:12
	16:51	17:28	18:00			19:33	30	08:06 (ML 19)	20:04	20:29	20:31	20:03			19:16	36	08:06 (ML 19)	18:26	16:45	16:31
12	07:22	06:58	06:17			06:26		07:37 (ML 19)	05:46	05:27	05:37	06:05			06:36		07:30 (ML 19)	07:06	06:41	07:13
	16:52	17:29	18:01			19:34	28	08:05 (ML 19)	20:05	20:30	20:31	20:02			19:15	35	08:05 (ML 19)	18:25	16:44	16:32
13	07:22	06:57	06:15			06:25		07:38 (ML 19)	05:45	05:27	05:38	06:06			06:36		07:31 (ML 19)	07:07	06:42	07:13
	16:53	17:30	18:02			19:35	25	08:03 (ML 19)	20:06	20:30	20:30	20:01			19:13	33	08:04 (ML 19)	18:23	16:43	16:32
14	07:22	06:55	06:14			06:23		07:40 (ML 19)	05:44	05:27	05:39	06:07			06:37		07:31 (ML 19)	07:08	06:43	07:14
	16:54	17:31	18:03			19:36	22	08:02 (ML 19)	20:07	20:31	20:30	19:59			19:11	31	08:02 (ML 19)	18:22	16:43	16:32
15	07:21	06:54	06:12			06:22		07:41 (ML 19)	05:43	05:27	05:40	06:08			06:38		07:32 (ML 19)	07:09	06:44	07:15
	16:55	17:33	18:05			19:37	19	07:59 (ML 19)	20:08	20:31	20:29	19:58			19:09	30	08:02 (ML 19)	18:20	16:42	16:32
16	07:21	06:53	06:11			06:20		07:44 (ML 19)	05:42	05:27	05:40	06:09			06:39		07:33 (ML 19)	07:10	06:46	07:16
	16:56	17:34	18:06			19:38	12	07:56 (ML 19)	20:09	20:32	20:29	19:57			19:08	27	08:00 (ML 19)	18:19	16:41	16:32
17	07:20	06:51	06:09			06:19			05:41	05:27	05:41	06:10			06:40		07:33 (ML 19)	07:11	06:47	07:16
	16:57	17:35	18:07			19:39			20:10	20:32	20:28	19:55			19:06	24	07:57 (ML 19)	18:17	16:40	16:33
18	07:20	06:50	06:07			06:17			05:40	05:27	05:42	06:11			06:41		07:35 (ML 19)	07:12	06:48	07:17
	16:59	17:36	18:08			19:40			20:11	20:32	20:27	19:54			19:04	20	07:55 (ML 19)	18:16	16:39	16:33
19	07:19	06:49	06:06			06:16			05:39	05:27	05:43	06:12			06:42		07:37 (ML 19)	07:13	06:49	07:18
	17:00	17:37	18:09			19:41			20:12	20:33	20:27	19:52			19:03	15	07:52 (ML 19)	18:14	16:39	16:33
20	07:19	06:47	06:04			06:14			05:38	05:27	05:44	06:13			06:43			07:14	06:50	07:18
	17:01	17:39	18:10			19:42			20:13	20:33	20:26	19:51			19:01			18:13	16:38	16:34
21	07:18	06:46	06:02			06:13			05:37	05:28	05:45	06:14			06:44			07:15	06:51	07:19
	17:02	17:40	18:11			19:43			20:14	20:33	20:25	19:50			18:59			18:11	16:37	16:34
22	07:18	06:45	06:01			06:11			05:37	05:28	05:45	06:15			06:45			07:17	06:53	07:19
	17:03	17:41	18:12			19:45			20:15	20:33	20:25	19:48			18:58			18:10	16:37	16:35
23	07:17	06:43	05:59			06:10			05:36	05:28	05:46	06:16			06:46			07:18	06:54	07:20
	17:04	17:42	18:13			19:46			20:16	20:34	20:24	19:47			18:56			18:08	16:36	16:35
24	07:16	06:42	05:57		06:52 (ML 19)	06:08			05:35	05:28	05:47	06:17			06:47			07:19	06:55	07:20
	17:05	17:43	18:14	12	07:04 (ML 19)	19:47			20:16	20:34	20:23	19:45			18:54			18:07	16:35	16:36
25	07:16	06:40	05:56		06:48 (ML 19)	06:07			05:34	05:29	05:48	06:18			06:48			06:20	06:56	07:21
	17:07	17:44	18:15	19	07:07 (ML 19)	19:48			20:17	20:34	20:22	19:44			18:53			17:06	16:35	16:36
26	07:15	06:39	05:54		06:45 (ML 19)	06.05			05:34	05:29	05:49	06:19			06:49			06:21	06:57	07:21
	17:08	17:46	18:16	24	07:09 (ML 19)	19:49			20:18	20:34	20:21	19:42			18:51			17:04	16:34	16:37
27	07:14	06:37	05:52		06:44 (ML 19)	06:04			05:33	05:29	05:50	06:20		07:46 (ML 19)	06:50			06:22	06:58	07:21
	17:09	17:47	18:17	27	07:11 (ML 19)	19:50			20:19	20:34	20:20	19:41	12	07:58 (ML 19)	18:49			17:03	16:34	16:38
28	07:13	06:36	05:51		06:42 (ML 19)	06:03			05:32	05:30	05:51	06:21		07:43 (ML 19)	06:51			06:23	06:59	07:23
	17:10	17:48	18:18	29	07:11 (ML 19)	19:51			20:20	20:34	20:19	19:39	18	08:01 (ML 19)	18:48			17:01	16:33	16:38
29	07:12		06:49		07:40 (ML 19)	06:01			05:32	05:30	05:52	06:22		07:41 (ML 19)	06:52			06:24	07:00	07:22
	17:12		19:19	32	08:12 (ML 19)	19:52			20:21	20:34	20:18	19:37	22	08:03 (ML 19)	18:46			17:00	16:33	16:39
30	07:12		06:47		07:39 (ML 19)	06:00			05:31	05:30	05:53	06:23		07:39 (ML 19)	06:53			06:26	07:01	07:22
	17:13		19:20	34	08:13 (ML 19)	19:53			20:21	20:34	20:17	19:36	25	08:04 (ML 19)	18:44			16:59	16:33	16:40
31	07:11		06:46		07:38 (ML 19)				05:31		05:54	06:24		07:37 (ML 19)				06:27		07:23
	17:14		19:22	35	08:13 (ML 19)				20:22		20:16	19:34	28	08:05 (ML 19)				16:58		16:40
Potential sun hours	298	298	370			399			447	451	458	427			375			346	299	389
Total, worst case				212			491						105			602				
Sun reduction				0,46			0,50						0,73			0,67				
Oper. time red.				0,88			0,88						0,88			0,88				
Wind dir. red.				0,56			0,56						0,56			0,56				
Total reduction				0,23			0,25						0,36			0,33				
Total, real				48			121						38			200				

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

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

TENPROJECT

RELAZIONE DI SHADOW FLICKERING

Codice	GE.AGB01.PDV.6.4.R00
Data creazione	16/11/2023
Data ultima modif.	16/11/2023
Revisione	00
Pagina	106 di 117

SHADOW - Calendar

Calculation: GE.AGB01.C8 SOLO PROGETTO **Shadow receptor:** R28 - R28
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [PALINURO C.]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,14	4,76	5,47	6,61	8,23	9,68	10,62	10,12	8,36	6,25	5,04	4,06

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
797	665	470	288	376	536	645	1.200	826	304	606	990	7.703

Idle start wind speed: Cut in wind speed from power curve

	January		February	March	April	May	June	July	August	September	October	November		December	
Potential sun hours	298		298	370	398	447	451	458	427	375	346	299		289	
Total, worst case	1448													2504	
Sun reduction	0,43											0,51		0,44	
Oper. time red.	0,88											0,88		0,88	
Wind dir. red.	0,71											0,72		0,70	
Total reduction	0,27											0,32		0,27	
Total, real	390											212		676	

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)

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ALLEGATO 3: "CALENDAR GRAPHIC": SINTESI GRAFICA DEL "FLICKERING" SUI RECETTORI ANALIZZATI

SHADOW - Calendar, graphical
Calculation: GE.AGB01.C8 SOLO PROGETTO
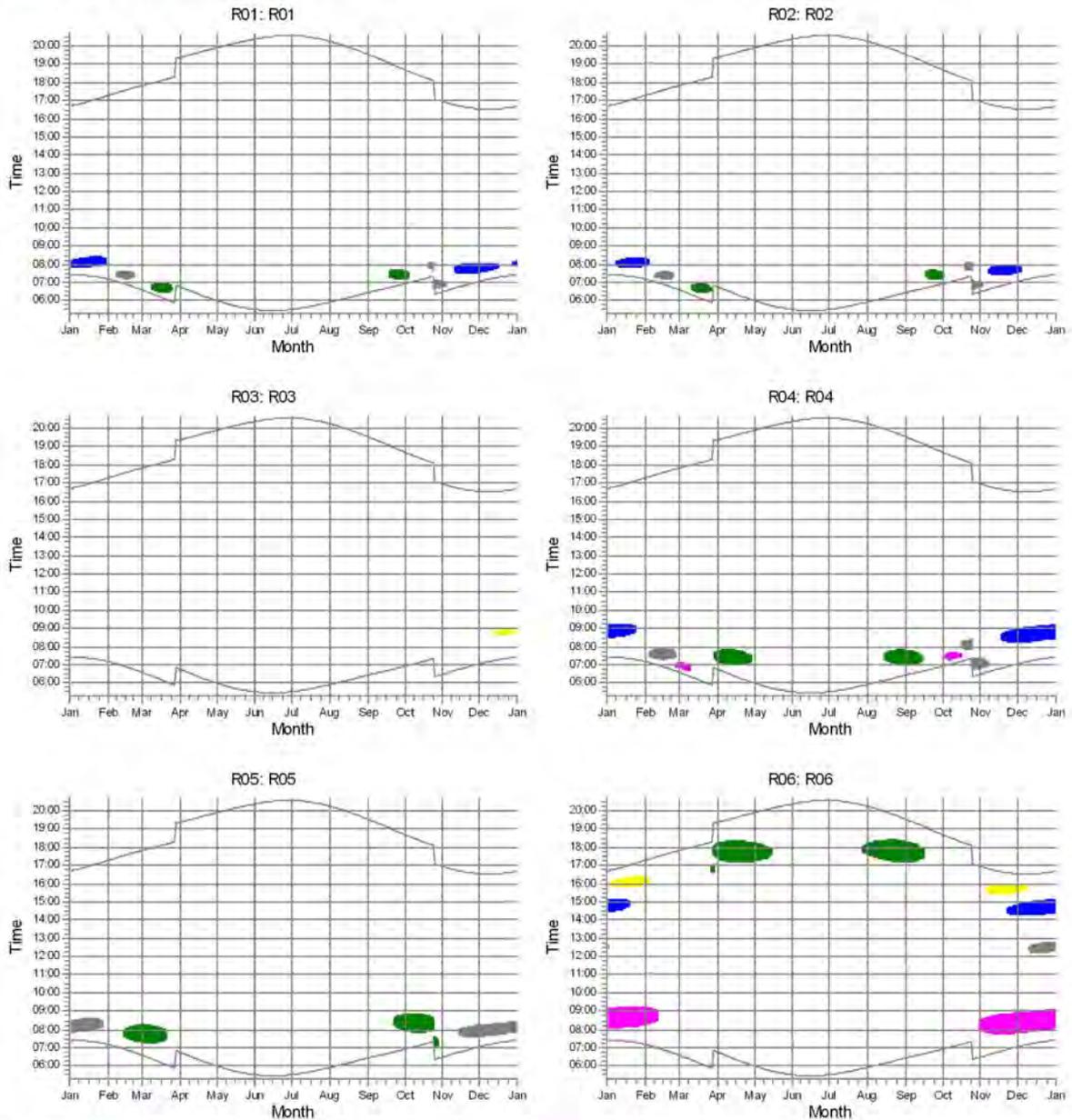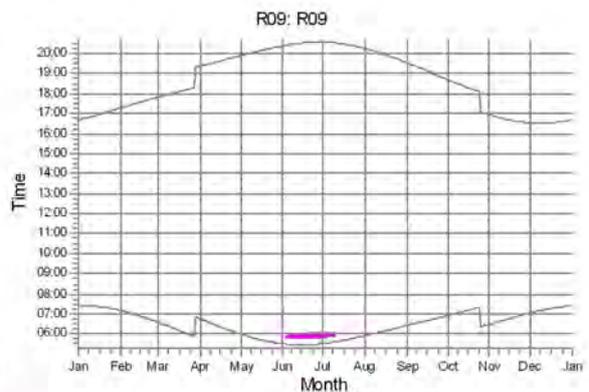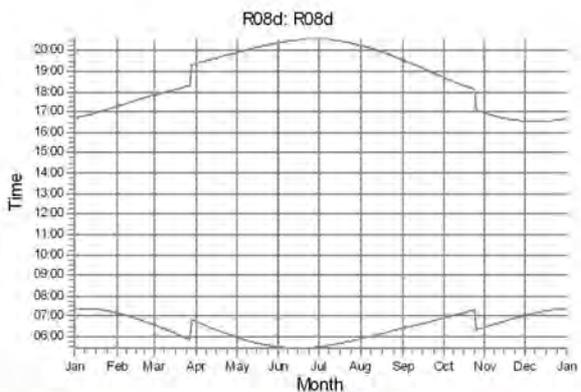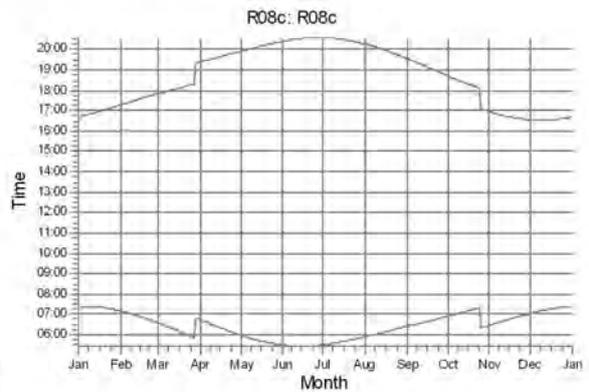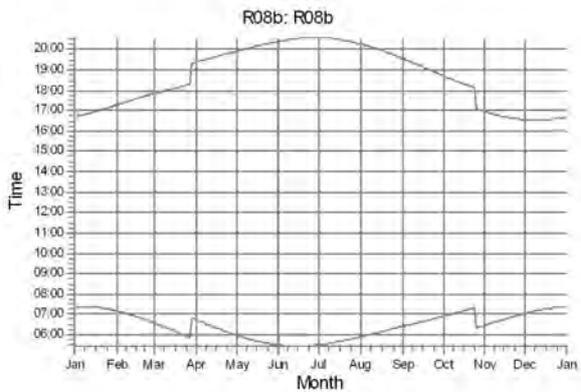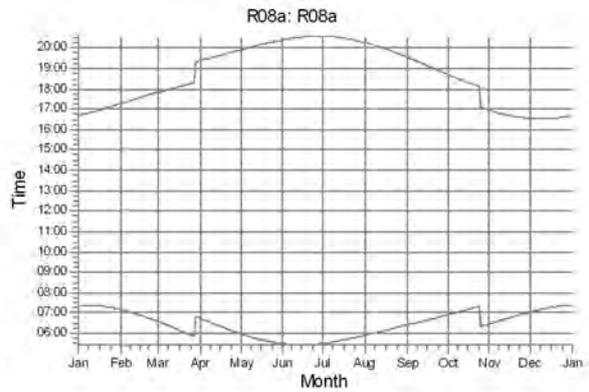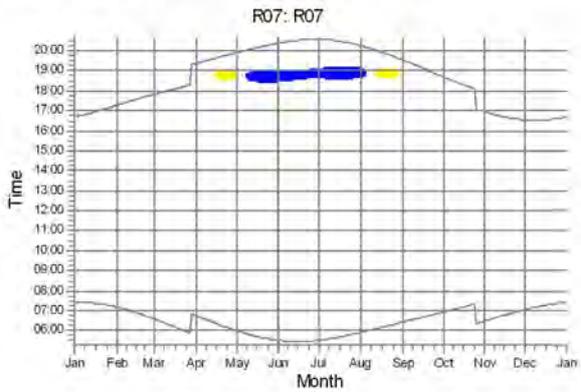
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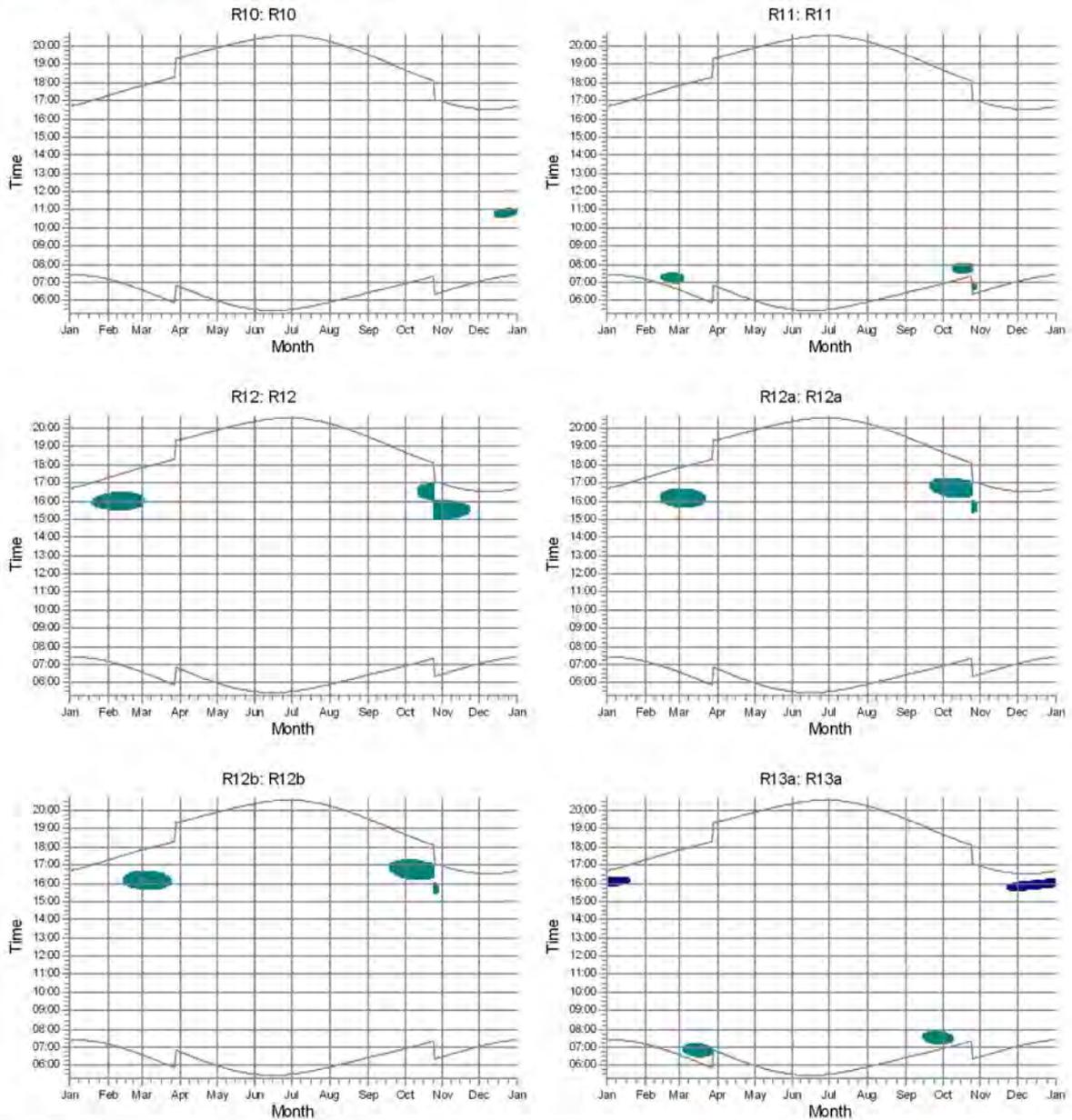
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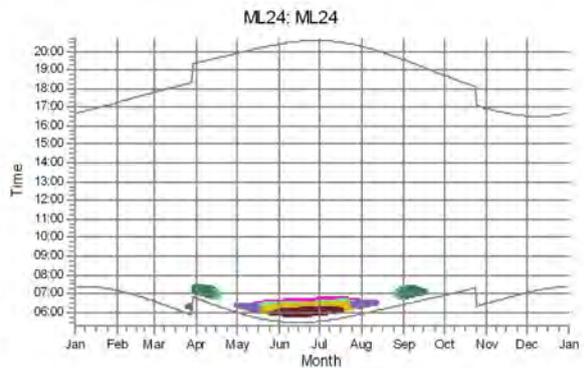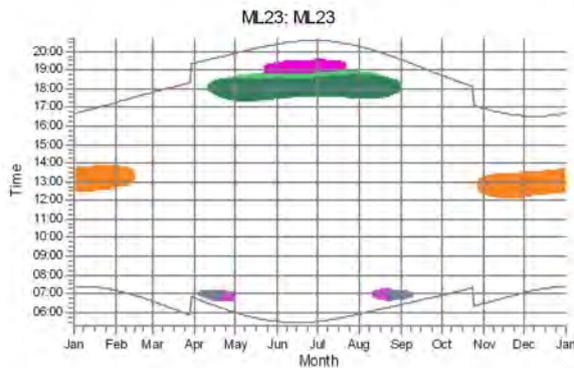
ML15: ML15   ML17: ML17

SHADOW - Calendar, graphical
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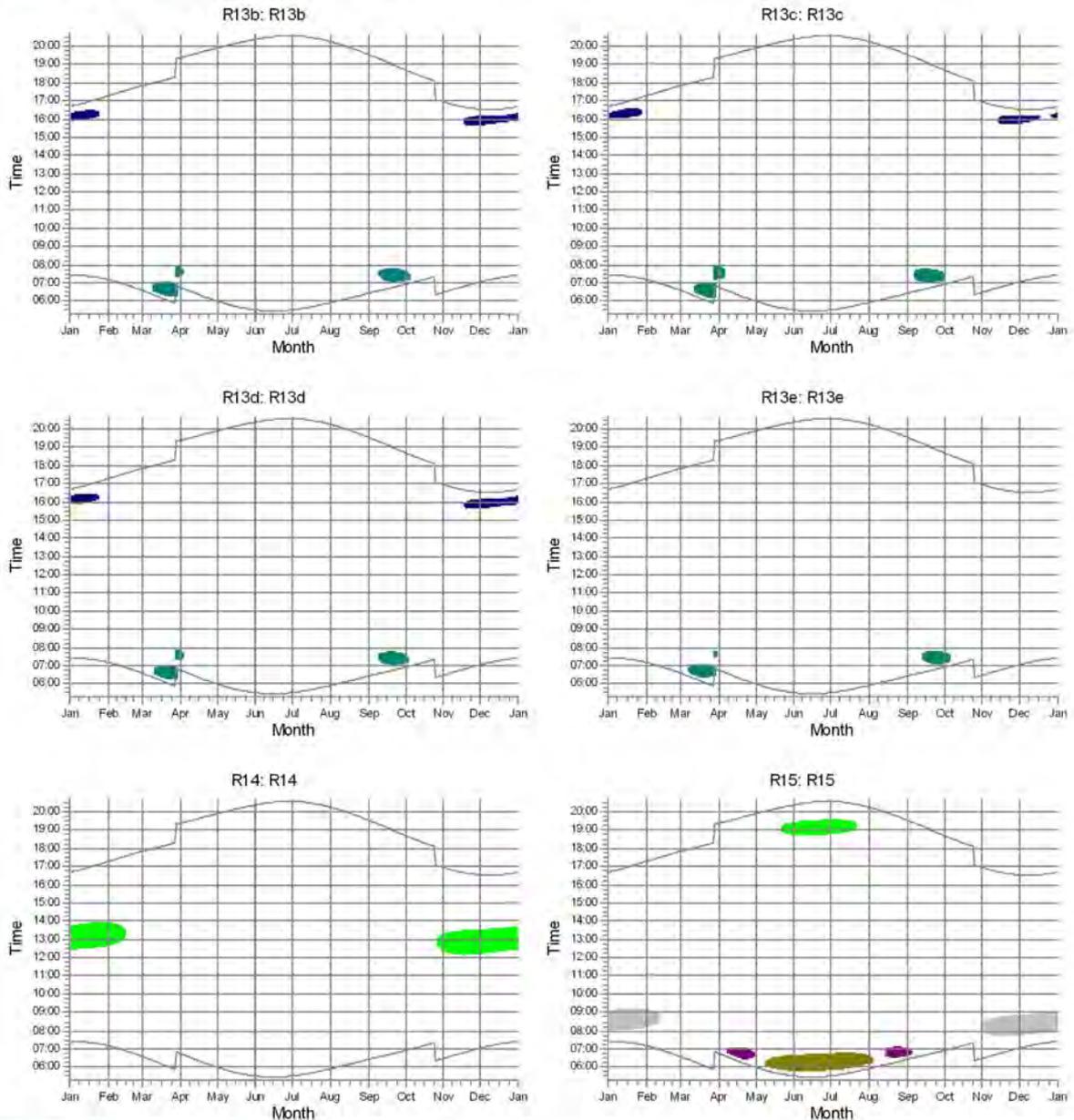
WTGs

ML15: ML15	ML23: ML23	ML26: ML26
ML17: ML17	ML24: ML24	ML28: ML28

SHADOW - Calendar, graphical
Calculation: GE.AGB01.C8 SOLO PROGETTO

WTGs

ML23: ML23		ML24: ML24		ML26: ML26		ML28: ML28	

SHADOW - Calendar, graphical
Calculation: GE.AGB01.C8 SOLO PROGETTO

SHADOW - Calendar, graphical
Calculation: GE.AGB01.C8 SOLO PROGETTO

WTGs

	ML17: ML17		ML19: ML19		ML23: ML23
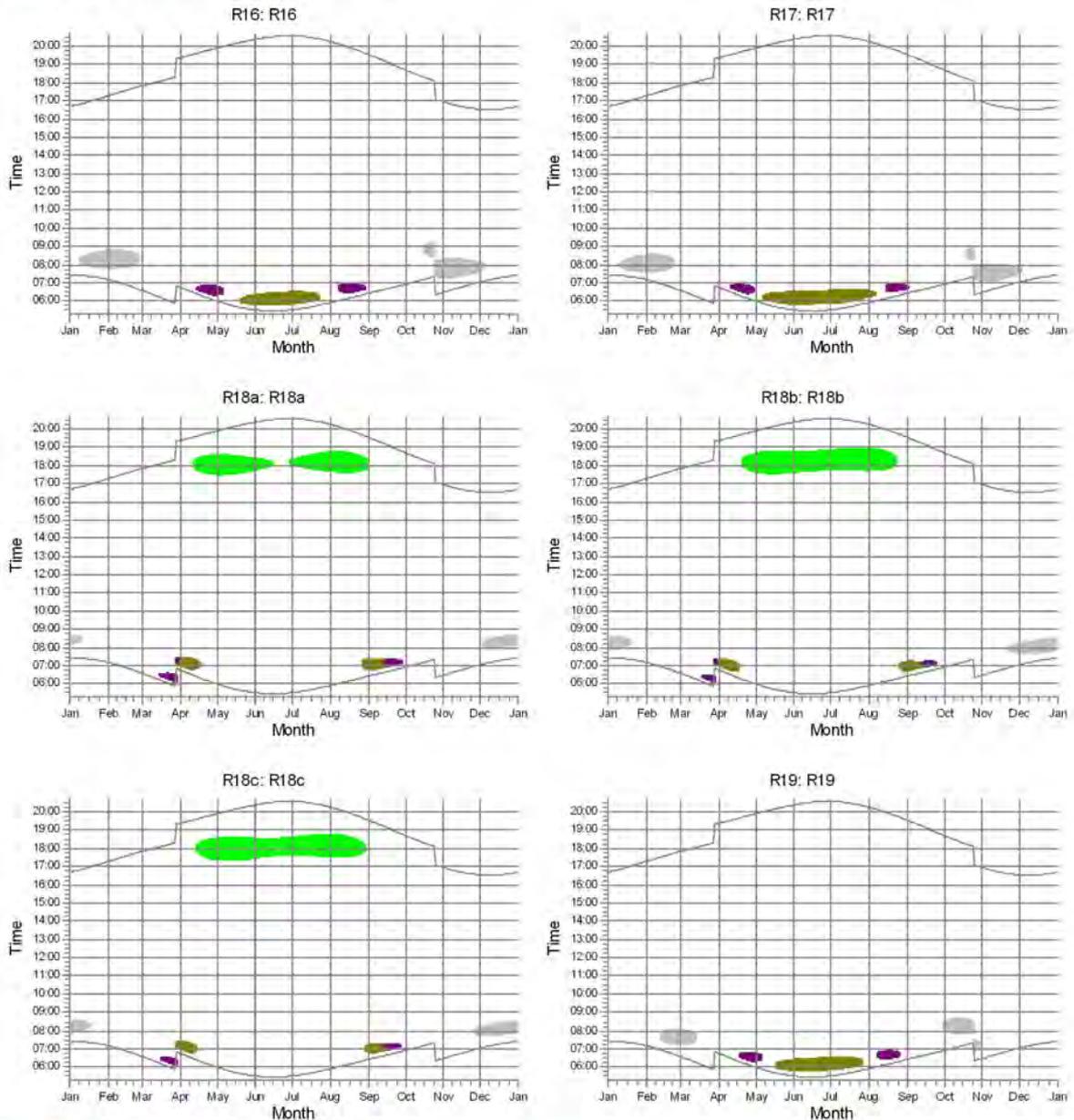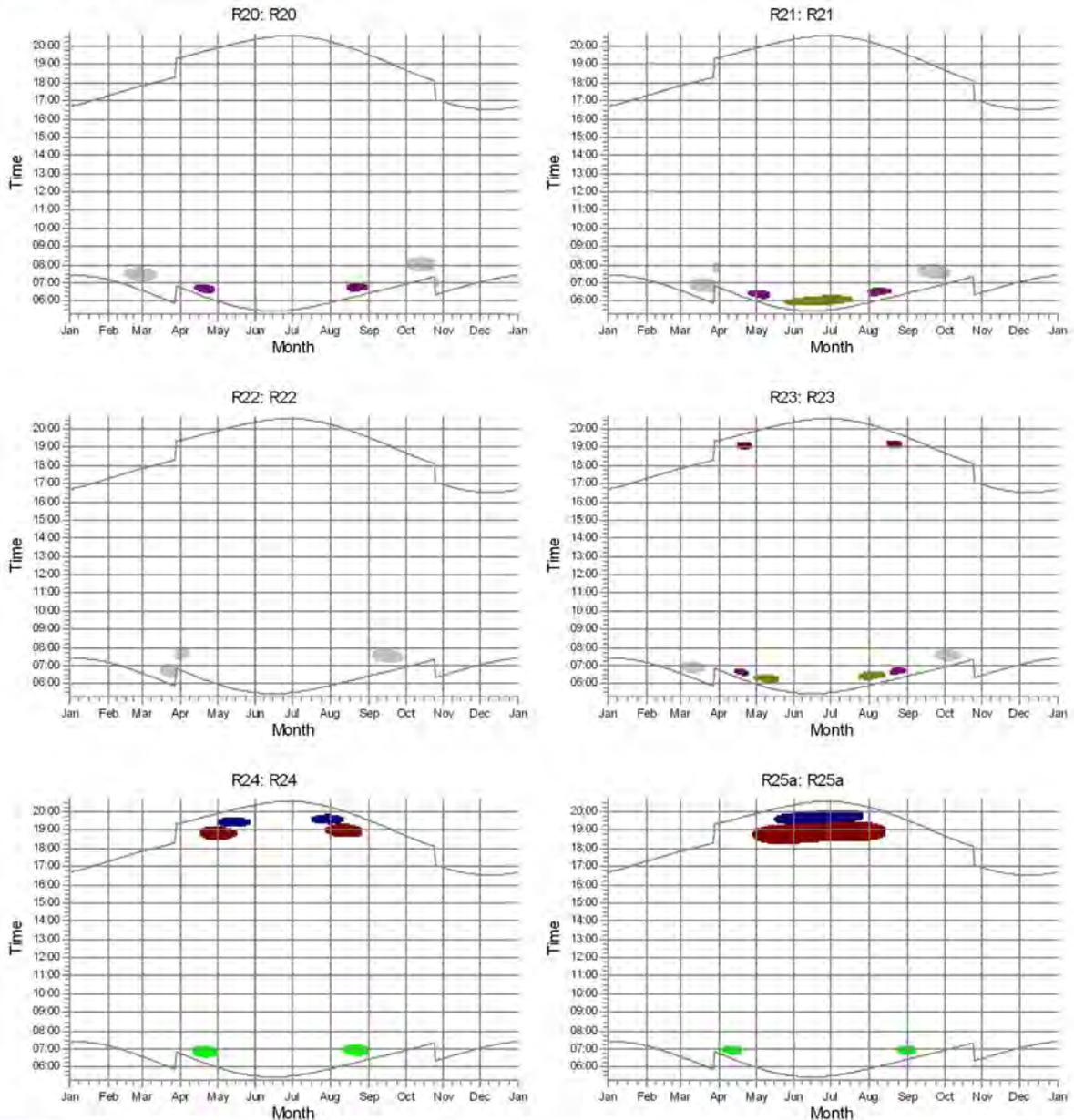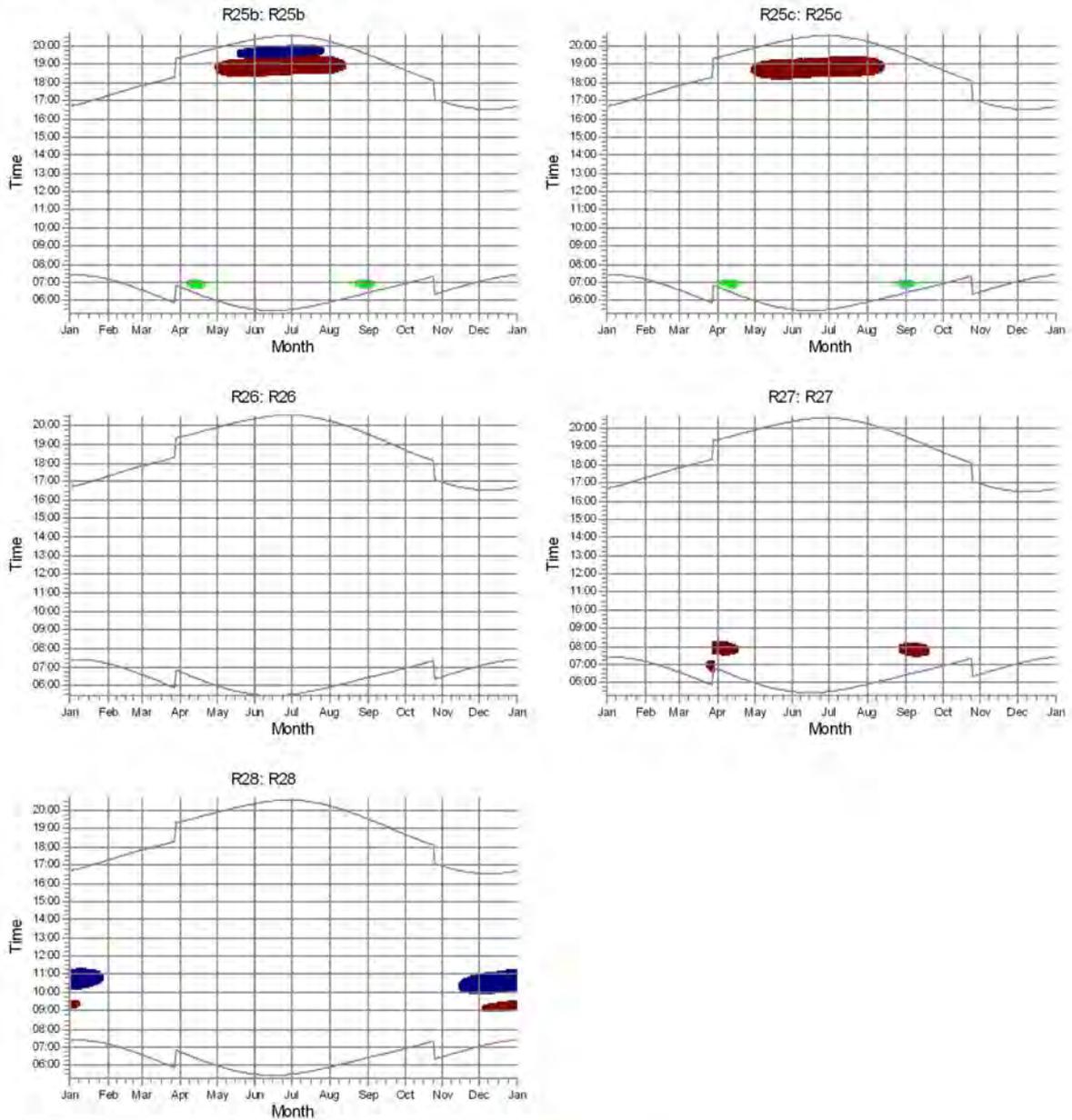
ALLEGATO 4: "CALENDAR GRAPHIC PER WTG": SINTESI GRAFICA DEL "FLICKERING" GENERATO DALLE WT DI PROGETTO
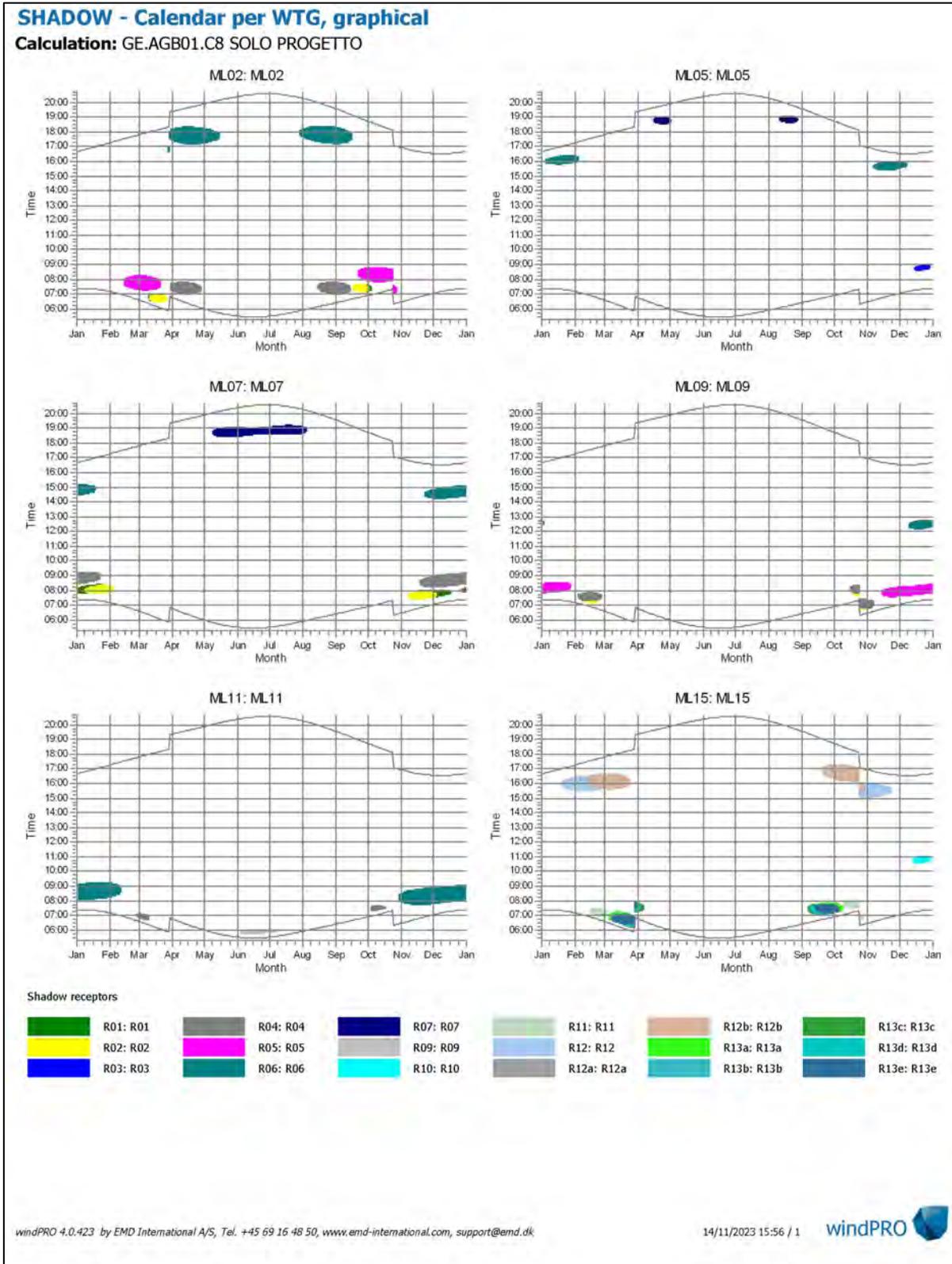
SHADOW - Calendar per WTG, graphical
Calculation: GE.AGB01.C8 SOLO PROGETTO

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Ten Project S.r.l: Sede legale ed operativa: Loc.Chianarile Z I., 82010 San Martino Sannita (BN) - **Sede Operativa**: Via Alfonso la Cava 114- 71036 Lucera (FG)

ALLEGATO 5: "SHADOW MAP" MAPPA CHE RAPPRESENTA LE ORE DI OMBREGGIAMENTO ("REAL CASE") PER LE AREE LIMITROFE ALLE TURBINE DI PROGETTO.
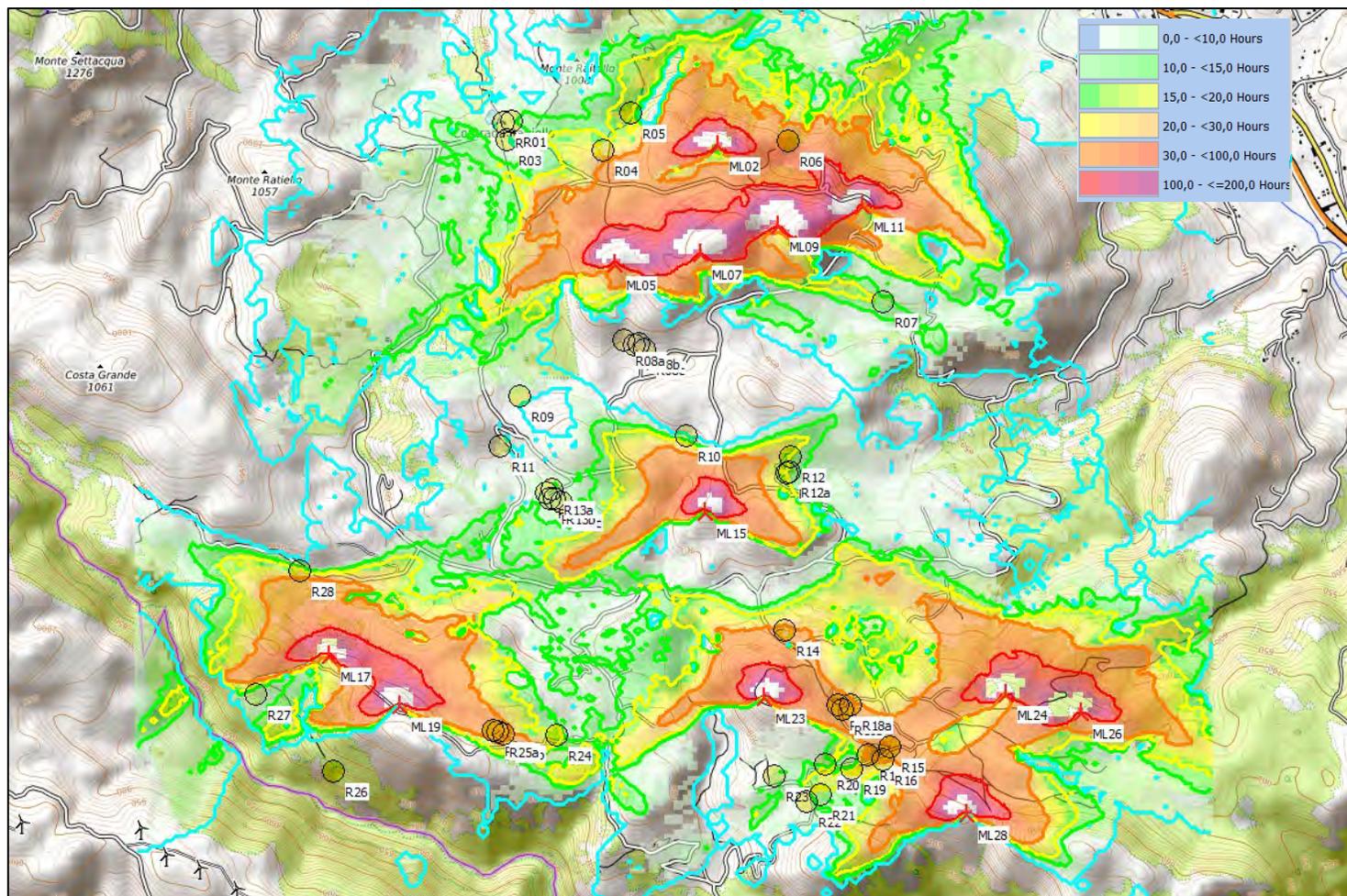
Figura 17: Mappa di isombreggiamento in versione planimetrica su cartografia topografica.

Figura 18: Mappa di isombreggiamento in versione planimetrica su cartografia ortofotografica